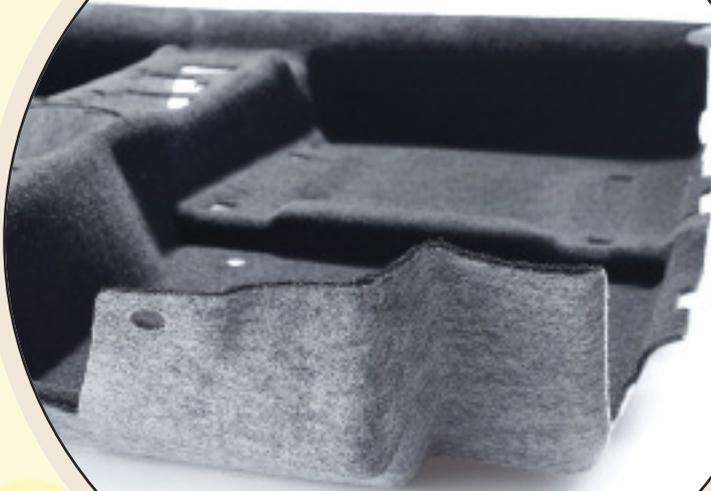


Technical **TEXTILES** international

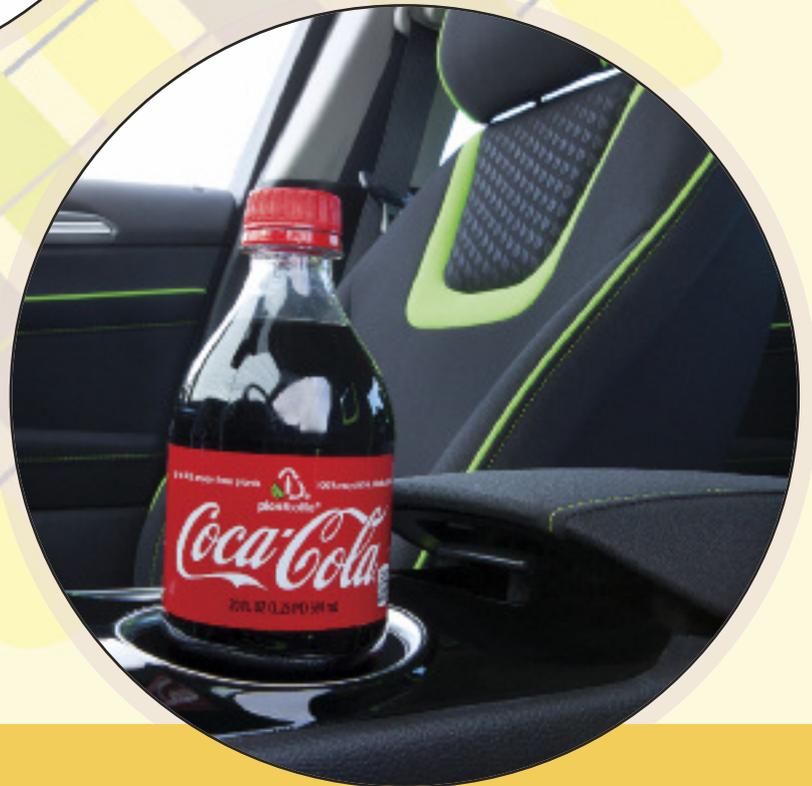
Autumn 2021
Volume 30, Number 3

Informing the industry worldwide



**Electric vehicles present
wealth of opportunities
for textile suppliers**

**Industry urgently seeks
sustainable raw materials**



INSIDE:

**What to expect on the show floor at *Index 2020*
Textiles that harvest energy from radio waves
Nonwoven pads ensure safety and reliability of batteries**

HIGH-PERFORMANCE NONWOVENS AT INDEX™

We are pleased to announce that in association with INDEX™ and EDANA, Technical Textiles International / TNet have developed the programme for a half-day seminar on smart Nonwovens - high-performance applications of nonwovens. This will take place on 20 October 2021 in INDEX™ Lab, Room W (Hall 3) at 14:00 - 16:45.

