



# Technical **TEXTILES** international

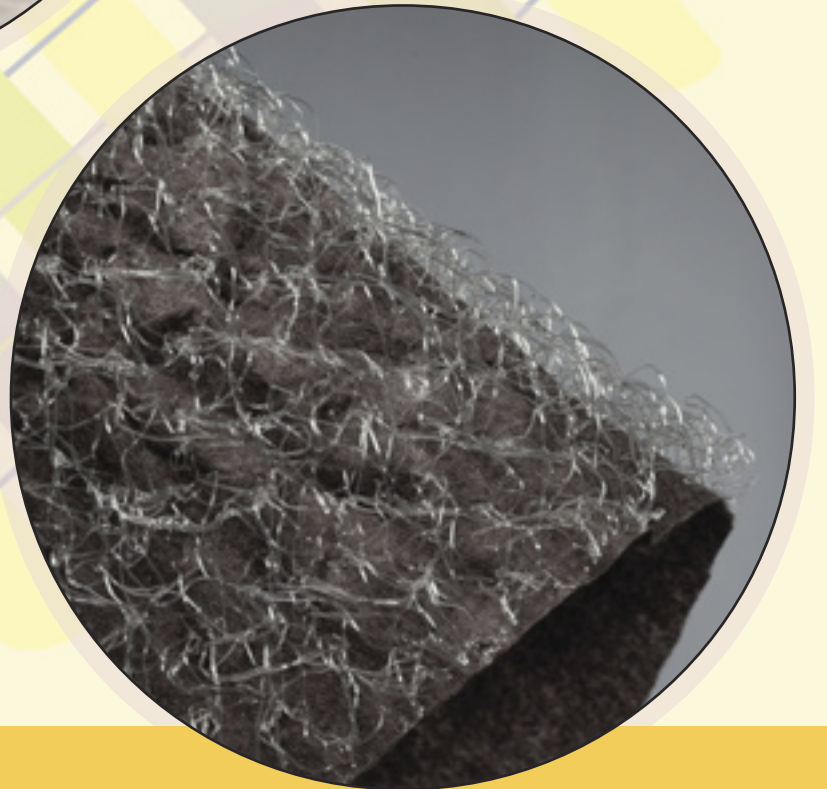
Summer 2024  
Volume 32, Number 2

Informing the industry worldwide



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for the latest developments  
in machinery

*Techtextil* to highlight  
innovation in fibres,  
fabrics, nonwovens  
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## INSIDE:

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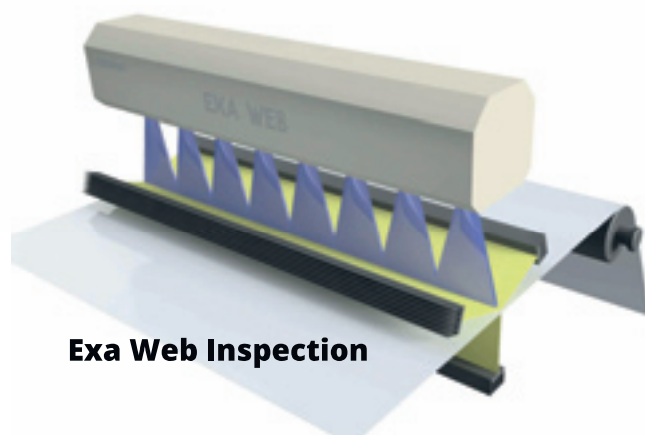


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Loptex S.r.l.  
Via Valtellina 16 - 22070 - Montano Lucino (CO) - Italy  
Phone: +39 - 031 47 11 99 - Fax: +39 - 031 47 17 82  
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**Editor: James Bakewell**

Tel: +44 (3301) 335079

Email: james@boughtonmedia.com

**Consulting Editor:**

Nick Butler

**Nonwovens Editor:**

Adrian Wilson

**USA correspondent:**

John W. McCurry

**India correspondent:**

Samuel Joseph

**Regular contributor:**

Geoff Fisher

**Display advertising sales:**

David Kay/Maria Box

Tel: +44 (1273) 423512

Email: dkay@fastnet.co.uk

**Published by:**

**Boughton Technical Media Ltd,**

**PO Box 54,**

**WR15 8XN, UK.**

**Subscription enquiries, orders  
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**Boughton Technical Media Ltd,**

**PO Box 54,**

**WR15 8XN, UK.**

**Tel: +44 (3301) 335079**

**Email: accounts@**

**boughtonmedia.com**

**<https://www.technical-textiles.net>**

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## In the Editor's opinion

The return of *Techtextil* and *Texprocess* to Frankfurt, Germany, on 23–26 April 2024, could not be better timed. The technical textiles industry currently faces some unprecedented challenges. Many European producers of machinery have seen their sales slump in recent months. The human coronavirus pandemic created much disruption, but it also meant that many machinery producers had major backlogs of orders throughout 2023, generating significant revenue. Now, their customers are more reluctant to invest. While this situation will likely start to improve by the end of the year, European companies are also facing increasing competition from machine manufacturers in China, India and Turkey.

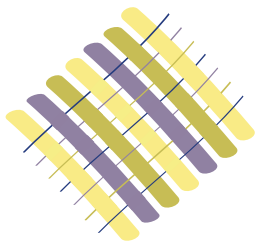
Added to this mix is the current geopolitical situation, which is less than favourable. The technical textiles industry has benefited from free trade more than almost any other sector in recent decades. Conflicts, such as the trade war ongoing between the USA and China, create uncertainty, and uncertainty is the enemy of investment. The costs of raw materials have skyrocketed and high energy costs have been exacerbated by the ongoing war in the Ukraine.

Increasingly stringent environmental regulations provide both a challenge and an opportunity, something illustrated in our extensive preview of *Techtextil*. Machinery builders are striving to make their equipment more efficient, cutting costs for manufacturers and reducing the impact their operations have on their environment (see also, page 4). Manufacturers of fibres (see also, page 22) and fabrics (see also, page 27) are working to incorporate more recycled and bio-based materials into their products. Chemical suppliers (see also, page 33), meanwhile, continue to develop additives that not only add value to textiles, but also reduce the harm to human health of the final products and of manufacturing processes to the environment.

Further, digital technologies for the automation of, and exchange of data between, production machinery (so called Industry 4.0) will be a major focus of the *Techtextil* exhibition. During a press conference and panel discussion arranged by Messe Frankfurt at *Heimtextil* on 11 January, a study conducted by the German Economic Institute was cited as finding that only 31% of companies in Germany are able to use data efficiently. It is, however, now essential for companies to improve their digital infrastructure, since upcoming legal regulations – such as the European Union (EU)'s Strategy for Sustainable and Circular Textiles and the digital product passports that this regulation stipulates – will require the increased adoption of digital technologies.

At the same time, digital technologies will help those that adopt them to meet the sustainability requirements of customers and partners by, for example, improving the transparency of their supply chains and their ability to calculate the resources used in the manufacture of their products.

Finally, at the time of writing, *Techtextil* and *Texprocess* are less than a month away. We will continue to investigate and report on the plans of exhibitors as they are announced via our website (<https://www.technical-textiles.net>), so that you will have the most complete information in advance of the shows. I look forward to seeing you in Frankfurt!



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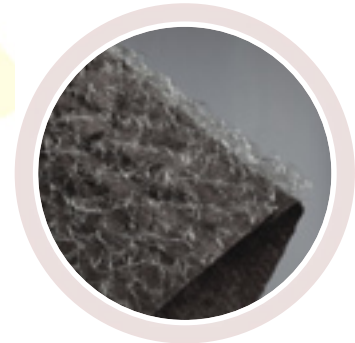
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## On the cover:



***At Techtextil, Dienes Apparatebau GmbH will highlight its wet-spinning lines, such as this. Our preview of the other innovations in machinery on show in Frankfurt starts on page 4***



***Exhibits at Techtextil will include nonwovens for high-performance applications, such as this carrier material for the creation of green roofs on urban buildings developed by Freudenberg Performance Materials (see also, page 31).***





### Efficient machinery for the production of technical textiles

Many machinery builders presented their most important developments at *ITMA* (which was held in Milan, Italy, on 8–14 June 2023), but *Techtextil*, and its sister show, *Texprocess*, still provide them with a vital opportunity to showcase their technologies to the technical-textiles market. Editor James Bakewell picks-out some highlights.



*Sorted and cut textile waste ready for tearing at Nouvelles Fibres Textiles' facility in Amplepuis, France.*

#### Fibres and nonwovens

##### Andritz (Hall 12.0, Stand B93)

A machine builder for the textiles and nonwovens industries, Andritz of Graz, Austria, will be able to discuss:

- technologies for recycling textiles;
- airlay and needlepunch technologies for the automotive industry;
- a specialist calendar (teXcal Raconip TT).

A significant focus for the company will likely be its lines for the recycling of textiles. In 2020, Andritz bought Laroche of Cours, France. Laroche is a supplier of systems for opening, blending and dosing, airlay web-forming, the recycling of textile waste and the decortication of bast fibres. In 2023, Andritz Laroche installed a line comprising equipment for the opening of post-consumer recycled fibres and their mixing with virgin fibres at Renaissance Textile of Laval, France.

The line is capable of recycling 3000 t of textiles a year. Further, Andritz Laroche has built what it describes as the first industrial-scale automatic textile-sorting and -recycling line in France in partnership with Pellenc ST and Nouvelles Fibres Textiles. The line is capable of sorting garments by composition and colour, and can be used for the recycling of post-consumer and post-industrial waste. The line also removes hard components, such as buttons and zips, from the material, which can then be processed in an Andritz tearing machine. The fibres recycled from the material can be used in the spinning, nonwovens and composites industries<sup>(1)</sup>.

For the automotive industry, Andritz will showcase its airlay and needlepunch technologies; the company has a technical centre for needlepunch processes at Andritz Asselin-Thibeau, in Elbeuf, France, and an airlay



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*A wet-spinning line from Dienes Apparatebau GmbH of Mühlheim am Main, Germany. The company will tell visitors to its stand that in order to develop new fibres, filaments and yarns, companies need efficient, modular, flexible and, in part, self-optimising experimental working systems that can gather data on the process being carried-out.*

pilot line at Andritz Laroche. It will also talk about its ProWin system, which enables the production of homogeneous webs and can reduce the input of raw materials required. ProWin allows a machine to run faster while generating less mechanical stress, and can be retrofitted to recent ProDyn installations.

Targeted at manufacturers of technical textiles (such as sports- and workwear, parachute fabrics and packaging materials), the teXcal Raconip TT calender has an innovative deflection-controlled roll, which, combined with the use of hydrostatic pistons, allows users to adjust the pressure applied to the fabric in specific areas. Andritz says users can control the roll and pistons to create profiles for treating fabrics in order to produce textiles that are precisely flat and have the desired permeability to air.

For the production of such as biodegradable and flushable wipes, Andritz will be able to discuss a range of technologies, including hydroentanglement and wetlace. Hydroentanglement can bond any kind of fibres – including pulp, cotton, hemp, linen, flax and bamboo – without the use of chemical binders or

thermal fusion. Andritz says that its wetlace card-pulp (CP) process, meanwhile, combines the benefits of two web-forming technologies (drylaid and wetlaid), with bonding by hydroentanglement. Using it, natural fibres can be processed to generate a high-performance and cost-effective wipe.