Experts from the following companies will present their latest technologies to the INDEX™ audience in Geneva:

Fibroline ▪ **NIRI** ▪ **Norafin** ▪ **RISE Research Institutes** ▪ **Indian Institute of Technology**

The session will be chaired by experienced industry specialist, Adrian Wilson. In addition, there will be an Innovation Lab where visitors can view products relating to the presentations given during the seminar. This display area is outside the seminar room.

SEMINAR PROGRAMME

- **Dry powder impregnation solutions** - Jérôme Ville, *CEO*, Fibroline SA (France)
- **Adsorbent Technology for High-performance Nonwoven Applications** - Ross Ward, *New Business Development Manager*, Nonwovens Innovation & Research Institute Ltd (NIRI) (UK)
- **Innovation in Technical Nonwovens – Evolving USP** - Marc Jolly, *Head of Research & Development*, Norafin Industries (Germany) GmbH
- **Opportunities for production of nonwoven bio-based electronics**, Hjalmar Granberg, *Senior Research Associate*, RISE Research Institutes of Sweden
- **High-performance applications for nonwovens - an overview**, Adrian Wilson, *Seminar Chair*, Technical Textiles International (UK)
- **Out-of-plane auxetic nonwoven as a designer metamaterial**, Amit Rawal, *Professor*, Indian Institute of Technology (India)

The seminar will provide a taste of the kind of high-quality, insightful and informative presentations that feature in our conference series, Nonwovens for High-Performance Applications (NHPA)



NHPA

Visit www.technical-textiles.online/NHPA for more information on our NHPA conference series and further details on the seminar at INDEX™ Geneva



Reifenhäuser

REICOFIL

The Extrusioners



Meet us

INDEX
GENEVA, SWITZERLAND
October 19 - 22
Booth 2531

RF5 Technology

For Next Level Nonwoven Materials You Can Rely On.

The world needs protective cloth, face masks as well as other medical and hygiene products it can rely on. Reason enough to select proven technology for the production of the needed materials. Work with the market leader and become a sought-after supplier of reliable, top-class nonwovens. reicofil.com | medicalsafety-reifenhauser.com/en/

Autumn 2021

(Volume 30, Number 3)

Editor: Nick Butler

Tel: +44 (3301) 335450

Email: tti@intnews.com

Nonwovens Editor:

Adrian Wilson

Composites Editor:

James Bakewell

USA correspondent:

John W. McCurry

China correspondent:

Jason Chen

Russia correspondent:

Eugene Gerden

India correspondent:

Samuel Joseph

Regular contributor:

Geoff Fisher

Display advertising sales:

Jill Gwinnutt

Tel: +44 (3301) 335450

Email: jill.gwinnutt@intnews.com

David Kay/Maria Box

Tel: +44 (1273) 423512

Email: dkay@fastnet.co.uk

Published by International Newsletters Ltd, PO Box 50, WR15 8XN, UK.

Subscription enquiries, orders and payments:

International Newsletters Ltd, PO Box 50, WR15 8XN, UK.

Tel: +44 (3301) 335450

Email: sales@intnews.com

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

Annual subscription (four issues): includes free access to publications and back issues online: £300/\$459/€390.

(Payments in other currencies are subject to our prevailing exchange rate). Prices are valid to the end of 2021, and include airmail delivery in Europe and air-speeded delivery elsewhere.

In the Editor's opinion

A return to normality or more chaos? Why we need to proceed cautiously

In June, the industry witnessed the first staging of a major exhibition since the pandemic struck—*ITMA Asia + CITME* was held in Shanghai, China, on 12–16 June 2021. It was quickly followed by *CINTE Techtexil China and Asia Nonwovens Exhibition and Conference (ANEX)/Shanghai International Nonwovens Exhibition (SINCE)*, held in the same city on 22–24 June and 22–24 July, respectively.

Emboldened by vaccination programmes, more parts of the industrialised world are now relaxing restrictions on gatherings and the following months promise to be extremely hectic, with many important meetings scheduled to follow between now and the end of the year—in August: *Techtextil North America*; in September: *Techtextil Russia*; in October: *FESPA Global Print Expo, Index* (see also, page 10, *Milipol* and *A+A*; in November: *IFAI Expo* and *Techtextil India* (see also, page 55).

There is a clear appetite among many to meet face-to-face at live events, not just for all the usual business-related reasons, but also to satisfy the very human needs for personal contact and affirmation that we are returning to a more familiar world—one similar, if not the same, as the one we knew before those of us outside of microbiology laboratories had heard of coronaviruses.

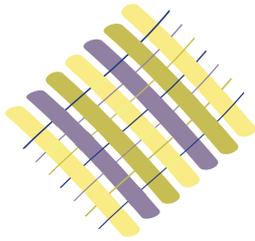
However, many remain more cautious, and with good reason. A headlong rush back to so-called “normality” could damage the fragile control we are beginning to grasp on this pandemic, resulting in the need to re-introduce restrictions on our freedoms.

Evidence for the continued need for caution came on 4 August, when, as a result of outbreaks of covid-19 in China, *Messe Frankfurt* announced that it was postponing major textile exhibitions for the apparel and domestic markets (*Shanghai Apparel Fabrics, Intertextile Shanghai Home Textiles* and *Yarn Expo*) all due to be held in Shanghai.

The postponements are only for a few weeks – originally due to take place at the end of August, the shows are now scheduled for October – but the disruption will be significant and it is highly symbolic that this is affecting the very city that had seemed to be a beacon of a return towards business as usual just a few weeks before.

In addition, where they are able, some major events, such as the *Dornbirn Global Fiber Congress* (taking place on 15–17 September), have chosen to be wholly online meetings. Others among those listed above, such as *Index* and *Techtextil India*, have contingency plans for some of their programmes at least to be online—recognition that even if events can go ahead as planned, not everyone from our international community will be able (or want) to travel just yet.

In summary, there are optimistic signs, but we need to proceed cautiously if we are not to jeopardise the return to normality we crave.



Contents

Autumn 2021

6 Finishing update

Zünd launches updated cradle feeder • Pulcra Chemicals buys Devan Chemicals • AATCC revises and introduces standards in supplement

8 Filtration update

Unifrax signs agreement to buy Lydall Inc • Toray unveils gas-separation membrane • Porvair expands range of microfiltration products • Neenah Gessner launches filter media

Preview: Index 2020

10 Long-awaited chance for nonwovens industry to meet in Geneva

In depth: Automotive textiles

17 Electric vehicles present new opportunities for textile suppliers

In depth: Sustainable fibres

24 Industry urgently needs to develop supplies of sustainable raw materials

31 Smart textiles update

Stretchable, washable textiles can harvest energy from radio waves • A foldable, rollable, musical keyboard • Inkjet printing shows promise for the production of electronic textiles • Thread features molecular tag for supply-chain security • Improving the power output of textile-based triboelectric nanogenerators • Smart textile-based monitoring used in space exploration • Massachusetts Institute of Technology engineers create digital fibre

35 Nonwovens update

Absorbent nonwoven pads ensure safety and reliability of batteries • Avgol to invest in Russian production facility • Andritz receives repeat order for hydroentanglement line • Ahlstrom-Munksjö unveils nonwovens for use in ceiling construction • Nonwoven Innovation & Research Institute invests in pilot meltblowing line • DiloGroup to supply web-forming and needling line for automotive • Ahlstrom-Munksjö launches filtration media for electric vehicles • Nonwoven for protective clothing is proven to reduce heat-stress • DuPont launches para-aramid nanofibre for battery separators