Since the last edition of *Techtextil*, Andritz has bought supplier of technologies for the production of airlaid nonwovens, Dan-Web<sup>(2)</sup>.

Based in Galten, Denmark, Dan-Web designs and builds customised machines and plants for the production of airlaid nonwovens for use in diapers for infants, feminine hygiene and adult incontinence products, and wipes. The company has 50 employees and is almost 50 years old.

By purchasing Dan-Web, Andritz, says that it will be able to supply airlaid technologies to its customers. The company already supplies technologies for air-through bonding, needlepunching, hydroentanglement, spunbonding and wetlaid/Wetlace processes, as well as machinery for the converting of nonwovens, and the finishing and recycling of textiles.

Dan-Web is also a supplier of hammer mills and forming-head technologies for the production of pulp-based packaging and single-use products.

### **Autefa Solutions (Hall 12.0, Stand C77)**

Autefa Solutions supplies customised equipment and related services for complete needlepunch lines: combing; opening and blending; chute-feeding; carding; crosslapping; needlepunching; drafting; winding. In addition, the company, from Friedberg, Germany, has sold lines for recycling carbon fibre and hydroentanglement machines.

The company will likely showcase its airlay line (Airlay KV12/K12) for the formation of heavy and thick webs from natural and recycled fibres for the growing acoustic and thermal insulation markets.

Further, Autefa will be able to highlight an automated system (Needle Exchanger) for the re-needling of needle boards. The company will tell visitors to its stand that this machine eliminates the need for the





physically tiring and risky manual processes of needle insertion, exchange and removal.

The company will also be able to discuss its injector (V-Jet) for hydroentanglement processes. The V-Jet injector reduces the distance between the nozzle and the injector-bottom from the conventional 15–25 mm to 0.5 mm, decreasing energy losses generated by friction with the air, air turbulence and jet expansion. This enables a 20% reduction in the water-pressure needed to produce a fabric demonstrating a given tensile strength—yielding overall energy savings of 30%.

Finally, the company can talk about its systems for the automation of warehousing operations.

### **Dienes Apparatebau (Hall 12, Stand C55C)**

Pilot spinning systems for the development of new products, such as renewable precursors for carbon fibres and biobased alternatives to synthetic fibres, are to be shown by Dienes Apparatebau GmbH of Mühlheim am Main, Germany, on its stand.

The company says that in order to develop new fibres, filaments and yarns, companies need efficient, modular, flexible and, in part, self-optimising experimental working systems that can gather data on the process being carried-out. Dienes claims that its MultiMode plant meets these demands. In a MultiMode plant, each step of the process is conducted by a module that can be adapted to the specific requirements of the customer and can be controlled separately from other modules. Dienes' production lines therefore comprise several modular units that can be exchanged and rearranged easily at any time. Further, the parameters of the process being developed can be viewed and recorded.

MultiMode Explorer is Dienes' tool for controlling and visualising MultiMode lines. A new user interface will be presented by the company at *Techtextil*. MultiMode Explorer allows for the gathering of data from sensors in real time, recipe management, the long-term-monitoring of production parameters and remote access to the plant for service and operation.

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## Dilo Group (Hall 12.0, Stand B81)

In 2023, German nonwovens machinery manufacturer Dilo Group, of Eberbach, announced that it will start working with Italian companies Dell'Orco & Villani and TechnoPlants to supply complete systems for the textile-recycling sector.

Dell'Orco & Villani, of Capalle, is a supplier of equipment for the tearing of textile waste. It says that its systems maintain the staple lengths of re-opened fibres from knitted and woven textiles, to avoid the downgrading of the material.

TechnoPlants of Pistoia is a manufacturer of aerodynamic web-forming and through-air technology, with a particular focus on the use of reclaimed fibres



*Dilo's MicroPunch needling technology, which it has been developing for the last 20 years, could be used in place of hydroentanglement for the production of disposable nonwovens from biodegradable fibres, as it is significantly more energy-efficient.*

for various applications such as acoustic and thermal insulation, car parts, upholstery and bedding.

Dilo Group, through Dilo Systems GmbH of Eberbach, will contribute its experience as a general contractor specialising in fibre preparation, carding, crosslapping and needling. The company will supply complete systems featuring the technologies from Dell'Orco & Villani and TechnoPlants.

Dilo's stand will likely feature its MicroPunch needling technology, which it has been developing for the last 20 years, and could be used in place of hydroentanglement for the production of disposable nonwovens from biodegradable fibres, as it is significantly more energy-efficient.

Needlepunching technologies have traditionally been used to bond nonwovens with medium-to-high areal densities, in part because the needles leave marks that are more apparent in fabrics with lower densities. As such, hydroentanglement is typically used to bond fabrics with areal densities of less than 100 g.m<sup>-2</sup>, but although the process is widely used for the manufacture of fabrics for wipes, it is water- and energy-intensive.

Dilo says that MicroPunch could be a viable alternative for the bonding of nonwovens with areal densities of 30-100 g.m<sup>-2</sup>. The machine features needle boards with 45 000 needles per metre, enabled by innovative designs by Groz-Beckert (see also, page 5 and page 20). The needles move in and out of the fibre web in a manner that minimises the appearance of any needle marks in the finished nonwoven. The machine runs at 160 to 170 metres per minute and the company reports energy savings of up to 50% per kilogramme of fabric produced, depending on the product, compared with hydroentanglement. Further, Fabrics made using MicroPunch are strong and have more volume than a lightweight hydroentangled fabric.

## Loptex Srl (Hall 12.0, Stand B20)

Loptex (see also, Inside front cover) has been serving the textile industry for more than 25 years, selling machinery for spinning fibres and manufacturing nowovens. Its assembly facility is in Montano Lucino, Italy, close to the border with Switzerland.



### Oerlikon Polymer Processing Solutions (Hall 12.0, Stand C55)

Technologies for the production of yarns for airbags, seatbelts and geotextiles, and a system for the hydrocharging of meltblown nonwovens, are to be shown by Oerlikon Polymer Processing Solutions.

The company, of Remscheid, Germany, says that, on average, modern passenger vehicles each contain 30–35 kg of yarn, with the polyamide (PA) and polyester (PES) yarns employed for the manufacture of airbags accounting for a large proportion of this weight. Oerlikon Polymer Processing Solutions will tell visitors to its stand that its technologies for the production of these yarns are efficient and stable. Technology Manager Technical Yarn at the company's Oerlikon Barmag division, also of Remscheid, Jen Supra, says: "They meet all the high quality standards for airbags, which – like almost all other textile products in vehicle construction – must guarantee maximum safety for the occupants, and without any loss of function in any climate, anywhere in the world, for the entire service life of the vehicle."

Seatbelts must withstand tensile forces in excess of 3 t and simultaneously stretch in a controlled manner in the event of impact, in order to reduce the load experienced by the passenger. A seatbelt comprises approximately 300 filament yarns, each of which are spun from around 100 individual filaments. Oerlikon Barmag claims that its Single Filament Layer Technology is a sophisticated and simultaneously gentle high-tenacity (HT) yarn process for manufacturing these yarns.

Yarns that demonstrate low elongation, high tenacity and high rigidity are also used in geotextiles, such as the geogrids employed in the base course system under asphalt. Geotextiles usually have high yarn counts of up to 24 000 denier. Systems from Oerlikon Barmag are able to simultaneously produce three filament yarns with counts of 6000 denier each. Thanks to the high spinning titer, fewer yarns can be plied together to achieve the required titer for the geotextile in a cost- and energy-efficient way.

Oerlikon Nonwoven's spunbond technology, meanwhile, can be used for the production of nonwovens for the manufacture of geotextiles made of

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*With the newly developed take-up area from Saurer, twist packages with precision winding can now be produced on the TechnoCorder TC2, shown here.*

PES or polypropylene (PP) and is characterised by high production capacities, yields and low energy consumption, according to the company.

Finally, Oerlikon Nonwoven will show a system for the hydrocharging of meltblown nonwovens that can be integrated easily into existing production lines. The company claims that by using the system (called hycuTEC), the pressure-drop in typical FFP2 filter media (as defined in EN 149, *Respiratory protective devices—Filtering half masks to protect against particles—Requirements, testing, marking*) can be reduced to less than a quarter and filtration efficiencies of more than 99.99% can be achieved for filter media of 35 g.m<sup>-2</sup> at 35 Pa. Oerlikon Nonwoven adds that tests at the facilities of its customers who manufacture FFP2 face masks have confirmed that the system improves the filtration efficiency of media while cutting use of material by 30%. Further, the company says that the system consumes less water and energy than other hydrocharging systems.

### **Retech AG (Hall 12.0, Stand B01)**

From Meisterschwanden, Switzerland, Retech AG will exhibit its range of heating, drawing and monitoring components for processing man-made fibres.

Retech's heated godet rolls are designed to apply heat-treatments to filaments. They must generate the correct temperature for the material used and must maintain that temperature continuously throughout the process. To achieve these aims, Retech's godets feature single or multi-zone heating systems using induction-, infrared radiation- or resistance-based technologies. The company says that the godets employ energy-efficient motors and heaters, and have long service lives.

The failure of a godet can cause significant disruption to production. Retech has therefore equipped its godets with additional temperature sensors so that preventive maintenance can be undertaken. The UTR-6A system measures the temperatures in the rotating godet and transmits the data to the UCR-6 temperature controller for processing.

Using thermocouples that are installed in the induction heater in each heating zone, the temperature of the induction coil can be measured and monitored. If the temperature exceeds a certain value, the coil can be damaged, and the system reacts with a warning and simultaneously switches-on a cooling function. The operator can then determine the cause of the increase in temperature and fix the problem. If the bearing temperature exceeds a certain value, the grease lubricating it decomposes and can cause damage and, ultimately, godet failure. Retech has also developed technology for monitoring the temperature of these parts. Vibrations can also damage bearings and lead to failures, and are also measured and evaluated via the UCR-6.

The company will tell visitors to its stand that modern godets need to be not only faster and bigger than their predecessors, but also need to be able to run slowly if needed for the production of such as carbon fibres. To ensure that such slow speeds, of 0.1–10 m.min<sup>-1</sup>, can be achieved in a stable manner, Retech has developed a drive system that, crucially, does not feature a coupling (common in the industry up to now) that connects the bearing, gear and motor. Instead, the bearing, the gearbox and the motor are one unit. Depending on the requirements for speed, torque and gearbox angle, a modular system is also available, which can be assembled according to a customer's needs.



### Saurer Twisting Solutions (Hall 12.0, Stand B52)

The focus of the exhibit by Saurer Twisting Solutions will be its two-for-one twisting machine (TechnoCorder TC2). The company, from Kempten, Germany, will highlight the machine's latest capabilities as well as novel and important applications for the yarns it processes.

With the newly developed take-up area from Saurer, twist packages with precision winding can now be produced on the TechnoCorder TC2. With their compact shape, high density and an exact edge structure, the packages demonstrate good unwinding behaviour. For finishing twisted polypropylene (PP) yarn, Saurer has developed an oiling device that can be installed directly after the twisting process. Further, it will showcase sensors for quality control and pots that enable the processing of fine and coarse yarns.

### SML Maschinengesellschaft mbH (Hall 12.0, Stand E52)

SML Maschinengesellschaft mbH (see also, page 27) of Redlham, Austria, will show a range of multifilament spinning lines for the production of fully drawn yarns (FDY) from polypropylene (PP) and polyethylene terephthalate (PET). The machines in the Vertex range can run at higher line speeds, have a higher output capacity and are more efficient at low titres than the company's Austrofil MT/HT spinning lines.

In comparison with SML's Austrofil MT/HT 4x4 spinning lines with 16 yarn-ends, the basic 3x3 configuration of the Vertex line has 24 ends, increasing its efficiency at low titres. With the same extruder output capacity, the production output for a 250-denier yarn is doubled. Further, the Vertex line is equipped with godets and winders for increased speeds.

The stretching and winding units on the Vertex machines are placed directly beneath the spinning head and the quenching unit, meaning that the footprint of a 3x8 line is reduced by 30% compared with an Austrofil MT/HT 4x4. Further, this concept enables the production capacity of the lines to be tailored simply by adding further spinning units.

### Trützschler Group (Hall 12.0, Stands C61 and C68)

At its stands, Trützschler Group of Mönchengladbach, Germany, will present the latest machines and



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*Trützschler Nonwovens has developed production lines for needlepunched nonwovens (T-Suprema) in partnership with Texnology Srl of Fontaniva, Italy. In 2024, Trützschler Nonwovens will inaugurate this T-Suprema at its technical centre in Egelsbach, Germany.*

technologies from its Spinning, Card Clothing and Nonwovens business units.

A focus of stand C61 will be Trützschler Nonwovens' production lines for needlepunched nonwovens (T-Suprema), which it has developed in partnership with Texnology Srl of Fontaniva, Italy. In 2024, Trützschler Nonwovens will inaugurate a T-Suprema at its technical centre in Egelsbach, Germany.

On stand C68, Trützschler Spinning will showcase innovations for carding, draw frames and combing that meet the requirements of its customers for high efficiency and automation. It will show its Truecycled technology, which it claims allows for the production of high-quality sliver from recycled materials. The company will also highlight a partnership with Balkan which enables it to supply complete solutions for the mechanical recycling of textile waste and its preparation for spinning.

Trützschler Card Clothing, of Neubulach, Germany, will highlight its technologies for the carding of nonwovens.

## **Weaving**

### **Itema Group (Hall 12.0, Stand D24)**

Itema Group of Colzate, Italy, makes airjet, rapier and projectile looms, and will highlight its latest developments on its stand. While the company's machines are widely used for the production of traditional textiles, they are, in adapted forms, also capable of manufacturing technical textiles. Variants of the R9500 rapier, for instance, can weave glass fibre (R9500 fibreglass) and one-piece woven (OPW) airbag fabrics.

The R9500 fibreglass loom exploits its extremely sensitive whip-roller to control the tension of the warp, and has weft cutters and rapiers that are specially designed for use with glass fibres. In addition, Itema





has developed a rotary spread-bar to facilitate weaving mesh fabrics. The sturdy structure of the R9500 keeps it stable when making OPW airbag fabrics at high speeds. Nevertheless, the company's engineers reinforce the components of looms intended for this application to make them even more robust.

### Picanol (Hall 12.0, Stand C01)

Picanol (see also, page 1) of Ieper, Belgium, will show an efficient and easy-to-use rapier weaving machine (Ultimax). Picanol's Vice President Weaving Machines, Johan Verstraete, says: "Creating a worthy successor to the OptiMax rapier generation, of which over 60 000 units are running worldwide, was a real challenge, but combining 85 years of experience with new ideas and technologies has resulted in the all-new and revolutionary Ultimax rapier machine."

The company will also be able to discuss its current generation of airjet and rapier weaving machines, which feature numerous technologies for their automation, and the gathering and exchange of data related to their operation, and were launched in November 2021.

Speaking at the time of their launch, the company's Vice President of Weaving Machines, Johan Verstraete, said: "Following the successful launch of our digital platform PicConnect earlier [in October 2021], we have now released a new generation of weaving machines, which are known as the Connect generation. Our Connect-generation weaving machines can provide the correct data and are loaded with new and never-before-seen functionalities."

Picanol's weaving machines now have the "Connect" suffix. Its airjet weaving machines are now known as OmniPlus-i Connect and TerryPlus-i Connect, while its rapier weaving machines are now called the OptiMax-i Connect and the TerryMax-i Connect.

On the OptiMax-i Connect, Picanol has introduced a lubrication-monitoring sensor and a temperature sensor. The data they gather in combination will help the user to ensure that the gripper tapes are in optimal condition. Further, as an option, a gripper-stroke measurement sensor can be fitted, which Picanol says not only dramatically simplifies the setting of the

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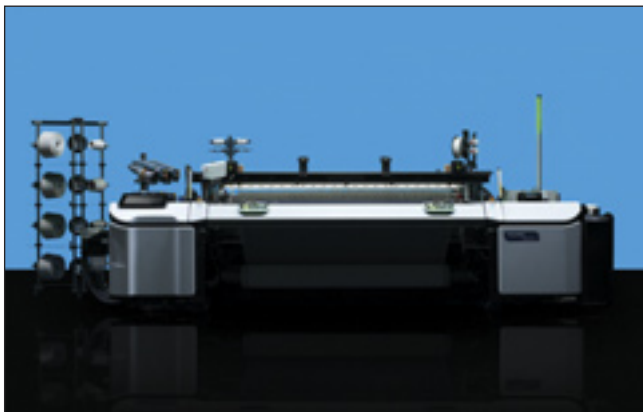
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gripper stroke, but also enables the user to realise higher machine speeds when weaving narrow widths.

Picanol's Sumo Drive machine drive has been updated with a sheet-metal package that reduces its energy consumption, an optimised oil-cooling circuit to improve its performance and a built-in sensor for monitoring its temperature.

Further, the Connect machines can be equipped with a power-monitoring module, which allows the user to keep track of the power consumption of each machine over time. Every Connect machine also has a built-in ambient-temperature and -humidity sensor, which will help the user to optimise the climate control in the weaving shed. Each machine can also be equipped with a sensor for monitoring the amount of raw material it uses.

To enable a fast reaction to the data gathered by the many sensors on the new machines, Picanol has also updated its BlueBox control unit. A sensor dashboard screen has been developed for the BlueTouch display; with a simple touch of the screen, the current and historical power consumption, temperature, humidity, material consumption, and – on the OmniPlus-i Connect – also the air consumption of the machines can be monitored. The BlueTouch display is now also equipped with an action centre, an electronic logbook where all actions such as maintenance interventions can be logged or scheduled.

The machine manual is also now available on the BlueTouch display and with a context-based help

function, the help pages related to the operation the user wants to perform appear with one touch. The built-in Internet browser even allows the user to consult, for example, on-line tutorial videos to guide them through a setting procedure.

Picanol has also introduced a variety of new tools that enable the weaving of high-quality fabrics. The harness frame stroke measurement system was, until recently, only available on the SmartShed machine, but it is now also available on the cambox and dobby machines. Combined with technologies for visualising and simulating the shed, it enables the user to optimise their shed settings without losing any time or taking any risks. Finally, a fully fledged access-control system not only limits the access to certain pages and settings depending on the user, but also allows a tailored dashboard to be established for each user profile.

## **Quality Machines Textiles BV (Hall 12.0, Stand F89)**

In 2015, QMatex BV was established in Waragem, Belgium, to exploit the double-shed formation found in wire looms in the development of looms for the production of technical textiles. The company is able to custom-build individual looms to the requirements of its customers.

In its relatively short history, QMatex has already developed looms for the production of:

- lightweight, flexible fabrics woven from fine yarns and with defined water-permeability, for the production of medical implants that are compact and resilient enough to be inserted into the human body using stents;
- heavy fabrics of 7.5 cm in thickness and 2 m in width for thermal insulation. This 36-t loom can generate a beat-up force of 180 000 N, so that wefts can be inserted above one another, and features a horizontal take-up to support the weight of the woven fabrics;
- spacer fabrics for the filtration of fine oil. The tolerance for the holes in the fabric is 0.02 mm.

## **Stäubli (Hall 12.0, Stand B01)**

Founded in 1892, Stäubli of Pfäffikon, Switzerland, manufactures high-speed shedding and weaving-preparation machinery. The company's machines are used for the production of such as one-piece woven (OPW) airbags, custom fabrics for use in lightweight construction and artificial grass.



At *Techtextil*, Stäubli will present the new TF30 weaving system, which it says can enable weaving mills to meet the specific and demanding requirements of the aerospace, medical-technology, marine and automotive industries. Using the machine, the height of rapier weft insertion can be varied, providing flexibility in shed programming and thus in weave structure. The weft insertion function is designed to ensure the gentle treatment of yarns, and it can therefore handle carbon and aramid yarns, as well as ultra-sensitive ceramic yarns.

### Vandewiele Sweden AB (Hall 12.0, Stand D20)

IRO AB (Vandewiele Sweden AB) from Ulricehamn, Sweden, is a maker of weft-yarn feeds and tension controllers, and a member of the Vandewiele Group of Marke, Belgium.

The company will present its fourth generation of yarn feeders (X4), which feature integrated displays that enable settings and any alarms to be monitored easily. The X4 feeders are available in three variants: with an

integrated Tension Display (TED); with integrated Active Tension Control (ATC); with Quick release.

The TED makes it easy to reproduce weft-tension settings from one machine to another, enabling fast start-ups the next time the same article is woven. The position of the S-Flex Tensioner is constantly monitored by an internal sensor, even if an adjustment is made when the machine is off.

Using the ATC, the required tension can be set and monitored easily on an integrated display. Once set, yarn tension is constantly and accurately measured by the ATC sensor unit, which sends signals to the ATC operator unit. In this way, the system constantly regulates itself to ensure that consistent yarn tension is maintained during the weaving process. Quick release provides a quick and easy way to change the brush-ring or tensioner.

IRO will also show [ironline.com](http://ironline.com), an Internet platform for ordering textile accessories.

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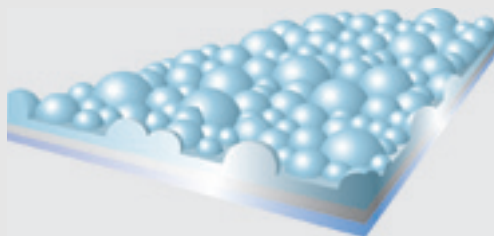
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Further, IRO will be able to discuss an efficient weaving-machine feeder it has developed for use in the production of reinforcements for composites. When weaving fibres such as carbon, glass and aramids, as well as thermoplastic tapes, for reinforcement fabrics, it is essential that there is no twist in the feed, which IRO says its new machine guarantees. The ZTF Zero Twist Feeder keeps the tape yarns or fibre tows constantly stretched to avoid the risks of any snarls or twisting. The unit can accommodate tapes of widths up to 10 mm, weights up to 7 kg and insertion lengths of up to 3.4 m. It is equipped with a buffer arm that is synchronised with the movement of the rapier on a weaving machine to deliver the exact amount of yarn from the bobbin required for the weft insertion. A tension and sensor arm ensures that constant yarn tension is maintained during the entire insertion cycle.