39 Sustainability update

Lyocell fibre produced using citrus-fruit waste • Superabsorbent polymers from bio-based acrylic acid • Tyre reinforcements produced from recycled plastic bottles • YKK to use sustainable finishing technology • Solvay launches partially bio-based polyamide yarn • Cleaning granulates support the development of bio-based fibres • Microfilament fabrics made using post-consumer recycled polyester • Producing elastic fibres from polylactic acid blends • Apply Carbon to establish carbon-fibre recycling facility • Additive enables thermoregulating fibres to biodegrade in landfills • Avgol and Algaeing to develop algae-based dyes for nonwovens

44 Safety and protection update

Rollable camouflage sheet can make soldiers nearly undetectable • Award for developers of electromagnetic radiation-attenuating yarn • Gloves protect goalkeepers from finger injuries • Durable, inherently flame-retardant fabric • Senate passage of *Innovation and Competition Act* is welcomed • DSM partners with mills for production of Dyneema fabrics • Klopman launches products through virtual showroom

47 Medical textiles update

Electrospun wound dressing indicates infection by glowing • Antimicrobial knitted face masks can withstand 100 washes • Face masks feature biosensors that can detect SARS Cov-2 virus • Antimicrobial additive can be applied through laundering • System developed for the closed-loop recycling of single-use face masks • Antimicrobial spray can be applied to textiles • Impregnated textile patch used to stem bleeding during surgery

52 Composites update

Spread-tow fabrics contribute to success of Ingenuity Mars helicopter • NCC unveils automated fibre-placement, automated tape-laying machine

54 Performance fibres update

ELG Carbon Fibre becomes Gen 2 Carbon • Zoltek to increase production capacity for carbon fibre • Fibre Extrusion Technology breaks ground on research and development centre • Teijin establishes carbon-fibre products facility in Vietnam

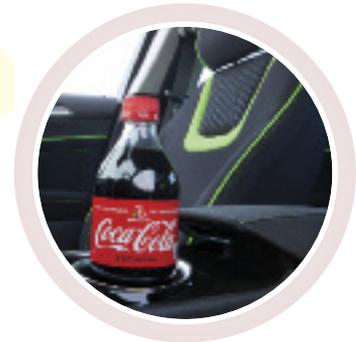
55 Events diary

56 Index to advertisers

On the cover:



Autoneum has developed a back-coating process for its range of automotive carpets that makes them easier to recycle. Adrian Wilson describes further textile technologies for use in future vehicles, starting on page 17



Consumer disapproval and pending legislation are piling pressure on the synthetic fibres industry to change its ways. Ford, for instance, has worked with Coca-Cola to produce interior fabrics using PlantBottle technology. Turn to page 24 to find out more

Innovative solutions for the textile industry.