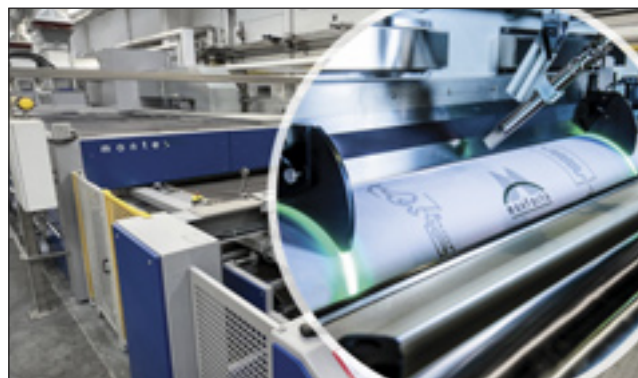
## Knitting

### Karl Mayer (Hall 12.0, Stand B73)

Producer of warp-knitting machinery, Karl Mayer (see also, page 31) of Obertshausen, Germany, used the last edition of *ITMA* to answer five of the most pressing questions it has received from its customers:

- how can I remain profitable with increasing cost pressures?;
- how can I keep my business running despite a skills shortage?;
- how do I find new business opportunities with the existing cost pressures?;
- how do I manage the increasing pressure to be more sustainable?;
- how do I react to market requirements quickly and flexibly?

For the production of technical textiles, including dense fabrics and meshes, the company will be able to discuss its efficient weft-insertion warp-knitting machines. It says that such textiles are usually made-up of three yarn systems. The weft and filler yarns give the products their unique appearance. The knitting yarns from another guide bar fix the textile according to its construction. It says that there is no waviness in the fabrics produced on the machines, since the yarn layers lie straight at angles of 0° and 90°. Weft yarns can be inserted and fixed only in the desired locations and a wide variety of yarns can be processed on the machine.



*Monforts reports that its Montex Coat coating units are increasingly being integrated with Montex stenters.*

At its stand, the company will be able to discuss a warp-knitted net made of biobased materials for the vertical cultivation of plants.

## Coating, laminating and finishing

### AGC Plasma Technology Solutions (Hall 11.1, B28)

Supplier of industrial vacuum-coating equipment, AGC Plasma Technology Solutions, will be able to tell visitors to its stand about a roll-to-roll pilot line for the coating of textiles it has installed at its demonstration centre in Lauenförde, Germany. The company says that vacuum-coating processes can be used to apply nanoscale layers of metals, oxides and nitrides to the surfaces of textiles to make them thermally reflective, electrically conductive and/or water- and oil-repellent. It adds that the processes are energy-efficient and do not require the use of water and solvents, but – despite their widescale use in the glass industry – they have seen limited application in the technical-textiles industry.

Using its pilot line, AGC Plasma Technology Solutions will demonstrate the potential of vacuum-coating technology to prospective customers through the manufacture of proof-of-concept and prototype products. The line is capable of applying thin-film coatings to textiles of up to 1.6 m in width using physical vapour deposition (PVD) and/or plasma-enhanced chemical vapour deposition (PECVD) processes.

### A. Monforts Textilmaschinen GmbH & Co KG (Hall 12.0, Stand C58)

Monforts, of Mönchengladbach, Germany, celebrates its 140<sup>th</sup> anniversary in 2024 and will tell visitors to its stand about recent successful installations of its Montex stenters and Montex Coat coating units.



A Montex stenter is being used, for instance, by manufacturer of technical textiles and high-performance nonwovens, Albarrie to produce denser, higher-quality fabrics more rapidly than it could otherwise. With the three-chamber Montex stenter at its plant in Barrie, Ontario, Canada, Albarrie is setting and drying needlepunched nonwovens of up to 4 mm in thickness for use in such as filter media. The Montex line features a MonforClean air-to-air cross-flow heat-exchanger and an electrostatic precipitator, enabling the purification of, and the recovery of heat from, up to 22 500 m<sup>3</sup> of exhausted air per hour—resulting in a significant reduction in the conventional heat-supply required. The MonforClean system was developed in co-operation with KMA Umwelttechnik of Königswinter, Germany. The fully automated system features a Siemens SPS S7 controller and KP 700 touch panel with which the energy being recycled can be continuously monitored and savings calculated.

Dolinschek in Baden-Württemberg, Germany, meanwhile manufactures an extensive number of technical products including automotive components, geotextiles and wallcoverings, but also those for more unusual applications such as inlays for extractor hoods, cut-protection fabrics and even wool felts, which are employed as insulation on wind turbines. Dolinschek has developed and commercialised its own proprietary dyeing machines, but for finishing technology relies on Monforts, and has installed a seven-chamber Montex TwinAir stenter range.

Dolinschek has also installed a Montex Coat coating unit in knife execution, enabling the coating of dimensionally stable knitted fabrics with polyurethane (PU) or acrylate. The Montex Coat enables full polyvinyl chloride (PVC) coatings, pigment dyeing or minimal-application surface and low-penetration treatments, as well as solvent coatings to be carried out. Its key technical applications include tents, tarpaulins and awnings, black-out roller blinds and sail cloth, automotive interior fabrics and medical disposables.

Other recent Montex Coat installations include: a unit for providing an anti-slip and textured backing to upholstery fabrics with a stable and uniform foam via knife-over-roller coating at Altun Tekstil in Bursa, Turkey; a combined Montex Coat and Montex stenter

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## VANDEWIELE

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range for weatherproofing specialist Halley Stevensons at its plant in Dundee in the UK.

### **Baldwin Technology (Hall 12.0, Stand D63)**

Baldwin has its global headquarters in St Louis, Missouri, USA, and its product and technology centre in Arlöv, Sweden. The company, which is owned by the multi-billion-dollar global manufacturing and engineering consultancy Barry-Wehmler of St Louis, is a major manufacturer and supplier of process automation equipment, and related consumables for printing, packaging, converting and film extrusion, as well as textiles.

At *Techtextil*, the company will join its distribution partner, Elmatex GmbH, on its stand. It will tell visitors that the use of its non-contact precision-spray system (TexCoat G4) for the finishing of textiles can reduce water and energy consumption by as much as 50% compared with traditional padding processes. The finish is distributed uniformly across the textile surface and is applied only where it is required—on one or both sides of the fabric.

The company claims that when using TexCoat G4, all of the oversprayed finish is recycled and none is wasted during changeovers of chemicals, colour or fabric. Since only the necessary amount of finish is applied to the fabric, a reduced wet pick-up level of 50% can be achieved, which allows for the line to run at higher speeds. Replacing every 2-3 pads with a TexCoat G4 is equal to adding the productivity of an additional finishing line at a fraction of the cost, with no additional floor space and no added labour, says the company.

### **Brückner Textile Technologies (Hall 12, Stand B54)**

Brückner Textile Technologies (see also, page 7) of Leonberg, Germany, is a specialist in coating and finishing lines for textiles and nonwovens.

Brückner will be able to discuss the latest developments at its Technology Center in Leonberg. At the start of 2023, for instance, the company added a flow-through belt oven to its range of test machines there to support its customers, and particularly those in the nonwovens industry. It says that, owing to its short length, the compact thermotreatment line is suitable

for simulating fast-running processes with short dwell times at moderate test speeds. The electrically heated unit is equipped with sensors for measuring the local system pressures, air volumes, air temperatures, material-surface temperature and the humidity of the process air.

The company will also be able to talk about a range of energy-efficient technologies for the finishing of textiles. The company has, for instance, developed a stenter with a double heating system. Depending on the availability of fuel, the stenter can be operated using gas or oil, or in combinations with steam or renewable sources of energy. This means that the chances of production delays associated with energy shortages can be minimised.

Further, Brückner has developed a system that monitors the settings of an entire finishing line and immediately signals deviations from default values to the machine operator, as well as storing them in the production history logbook. A new simulation tool also helps the machine operator to achieve the highest possible productivity and/or energy-savings. In addition, suggestions for spare parts are displayed after certain intervals, and alerts for upcoming maintenance tasks are provided, which can be retrieved on mobile devices.

Finally, the company will be able to discuss systems that reduce the amount of chemicals consumed during coating processes. Its Eco-Coat unit, for instance, can apply a variety of coatings to either side of a fabric, allowing for the production of functionalised textiles. Using an engraved roller, a single-sided application of up to 100 g.m<sup>-2</sup> can be achieved using the system, which also features a very small liquor reservoir that ensures that minimal quantities of wastewater are produced when changing batches or liquors. As less water needs to be evaporated in the subsequent drying process than, for example, in the case of impregnation in a water bath, energy consumption is also reduced.

### **Fibroline (Hall 12.0, Stand D90)**

Fibroline of Limonest, France, has developed and patented an impregnation method for dry powders. Using alternating electric fields, the company's D-Preg,





S-Preg, T-Preg and Y-Preg technologies can permanently embed various additives into porous structures, including nonwovens up to 10 cm in width, on lines running continuously at 10–300 m.min<sup>-1</sup>.

### Santex Rimar Group (Hall 12,0, Stand D85)

Santex Rimar Group of Vicenza, Italy, consists of:

- Cavitec, a specialist in preregs for composites;
- Isotex, which makes coating, printing and embossing machinery;
- Santex Nonwovens a maker of ovens for thermobonding nonwovens;
- SMIT, a manufacturer of rapier looms used to make technical textiles such as airbags, glass-fibre fabrics and conveyor belts;
- Sperotto Rimar, which makes machinery for finishing textiles;
- Solwa, a specialist in environmental technologies, including water treatments.

In Frankfurt, the Group stand will feature Cavitec, Isotex and SMIT.

### Weko – Weitmann & Konrad GmbH & Co KG (Hall 12.0, Stand C55B)

Weko – Weitmann & Konrad GmbH & Co KG is a specialist in the selection and integration of non-contacting systems for the application of small amounts of functional additives/finishes during production. Based in Leinfelden-Echterdingen, Germany, the company offers test services at its technical centre.

A highlight of its exhibit will be the Weko-ProTec system for applying functional fluids for the finishing of webs. The company will say the system applies the finishes reliably and reproducibly. It also has an encapsulated unit allowing users to handle safely substances that should not be exposed to the working environment.

### Zimmer Austria (Hall 12.0, Stand B78)

With sites in Klagenfurt and Kufstein, Zimmer Austria produces machines for the digital printing and functionalisation, flat-screen and rotary screen-printing, coating, steaming, washing and drying of textiles and carpets.



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## Other machinery, equipment and accessories

### Erhardt+Leimer (Hall 12.0, Stand B53)

Erhardt+Leimer of Stadtbergen, Germany, will exhibit products that it designs, makes and supplies for automated measurement and control technologies for nonwovens and textiles, as well as plastics, paper and tyres. These products include cutters, spreaders, guides, devices to measure tension and control webs, and monitors to check printed images. The company recently introduced its latest metal detector, the Elmeta MDA1005/1006, which it claims can detect small metal particles across the width of a web running at between 2 and 500 m.min<sup>-1</sup>.

### Groz-Beckert (Hall 12.0, Stand B80)

A specialist in industrial machine needles and accessories for processing fabrics based in Albstadt, Germany, Groz-Beckert (see also, page 5) will exhibit its portfolio covering knitting, weaving, felting, carding and sewing products.

### Topocrom GmbH (Hall 12.0, D93)

Topocrom (see also, page 15) will exhibit its coatings for the guiding parts and surfaces of filament processing machinery. The coatings decrease damage and breakage to high-performance fibres.

## References

<sup>(1)</sup>*Industrial-scale automatic textile-sorting and recycling plant is inaugurated,*  
<https://www.technical-textiles.net/node/77346>

<sup>(2)</sup>*Andritz to buy Dan-Web,*  
<https://www.technical-textiles.net/node/77196>

## Further information

### Fibres and nonwovens

Susan Trast, Vice President Group Communications and Marketing, Andritz  
Email: [susan.trast@andritz.com](mailto:susan.trast@andritz.com);  
<https://www.andritz.com>

Jutta Soell, Head of Marketing, Autefa Solutions Germany GmbH.  
Tel: +49 (821) 2608-138. Fax: +49 (821) 2608-299.

Email: [jutta.soell@autefa.com](mailto:jutta.soell@autefa.com);  
<http://www.autefa.com>

Isabelle Garnier, Manager Aftersales and Marketing, Dienes Apparatebau GmbH.  
Tel: +49 (6108) 707111.  
Email: [i.garnier@dienes.net](mailto:i.garnier@dienes.net);  
<http://www.dienes.net>

Dilo Group.  
Tel: +49 (6271) 940-0. Fax: +49 (6271) 711-42.  
Email: [info@dilo.de](mailto:info@dilo.de);  
<http://www.dilo.de>

Loptex Srl.  
Tel: +39 (031) 471199. Fax: +39 (031) 471-7821.  
<https://www.loptex.it>

André Wissenberg, Vice President and Head of Marketing, Corporate Communications and Public Affairs, Oerlikon Polymer Processing Solutions.  
Tel: +49 (2191) 67-2331.  
Email: [andre.wissenberg@oerlikon.com](mailto:andre.wissenberg@oerlikon.com);  
<https://www.oerlikon.com>

Tamara Kramis, Sales Assistant, Retech AG.  
Tel: +41 (56) 676-6633.  
Email: [info@retech.ch](mailto:info@retech.ch);  
<https://www.retech.ch>

Karl-Heinz Sandholzer, Vice President, Product Management, Saurer Technologies GmbH & Co KG, Twisting Solutions. Tel: +49 (831) 688-0.  
Email: [karl-heinz.sandholzer@saurer.com](mailto:karl-heinz.sandholzer@saurer.com);  
<https://www.saurer.com>

Bettina Kreuzer, Marketing Manager, SML Maschinengesellschaft mbH.  
Tel: +43 (7673) 909990.  
Email: [krb@sml.at](mailto:krb@sml.at);  
<https://www.sml.at>

Jutta Stehr, Senior Marketing Manager, Trützschler Nonwovens & Man-Made Fibers GmbH.  
Tel: +49 (6103) 401321.  
Email: [jutta.stehr@truetzschler.de](mailto:jutta.stehr@truetzschler.de);  
<https://www.truetzschler-nonwovens.de>

### Weaving

Valentina Brignoli, Marketing and Communications Manager, IteMA SpA.



Tel: +39 (035) 728-2111. Fax +39 (035) 740505.  
Mobile/cellular: +39 (348) 516-6835.  
Email: valentina.brignoli@itemagroup.com;  
<http://www.itemagroup.com>

Femke Heens, Communication and Marketing Manager,  
Picanol.  
Tel: +32 (57) 211235.  
Email: femke.heens@picanol.be;  
<https://www.picanol.be>

Henk Lambrecht, Chief Executive Officer, Quality  
Machines Textiles (QMatex) BV.  
Tel: +32 (472) 185820.  
Email: henk@qmatex.com;  
<https://www.qmatex.com>

Fritz Legler, Head of Marketing, Sales and Customer  
Support, Stäubli AG.  
Tel: +41 (81) 725-0101.  
Email: Fritz.legler@staubli.com

Nadine Reinwald, Communications and Media Relations,  
Stäubli AG.  
Tel: +33 (4) 5064-3168.  
Email: N.reinwald@staubli.com;  
<https://www.staubli.com>

IRO AB (Vandewiele Sweden AB).  
Tel: +46 (321) 29700,  
Email: info@iro.se or: info@vandewiele.se;  
<https://iroab.com>

### Knitting

Ulrike Schlenker, Karl Mayer Textilmaschinenfabrik GmbH.  
Tel: +49 (6104) 402-274. Fax: +49 (6104) 402-73274.  
Email: ulrike.schlenker@karlmayer.com;  
<http://www.karlmayer.com>

### Coating, laminating and finishing

Jeroen Schotsaert, Marketing, Sales and Business  
Development, AGC Plasma Technology Solutions.  
Tel: +32 (499) 993009.  
Email: jeroen.schotsaert@agc.com;  
<https://www.agc-plasma.com>

Nicole Croonenbroek, Marketing Manager, A. Monforts  
Textilmaschinen GmbH & Co KG.  
Tel: +49 (2161) 401408.  
Email: marketing@monforts.de;  
<http://www.monforts.com>

Rick Stanford, Vice President, Global Business  
Development, Textiles, Baldwin Technology Company Inc.  
Tel: +1 (913) 888-9800. Fax: +1 (913) 888-4015.  
Email: rick.stanford@baldwintech.com;  
<https://baldwintech.com>

Verena Ruckh, Head of Advertising and Marketing,  
Brückner Textile Technologies GmbH & Co KG.  
Tel: +49 (7152) 12-334. Fax: +49 (7152) 12-9334.  
Email: vruckh@brueckner-textile.com;  
<https://www.brueckner-textile.com>

Jérôme Ville, Chief Executive Officer, Fibroline.  
Tel: +33 (4) 2829-8534.  
Mobile/cellular: +33 (6) 7408-2184.  
Email: jville@fibroline.com;  
<http://www.fibroline.com>

Santex Rimar Group Srl.  
Tel: +39 (0445) 176-1469. Fax: +39 (0445) 176-1478.  
Mobile/cellular: +39 (347) 672-4097.  
Email: press@santexrimar.com;  
<http://www.santexrimar.com>

Jessica Deiss, Marketing Department, Weko – Weitmann  
& Konrad GmbH & Co KG.  
Tel: +49 (711) 7988-219.  
Email: jessica.deiss@weko.net;  
<https://www.weko.net>

### Other machinery, equipment and accessories

Isgrit Bloch, Corporate Communications,  
Erhardt+Leimer GmbH.  
Tel: +49 (821) 2435-636. Fax: +49 (821) 2435-682.  
Email: i.bloch@erhardt-leimer.com;  
<https://www.erhardt-leimer.com>

Birte Kleefisch, Corporate Communications,  
Groz-Beckert KG.  
Tel: +49 (7431) 10-2277. Fax: +49 (7431) 10-62277.  
Email: birte.kleefisch@groz-beckert.com;  
<http://www.groz-beckert.com>

Marina Lehmann, Chief Marketing Officer,  
Topocrom GmbH.  
Tel: +49 (7771) 9363-32. Fax: +49 (7771) 9363-10.  
Email: m.lehmann@topocrom.com;  
<http://www.topocrom.com>





### The latest developments in fibres, yarns, filaments and threads

The development of high-performance fibres, yarns, filaments and threads continues to create numerous opportunities for manufacturers of technical textiles. James Bakewell uncovers some highlights to look-out for during *Techtextil*.



*B.I.G. Yarns' bulk continuous filament polyethylene terephthalate yarns for use in the production of automotive carpets.*

#### **Beaulieu Fibres International (Hall 9.1, Stand C70)**

Beaulieu Fibres International, of Wielsbeke, Belgium, describes itself as Europe's largest producer of polyolefin fibres.

In 2024, its subsidiary, Wielsbeke-based manufacturer of polyamide (PA) 6 yarns, B.I.G. Yarns, started to produce bulk continuous filament (BCF) polyethylene terephthalate (PET) yarns for use in automotive carpets.

B.I.G. Yarns says that demand from carmakers and their suppliers for PET carpets and flooring is increasing, as these products can be recycled in their entirety. Further, it adds that carpets produced from its BCF PET yarns are resistant to abrasion and staining, are durable, and conform to automotive standards for compression and recovery, light-fastness and emissions of volatile organic compounds. For the production of mats, the yarns can be solution-dyed, have a linear density of 1300–1500 dtex and comprise 81 filaments. The resulting mats can have areal densities of 400–800 g.m<sup>-2</sup>. For the production of moulded carpets, the yarns are available in a linear

density of 1200 dtex, have 144 filaments and yield products with areal densities of 380 g.m<sup>-2</sup>.

B.I.G. Yarns claims that it can now produce three types of solution-dyed BCF carpet yarns for the automotive industry: PA 6, polypropylene (PP); PET.

Another subsidiary, Beaulieu Technical Textiles of Comines-Warneton, Belgium, recently developed a durable interwoven polypropylene (PP) groundcover fabric for weed-control. Called Recover, the fabric contains 30%-by-weight post-industrial waste sourced from Beaulieu's recycling unit, reducing carbon dioxide emissions associated with the production of the fabric by 35%, according to a life-cycle analysis (LCA) conducted by the company.

Beaulieu Technical Textiles' Sales Manager Agrotexiles, Maarten Balcaen, says that Recover is unique among groundcover fabrics, owing to the performance it delivers and the amount of recycled content it contains. He adds that less virgin PP is required to manufacture the fabric than would otherwise be needed and that it can be recycled at the end of its working life.

#### **Bekaert (Hall 11.1, Stand A23)**

A specialist in metal and alloy fibres and textiles, Bekaert of Zwevegem, Belgium, says that its yarns have been typically used for antistatic and electromagnetic interference (EMI)-shielding applications, and to improve the cut-resistance of such as protective gloves and garments. For several years, however, they have increasingly been used in the production of smart textiles.

The inclusion of continuous stainless-steel yarns allows for the manufacture of fabrics for heating applications, such as in gloves and garments, sleeping bags, car seats, and heating cables for selective catalytic reduction (SCR) tubes and tanks. Supplied yarns can be insulated individually or in bundles. They offer resistance to corrosion, good mechanical properties



and remain effective despite repeated flexing. They also help to ensure that the distribution of heat throughout the product is uniform.

Indeed, one of the first smart-textile applications for Bekaert's stainless-steel Bekinox VN yarns was for the heating of car seats. Bekinox VN is a multifilament yarn made entirely from stainless steel. It is corrosion-resistant, flexible and durable, and can demonstrate electrical resistivities of 2.7–65  $\Omega$ .m. The company's Market Manager Conductive Solutions, Steve Verstraeten, says: "The diameter of the filaments in Bekinox VN is very thin; down to 8  $\mu$ m. One bundle comprises a few-hundred filaments and, depending on the required resistance, we can make the cables from several bundles. The durability of the cables comes from this fine filament-diameter."

Bekaert is also seeing increasing demand for its highly flexible and wearable Bekinox BK yarns for the manufacture of smart textiles. Verstraeten continues: "Bekinox BK is a combination of polymer fibres, such as PES, or natural fibres, such as cotton, with our stainless-

steel fibres at different rates. Historically, these yarns were used for antistatic applications, such as in workwear and filtration, but are now being used to create textile electrodes using knitting and embroidery".

At *Techtextil*, Bekaert will introduce Bekinox elastic spun yarn, which demonstrates high durability and electrical conductivity. The company has been developing the elastic yarn for the last two years in response to the demands of manufacturers of tightly fitting electrical muscle stimulation (EMS) suits. The company found that such manufacturers were relying



*Bekinox elastic spun yarn is electrically conductive and directly knittable.*



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*International Fibres Group's research and development line at IFG Asota in Linz, Austria.*

on alternative elastic conductive yarns, but these were not durable enough to withstand such as knitting processes reliably.

### **FibrXL (Hall 9.1, D18)**

FibrXL, which is based in Almere and Beek, The Netherlands, and Richmond, Virginia, USA, was formed in February 2020 through the merger of three fibre suppliers specialising in technical textiles and will display a wide range of its products at *Techtextil*.

One of the three former companies, EuroFibers, was a distributor and processor of high-performance fibres such as ultra-high molecular weight polyethylene (UHMWPE), para-aramid, liquid-crystal polymer and polyphenylene polybenzobisoxazole (PBO) fibres, supplying on behalf of leading manufacturers such as: DSM Dyneema of Urmond, The Netherlands; Teijin Aramid of Arnhem, The Netherlands; Kuraray of Osaka, Japan; Teijin of Tokyo, Japan; Toyobo Chemicals Europe of Düsseldorf, Germany. It also had a proprietary coating technology (Prisma) that can apply colour to high-performance fibres and yarns previously only available in their natural state.

Lumat, meanwhile, was a supplier of industrial yarns such as polyester (PES), polyamide (PA) and viscose. Serving industrial markets, the company has contributed offices and warehouses in Europe, Africa and the Americas.

Finally, Dominion Fiber Technologies Inc specialised in processing (twisting, winding, cabling, tacking and finishing) industrial filament yarns made from PA 6,

PA 6.6, PES, aramids, UHMWPE, polypropylene (PP), spun fibres, partially oriented yarn (POY) and hybrid fibres.

In May 2023, FibrXL bought producer of high-tenacity synthetic fibres, Eurotextilati. Founded in 1975, Eurotextilati has its headquarters in Dro, Italy, and has a subsidiary office in Istanbul, Turkey. FibrXL says that it plans to continue to expand through acquisitions.

FibrXL consists of two business units:

- FibrXL Industrial for industrial fibres (such as PES, PA and viscose) based in Almere and Richmond;
- FibrXL Performance in Beek and Richmond for high-performance fibres and finishing processes.

### **International Fibres Group (Hall 9.1, Stand D50)**

International Fibres Group (IFG) is based in Huddersfield, UK, and specialises in the global supply of polyolefin staple fibres, as well as polyamide (PA), biopolymer and recycled fibres. The company focusses on research and development (R&D) in order to create innovative fibres that meet the exact demands of its customers. Technical textile markets for the fibres include automotive, geotextiles, sports and leisure, filtration and construction. The Group includes three European fibre companies:

- IFG Drake of Huddersfield;
- IFG Asota of Linz, Austria;
- IFG Exelto of Zwijnaarde, Belgium.

In 2023, IFG celebrated the ten-year anniversary of its launch of a fibre made from the biopolymer polylactic acid (PLA). PLA fibres will likely feature heavily on its stand. IFG's PLA fibres are meltspun from a sustainable, bio-based raw material that is compostable under industrial conditions (when assessed according to the criteria laid-out in DIN 13432<sup>(1)</sup>). The company's PLA fibres have, for instance, been used to produce geotextiles for the stabilisation of ground (turf, grass and sand). The geotextiles do not affect the natural drainage properties of the ground. IFG is also creating fibres for use in wet-laid nonwovens and is looking into their use as a binder in natural fibre-reinforced composites.

In September 2022, IFG opened a research centre at its Asota site in Linz, Austria. The new facility, called the Fibres Research Centre (FRC), houses IFG's state-of-the-





art, semi-industrial meltspinning line (the SF1000 Pilot Line), which allows the Group's companies to test and evaluate new and emerging polymers, and to develop and engineer fibres to meet the bespoke requirements of their customers. The FRC allows IFG's research and development (R&D) team to host customers and demonstrate the pilot line in action. IFG says it welcomes approaches from others for collaborative research projects, particularly those who wish to test and develop sustainable alternatives to fossil-based polymers and additives.

Group R&D Director Simon Riepler said at the time that the FRC will be an international centre of competence for thermoplastic fibres: "The goal is to create a place where state-of-the-art fibre R&D can happen. Together with our suppliers, customers and development partners, we work on the sustainable fibre solutions, where bio-based, biodegradable and recycled materials are key."

In addition, the FRC hosts a laboratory offering customers a wide range of testing services including: assessing raw materials; measuring titre and spin-oil content; determining thermal shrinkage; ultraviolet (UV) and Fourier transform infra-red (FTIR) testing; differential scanning calorimetry (DSC).

### **Kelheim Fibres (Hall 12.1, Stand C40A)**

Kelheim Fibres will show a wide range of its highly functional and biodegradable cellulose fibres at *Techtextil*.

For the production of nonwovens, Kelheim Fibres has developed several products that are made from wood pulp derived from certified and sustainably managed forests. These are particularly suitable for the manufacture of absorbent hygiene products (AHPs). Galaxy, for example, is a trilobal viscose fibre that absorbs 25–30% more fluid than cotton or standard viscose fibres<sup>(2)</sup>, making it suitable for the manufacture of such as acquisition distribution layers (ADLs) for diapers.

Bramante<sup>(3)</sup>, meanwhile, is a viscose fibre with a hollow cross-section where fluid can be stored and can be used for the production of absorbent cores for diapers. Kelheim Fibres says that Bramante not only delivers an excellent absorption capacity, but also a moisture-retention level of 260%—in contrast to 50% in cotton

fibres. The liquid remains inside the fibre, even under pressure. Olea is a hydrophobic viscose fibre that can be used for the cover- and back-sheets of hygiene products.

Kelheim's range of speciality fibres for textile applications, meanwhile, comprises spun-dyed fibres, a flat fibre (Viloft) that creates small air pockets in a textile, rendering it highly breathable and comfortable, a fibre (Viseta) that is 50% finer than silk and imparts a flowing drape and a soft touch to fabrics made from it, and others.

### **Lenzing (Hall 9.1, Stand D71, and Hall 11.1, Stand D30)**

Lenzing will be able to talk about the use of its lyocell (Tencel) filament for the production of uppers and fabrics for footwear using Coats Footwear's jacquard weaving technology (ProWeave).

The two companies, of Lenzing, Austria, and Bristol, UK, respectively, are working together to create materials for footwear that are more environmentally friendly



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than conventional alternatives, while demonstrating the necessary performance. At *Lineapelle*, which took place in Milan, Italy, on 19–21 September 2023, the partners showed fabrics that were used in a prototype of Circle Sportswear's SuperNatural Runner footwear, and are woven from Tencel lyocell filament blended with wool and other bio-based materials.

Coats Footwear says that ProWeave enables designers of footwear and apparel to create fabrics that have the functional features that they want – such as zones of differing elasticity, tenacity and resistance to abrasion – and aesthetic elements, exactly where they want them, within the same weave.

Coats Footwear is also working closely with Lenzing to explore the use of Tencel lyocell and modal fibres for the production of footwear uppers and fabrics.

Lenzing will also be able to discuss a pilot collection of comfortable and durable chef uniforms made from a combination of lyocell and recycled polyester (PES) fibres it has developed with producer of workwear, Kentaur. Lenzing says that the chef uniforms comprise 50% Tencel lyocell produced using its recycling technology (Refibra) and 50% PES.

Refibra is a clean chemical method that turns cotton scraps into pulp to be fed into the closed-loop process used to make lyocell. In developing the process, Lenzing has had to solve a number of problems. Cotton pulp has a different fibre morphology and

distribution of molecular weights, a lower content of hemi-cellulose, higher crystallinity and lower porosity than wood pulp. Another complication is that the process generally needs to be run on a large batch of the same material.

### Further information

Valérie Bouckaert, Beaulieu International Group.

Mobile/cellular: +32 (477) 820513.

Email: [valerie.bouckaert@bintg.com](mailto:valerie.bouckaert@bintg.com)

B.I.G Yarns.

Tel: +32 (56) 668191.

<https://www.beaulieuyarns.com>

Beaulieu Technical Textiles.

Tel: +32 (56) 560670.

Email: [btt@bintg.com](mailto:btt@bintg.com);

<https://www.beaulieutechnicaltextiles.com>

Vanessa De Pauw, Bekaert.

Tel: +32 (9) 365-7111.

Email: [Vanessa.DePauw@bekaert.com](mailto:Vanessa.DePauw@bekaert.com);

<http://www.metalfibers.bekaert.com>

FibrXL Industrial.

Tel: +31 (29) 441-8129. Tel: +1 (804) 329-0491.

Fax: +1 (804) 329-1921.

FibrXL Performance.

Tel: +31 (43) 304-0015. Tel: +1 (804) 329-0491.

Fax: +1 (804) 329-1921.

<https://fibrxl.com>

Richard Barker-Poole, Group Sales & Marketing Director, International Fibres Group.

Tel: +44 (113) 285-2202.

Email: [rbarker-poole@ifgdrake.co.uk](mailto:rbarker-poole@ifgdrake.co.uk);

<https://fibresgroup.com>

Marina Crnoja-Cosic, Director of New Business Development, Kelheim Fibres GmbH.

Tel: +49 (9441) 99-561.

Email: [marina.crnojacosic@kelheim-fibres.com](mailto:marina.crnojacosic@kelheim-fibres.com);

<http://www.kelheim-fibres.com>

Rita Ng, Head of Global Marketing Services, Lenzing.

Tel: +1 (852) 3718 5675.

Email: [r.ng@lenzing.com](mailto:r.ng@lenzing.com);

<http://www.lenzing.com>

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<sup>(1)</sup>DIN EN 13432, *Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging*, <https://www.en-standard.eu/din-en-13432-requirements-for-packaging-recoverable-through-composting-and-biodegradation-test-scheme-and-evaluation-criteria-for-the-final-acceptance-of-packaging-english-version-of-din-en-13432>

<sup>(2)</sup>*Viscose specialities introduced for nonwoven applications*, <https://www.technical-textiles.net/node/47221>

<sup>(3)</sup>*Incontinence solutions and hydrophobic specialities at IDEA*, <https://www.technical-textiles.net/node/51336>



## An abundance of innovation in knitted, woven and laminated fabrics

There will be myriad examples of innovation from manufacturers of knitted, woven and laminated fabrics at *Techtextil*. James Bakewell provides a guide to companies to look for on the show floor.

### Cordura Advanced Fabrics/Invista Textiles UK Ltd (Hall 9.1, Stand B34)

Among other products on its stand, Invista's Cordura brand will showcase a range of durable fabrics made from pre-consumer recycled polyamide (PA) 66 fibres.

Invista, which has its headquarters in Wichita, Kansas, USA, will say that the fabrics – called Cordura re/cor RN66 and available in dozens of colours – deliver similar levels of mechanical performance to conventional Cordura fabrics. The company adds that, compared with fabrics made from virgin PA 66, the production of Cordura re/cor RN66 generates 83% less greenhouse gas emissions, consumes 82% less energy and uses 57% less water. The pre-consumer recycled material from which the fabrics are produced is certified according to the Global Recycled Standard (GRS) from Control Union Certifications.

Cordura re/cor RN66 fabrics are suitable for the production of such as apparel and outerwear, bags and packs, luggage and footwear.

Invista will also exhibit fabrics made from GRS-certified post-consumer recycled polyester (PES) and pre-consumer recycled PA 6, both of which have been incorporated into the Cordura re/cor range.



*Mystery Ranch Backpacks has used fabrics made by Invista from pre-consumer recycled polyamide 66 to produce packs for its District Series.*

Further, the company will show solution-dyed PA 66 fabrics, called Cordura Truelock. The polymer melts used to produce the multi-filament PA 66 fibres from which Cordura Truelock fabrics are made are coloured before they are extruded—reducing the consumption of water and energy, as well as carbon dioxide emissions, compared with piece dyeing.

### Delcotex Delius Tectex GmbH & Co KG (Hall 12.1, Stand D44)

At its stand, Delcotex Delius Tectex GmbH & Co KG (see also, page 25) of Bielefeld, Germany, will showcase

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its capabilities for the manufacture of textiles and nonwovens from filament yarns made of such as polyamide (PA), polyester (PES), liquid-crystal polymer, ultra-high molecular weight polyethylene (UHMWPE), aramid and glass. These fabrics are used in the construction, automotive and military sectors, amongst others. The company also manufactures thermoplastic prepregs (DeliComp) for the production of composite parts.

## **Getzner Textil AG (Hall 11.1, Stand C67)**

Based in Bludenz, Austria, Getzner Textil is a leading manufacturer of African fashion Damasks, but also has a significant presence in the technical textiles market. In its own laboratories, and research and development (R&D) department, it creates fabrics for personal protective equipment (PPE), workwear and outdoor clothing. It also develops fabrics for industrial applications, sports equipment and architectural use, and markets its own brand of acoustic products under the name acunic.

The company can add a wide variety of finishes to the fabrics that it produces. Getzner offers, for instance, two kinds of water-repellent finishes: a perfluorinated compound (PFC)-free finish for the production of machine-washable outdoor apparel; an oleophobic coating that contains PFCs and is used by government organisations.

Further, Getzner can apply special reverse coatings that make its fabrics completely waterproof, up to a certain level of water pressure. This is an essential property for rucksacks, bags, windbreaker jackets and abrasion-resistant areas on clothing (the knee pads on work trousers, for instance). Depending on the requirements of its customers, the company uses various materials for this purpose, from polyurethane (PU) and silicone to laminates (to impart an extremely high water column) and rubbers.

## **GKD – Gebr. Kufferath AG (Hall 12.0, Stand E11)**

Based in Düren, Germany, GKD weaves industrial materials to make high-performance meshes with a range of technical properties. At the show, its development, sales and process technology specialists will be looking for new problems to solve using this expertise.

The company says it can use its proprietary looms to weave a wide array of materials, including metals, alloys, shape-memory alloys, polymers, ceramics and

glass, in cable, wire and fibre forms. By combining materials and selecting the appropriate fabric structure, it produces unique products with highly functional properties such as resistance to abrasion, high electrical and thermal conductivities, high-temperature-resistance, flame-retardance, resistance to ultraviolet (UV) radiation and high tensile strength. At the same time, mechanical stability and drape can be tailored to the application's requirements.

During *Techtextil*, GKD will exhibit examples of the woven fabrics it can make, including products for:

- wound dressings;
- thermal and acoustic insulation;
- filtration and separation;
- upholstery.

## **Heathcoat Fabrics (Hall 12.1, Stand B09)**

Tiverton, UK-based manufacturer of knitted and woven technical textiles, Heathcoat Fabrics, will be able to discuss its new surface-to-surface moisture-wicking spacer fabric for military equipment.

Called Drytec, the spacer fabric is made from a combination of polyester (PES), monofilament and cellulosic yarns. It draws perspiration away from the skin, through the spacer, and then disperses and on its external surface, where it can evaporate, ensuring its wearer remains dry and comfortable when carrying heavy equipment. Further, Heathcoat Fabrics says that Drytec is soft, comfortable and breathable, and resistant to wear and tear. Its compressible air-gap structure provides shock absorption and weight distribution, making it suitable for use in backpack straps, lumbar supports and ballistic plate carriers.

## **Rivertex Technical Fabrics Group (Hall 11.0, Stand E15)**

Rivertex Technical Fabrics Group of Culemborg, The Netherlands, will showcase what it describes as an affordable alternative to polyvinyl chloride (PVC)-coated textiles. It will say that its Rivercyclon fabrics are non-toxic, recyclable and light in weight. Further, they demonstrate good welding strength and are highly resistant to ultraviolet (UV) radiation.

It will also show two fabrics – one softshell and one hardshell – that are made from recycled materials and are readily recyclable. The three-layer softshell fabric, called HPL Comfort R325 Softshell, is made from recycled polyester (PES) yarn, a waterproof and breathable recycled



polyethylene terephthalate (PET) membrane and a recycled PES fleece backing. The two-layer hardshell fabric, called HPL Comfort R303, also has an all-PES construction, which makes the two fabrics straightforward to recycle.

Since the technical performance of the two fabrics is no different from their conventional counterparts, Rivertex is selling them in place of its HPL Comfort 325 Softshell and RTX+ 300 fabrics.

### Teijin Frontier (Hall 12.1, Stand C65)

Teijin Frontier of Osaka, Japan, will present a wide range of fabrics on its stand at *Techtextil*.

The latest developments by the company, part of the Teijin Group of Tokyo, Japan, include a knitted fabric (Solotex Liberte) that is stretchable, light in weight and exhibits good lustre. The fabric is made from polytrimethylene terephthalate (PTT) yarns comprising a side-by-side arrangement of a composite-yarn core and a randomly oriented, low-shrinkage monocomponent sheath yarn. The two different yarns shrink at different rates in response to heat.

Teijin Frontier says that Solotex Liberte has a soft texture and smooth finish. It can be made in vivid colours with a luxurious glossy appearance and has a moderate drape. Apparel made from the fabric provides comfort, owing to its soft stretch, low weight, water absorption and the rapid rate at which it dries.

Microft AR, meanwhile, is a seamless knitted fabric that can be soft, warm, sweat-absorbent and quick-drying, and is suitable for the production of sportswear. Microft AR is knitted from chenille yarn comprising a core of highly crimped yarn (Deltapeak) with a pile of polyester (PES) filament. The nature of this filament can be tailored depending on the properties required of the fabric. If the fabric needs to be absorbent and quick-drying, for instance, Teijin Frontier's Calculo filaments can be used. Waveron can be employed if a soft texture is required. The high density of the piles makes the fabric warm while helping to prevent it from shedding microfibres, according to Teijin Frontier. It adds that, as Microft AR is made entirely from PES, it can be recycled easily.

Microft AR could serve as an alternative to the conventional fleece used for sportswear and outdoor

wear, which does not absorb sweat, dries slowly, is bulky and can change in appearance after wear and laundering.

### Trans-Textil GmbH (Hall 12.1, Stand A46)

Trans-Textil will be able to discuss its waterproof, breathable three-layer hardshell and softshell laminates made using bio-based materials that it developed for outdoor apparel and workwear in 2023.

From the outer and inner fabrics of the laminates, to the membrane systems they feature, the technology used to consolidate them and the perfluorinated compound (PFC)-free water-repellent finish applied to them, all of the elements are made using natural components wherever possible, according to the company.

The bio-based materials used by Trans-Textil for the production of the laminates include, for example, the by-products of food production, such as orange and banana peels, coffee grounds and crop-harvest waste. When announcing the development of the product, the Managing Director of the company, Matthias

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Krings, said: "It is important to us that we draw on only certified materials from responsible sources that would otherwise not be used as foodstuffs."

The use of natural hemp fibres, cotton and cellulose-based fibres, and polyester (PES) and polyamide (PA) fibres made from biopolymers, enables the production of textiles that are made entirely from bio-based materials. Krings continued: "Around half of our membrane system is already derived from renewable components at present, with this figure increasing to around 70% in adhesive systems and even exceeding 99% in hydrophobic finishes."

Trans-Textil claims that the laminates demonstrate the same performance as their conventional petrochemical-based counterparts. Able to withstand a water-column rating of over 10 m and demonstrating a vapour-transmission rate of  $10\,000\text{ g}\cdot\text{m}^{-2}\cdot\text{d}^{-1}$ , the laminates are suitable for the production of durable functional clothing for outdoor-, sports- and workwear, and are durable to wear and laundering. Further, Trans-Textil says that the use of natural fibres on the inside of the laminates makes them comfortable to wear.

The company will also use *Techtextil* to present its solvent-free, breathable and waterproof membrane (Purable). The membrane is highly elastic, has a pleasant soft feel, and has been proven to be resistant to over 50 laundry cycles at 60°C. To ensure that they are watertight, the membranes are processed into individual multi-layer composites using Trans-Textil's Point-in-Point lamination process. For workwear, and outdoor and sports clothing, further functionality can be added to the composites by applying a perfluorinated compound (PFC)-free water-repellent finish (Topaz clean4green).

The Managing Director of Trans-Textil GmbH, Matthias Krings, says: "With this alternative and environmentally friendly surface-finish, we are already achieving water-repellency that is comparable to conventional fluorine-based formulations. The actual tightness against oil and other chemicals is provided by the membrane system."

The company will also exhibit solvent-free seam-sealing tapes (Topaz Elements) for all common laminates.

Finally, the company will show its imitation leather (Aquir). The breathable, abrasion-resistant laminates are made using a water-borne polyurethane (PU) formulation, the company will say, adding that the latest additions to its VAP range of membranes are also made without recourse to organic solvents.

### Further information

Cindy McNaul, Business Development Director, Cordura.

Tel: +1 (704) 900-8768.

Email: [cindy.d.mcnaull@invista.com](mailto:cindy.d.mcnaull@invista.com);

<http://www.invista.com>;

<https://sustainability.cordura.com>

Uwe Mahnken, Head of Sales, Delcotex Delius Techtext GmbH & Co KG.

Tel: +49 (521) 543509. Fax: +49 (521) 543148.

Email: [uwe.mahnken@delcotex.de](mailto:uwe.mahnken@delcotex.de);

<https://delcotex.de>

Nicole Bösch, Director of Marketing and Communication, Getzner Textil AG.

Tel: +43 (5577) 84641-28.

Email: [nicole.boesch@getzner.at](mailto:nicole.boesch@getzner.at);

<https://www.getzner.at>

Hans Schlebusch, Sales, GKD – Gebr. Kufferath AG.

Tel: +49 (2421) 803124.

Email: [hans.schlebusch@gkd-group.com](mailto:hans.schlebusch@gkd-group.com);

<https://www.gkd-group.com>

Heathcoat Fabrics Ltd.

Tel: +44 (1884) 254949.

Email: [info@heathcoat.co.uk](mailto:info@heathcoat.co.uk);

<https://www.heathcoat.co.uk>

Boris Gaasbeek, Rivertex Technical Fabrics Group.

Tel: +31 (345) 533886.

Email: [bgk@rivertex.nl](mailto:bgk@rivertex.nl);

<https://www.rivertex.com>

Corporate Communications, Teijin Ltd.

Tel: +81 (3) 3506-4055. Fax: +81 (3) 3506-4150.

Email: [pr@teijin.co.jp](mailto:pr@teijin.co.jp);

<http://www.teijin.co.jp>

Andreas Hänsch, Marketing & Sales/Quality Management, Trans-Textil GmbH.

Tel: +49 (8654) 6607-770. Fax: +49 (8654) 6607-10.

Email: [ahaensch@trans-textil.de](mailto:ahaensch@trans-textil.de);

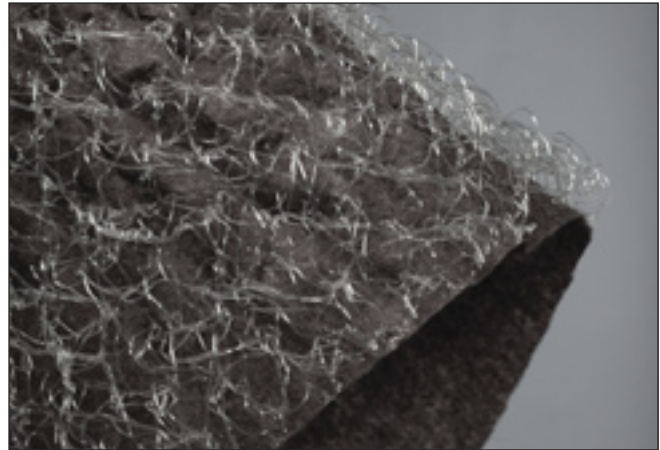
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## Nonwovens for high-performance applications take centre-stage

Techtextil offers nonwovens manufacturers the chance to show a range of technical applications for their products. James Bakewell picks his highlights.



Durable packaging made from Evolon (left) suitable for the transportation of sensitive industrial items, such as automotive parts, and Freudenberg's carrier material (right) for the creation of green roofs on urban buildings.

### Freudenberg Performance Materials (Hall 12.2, Stand C29)

On its stand, Freudenberg Performance Materials will display a novel polyester (PES) nonwoven for the padding of car seats. Available also as a composite with polyurethane (PU) foam, the soft, flexible nonwoven is easy to handle during installation and demonstrates good dimensional stability. The nonwoven is recyclable and 25% of the material used in its production is recycled.

Freudenberg Performance Materials will also show a sustainable carrier material for green roofs on urban buildings.

The carrier is made from polylactide and, when filled with soil, provides a strong foothold to root systems, enabling the growth of lightweight sedum blankets that can be rolled-out to create instant green roofs.

The company will highlight a thermal wadding (comfortemp HO 80xR circular) made from polyamide (PA), 70% of which is sourced from plastic waste, including fishing nets, carpets and flooring, and industrial plastics. Freudenberg Performance Materials will also be able to discuss thermal insulation it developed for a jacket made entirely from loopamid, a PA 6 derived from textile waste. Loopamid was launched by BASF, of Ludwigshafen, Germany, and Inditex, of Arteixo, Spain, in January 2024.

Freudenberg Performance Materials will showcase its Evolon technical packaging products, which are substitutes for the disposable packaging used in the transport of sensitive industrial items, such as automotive parts. The material is made from up to 85% recycled polyethylene terephthalate (PET). The company will also show bio-based and industrially compostable materials for the manufacture of desiccant bags.

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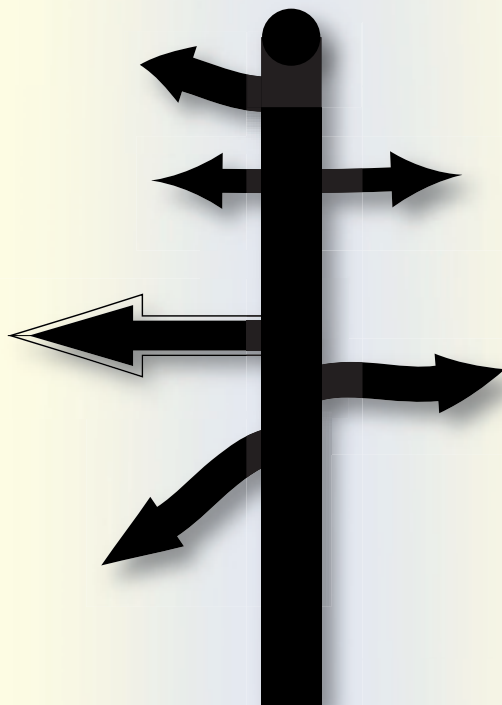
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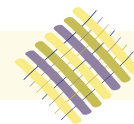
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### Outdoor by ISPO

3–5 June 2024  
Munich, Germany  
Sabine Wagner, ISPO;  
Tel: +49 (89) 949-20802  
sabine.wagner@messe-muenchen.de;  
<https://www.ispo.com>

### International Textile Machinery Exhibition (ITM)

4–8 June 2024  
Istanbul, Turkey  
Teknik Fairs Ltd Co;  
Tel: +90 (212) 876-7506;  
Fax: +90 (212) 876-0681;  
info@teknikfuarcilik.com;  
<https://www.itmexhibition.com/itm2024>

### World of Wipes

17–20 June 2024  
Minneapolis, Minnesota, USA  
Misty Ayers, Marketing Coordinator, INDA  
(Association of the Nonwoven Fabrics Industry);  
Tel: +1 (919) 459-3712  
mayers@inda.org;  
<https://www.worldofwipes.org>

## August 2024

### Techtextil North America

20–22 August 2024  
Raleigh, North Carolina, USA  
Kristy Meade, Show Director, Messe Frankfurt Inc;  
Tel: +1 (770) 984-8016, x 2428;  
Fax: +1 (770) 984-8023;  
kristy.meade@usa.messefrankfurt.com;  
<https://techtextil-north-america.us.messefrankfurt.com>

### Yarn Expo Autumn

27–29 August 2024  
Shanghai, China  
Rita Li, Messe Frankfurt (HK) Ltd;  
Tel: +852 223-9966;  
Fax: +852 2598-8771;  
rita.li@hongkong.messefrankfurt.com;  
<https://intertextilehome.hk.messefrankfurt.com/china/en.html>

## September 2024

### International Composites Summit

4–5 September 2024  
Milton Keynes, UK  
Composites UK;  
Tel: +44 (1442) 817502  
info@fpcc-conference.com;  
<https://compositesuk.co.uk/events/international-composites-summit>

### Dornbirn Global Fiber Congress

11–13 September 2024  
Dornbirn, Austria

### Dornbirn Global Fiber Congress Office;

Tel: +43 (1) 319-2909-41;  
Fax: +43 (1) 319-2909-31;  
office@dornbirn-gfc.com;  
<http://www.dornbirn-gfc.com>  
See also, page 29

### CINTE Techtextil China

19–21 September 2024  
Shanghai, China  
Jason Taylor, Messe Frankfurt (HK) Ltd;  
Tel: +852 2230-9296;  
Fax: +852 2598-7919;  
jason.taylor@hongkong.messefrankfurt.com;  
<https://cinte-techtextil-china.hk.messefrankfurt.com/shanghai/en.html>

### Advanced Textiles Expo

24–26 September 2024  
Anaheim, California, USA  
Amy Collins, Advanced Textiles Association;  
Tel: +1 (651) 225 6970  
amy.collins@textiles.org;  
<https://www.textiles.org/event/ifai-expo-2024>

### Outlook

24–26 September 2024  
Rome, Italy  
Delphine Rens, Marketing and Communications Coordinator, EDANA;  
Tel: +32 (2) 740-1822;  
Fax: +32 (2) 733-3518;  
delphine.rens@edana.org;  
<https://www.edana.org/events/outlook/outlook-2024>

## October 2024

### Research, Innovation and Science for Engineered Fabrics (RISE) 2024

1–2 October 2024  
Raleigh, North Carolina, USA  
Misty Ayers, Marketing Coordinator, INDA  
(Association of the Nonwoven Fabrics Industry);  
Tel: +1 (919) 459-3712  
mayers@inda.org;  
<https://www.riseconf.net>

### Textile Discovery Summit

6–8 October 2024  
Savannah, Georgia, USA  
Kim Nicholson, AATCC;  
Tel: +1 (919) 549-8141  
education-dept@aatcc.org;  
<https://aatcc.org/events>

### ITMA Asia + CITME

14–18 October 2024  
Shanghai, China  
Daphne Poon, ITMA Services;  
Tel: +65 9478-9543  
daphnepoon@itma.com;  
<https://www.itmaasia.com>

### Performance Days

23–24 October 2024  
Munich, Germany  
Design and Development GmbH Textile Consult;  
Tel: +49 (89) 9394-6060  
info@performancedays.com;  
<https://www.performancedays.com>

## November 2024

### Filtech 2024

12–14 November 2024  
Cologne, Germany  
Suzanne Abetz, Filtech Exhibitions Germany;  
Tel: +49 (2132) 935760  
info@filtech.de;  
<http://www.filtech.de>

### Hygienix

18–21 November 2024  
Nashville, Tennessee, USA  
Tracie Leatham, INDA (Association of the Nonwoven Fabrics Industry);  
Tel: +1 (919) 459-3726  
tleatham@inda.org;  
<https://www.hygienix.org>

## April 2025

### IDEA

29 April–1 May 2025  
Miami Beach, Florida, USA  
Misty Ayers, INDA (Association of the Nonwoven Fabrics Industry);  
Tel: +1 (919) 459-3712;  
Fax: +1 (919) 459-3701;  
mayers@inda.org;  
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## May 2025

### Techtextil North America

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### Texprocess Americas

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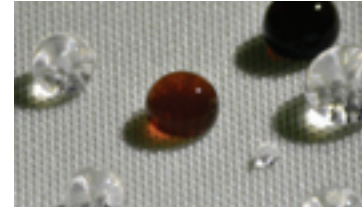
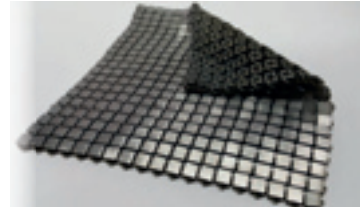
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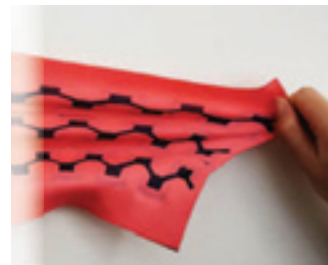
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### ADVANCES IN *Textiles* technology

February 2022 An international newsletter on textile technology edited by James Bakerell

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**Fibres, filaments and yarns**  
**Artificial silk door-pulls feature on Mercedes-Benz concept car**

Novel, sustainable door-pulls made from artificial silk fibre are being used by Mercedes-Benz of Stuttgart, Germany, in its latest concept car, the Vision EQXX. The carmaker has designed Vision EQXX to highlight ways in which luxury vehicles can be produced using technologies that are more environmentally sustainable than conventional approaches.

The artificial silk fibre is called Biosilk and is produced by AMSilk of Planegg, Germany. The company says that the fibres are biodegradable and recyclable, and no waste is generated during their manufacture. It adds that Biosilk demonstrates mechanical properties



The door pulls for the Vision EQXX concept car from Mercedes-Benz are made from Biosilk artificial silk fibres.

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**Highlights this month:** full contents listing on page 2...

Methods for determining the effects of strains and stresses on carbon nanotube fibres are being developed by researchers at Rice University	2	A single vented tumble dryer can discharge up to 120 million microfibres into the air each year, according to a pilot study	5
A range of durable fabrics made from pre-consumer recycled polyamide (PA) 66 fibres has been launched by Invista through its Cordura brand	3	A fibre-laying process that enables the efficient production of composite floorplates and toe caps for use in footwear has been launched by Coats	7
A dual-action thermoregulating finish that reduces the temperature of surfaces to which it is applied by up to 3°C has been launched by HeliQ	4	A long, fibre-based lithium-ion battery that could be woven into fabrics is being developed by researchers at the Massachusetts Institute of Technology	10

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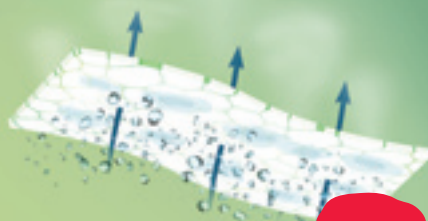
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