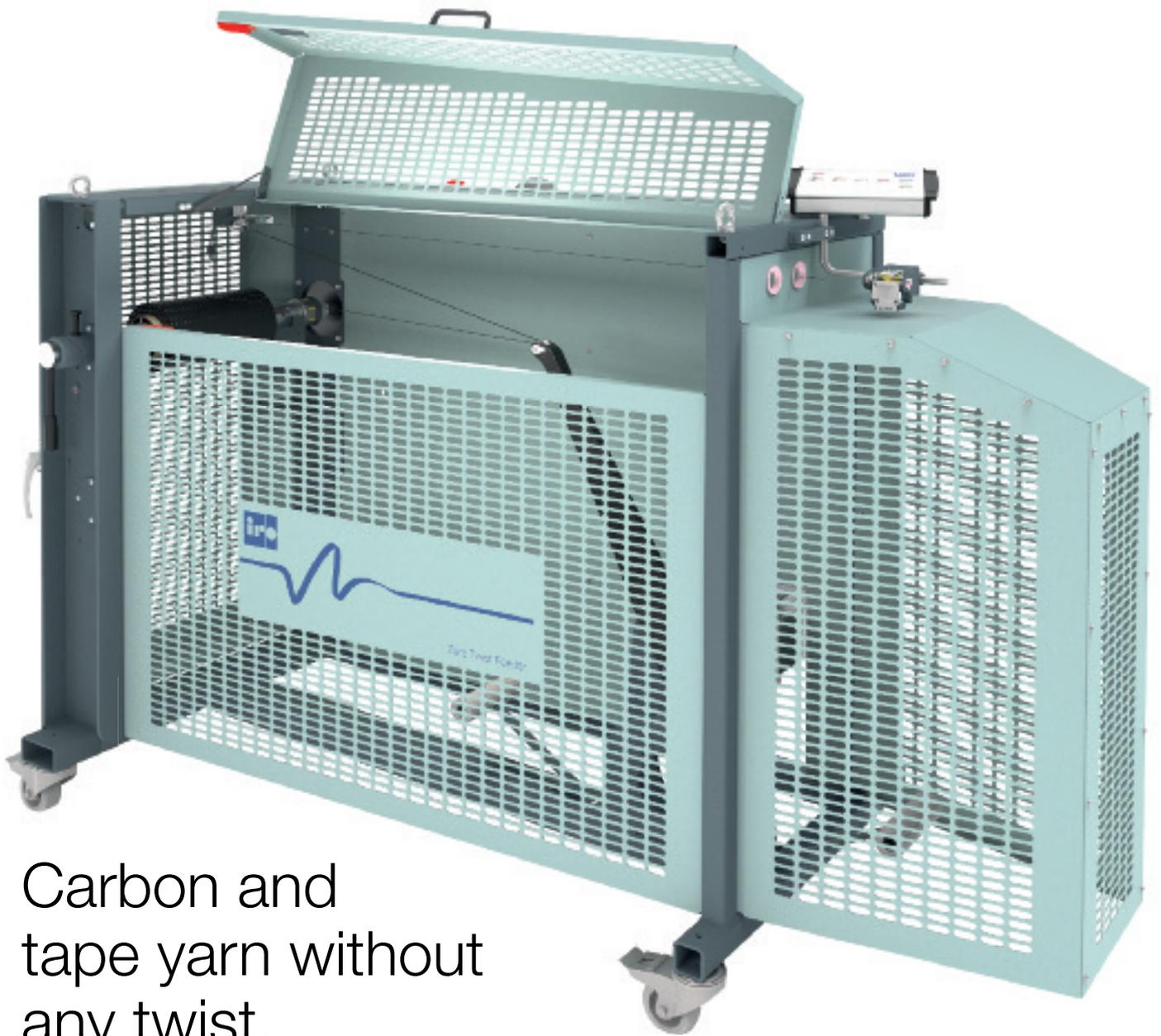
Developed from years of experience.



Share tension settings.
Fast and accurate.

TED Tension Display

An innovative and unique product that makes it possible to reproduce weft tension settings from one machine to another enabling a fast start up the next time the same article is woven.



Carbon and
tape yarn without
any twist.

ZTF Zero Twist Feeder

The Zero Twist Feeder delivers a tape yarn or fibre tow to the weaving machine without any twist.

It keeps the yarn constantly stretched to avoid the risk of any snarls or twisting of the tape.

Vandewiele Sweden AB
Karlsnäsavägen 7, SE-523 37 Ulricehamn, Sweden
Telephone +46 321 297 00

www.vandewiele.se www.iroab.com





NONWOVEN

GROWING YOUR BUSINESS OPPORTUNITIES

FOR YEARS TO COME

We're here to give you support in every aspect of your nonwovens production. You benefit from the most advanced expertise and complete solutions integrating air-through-bonding, needlepunch, spunlace, spunlaid, wetlaid and converting technologies. With ANDRITZ you'll also profit from the highly efficient use of energy and

raw materials that rewards you with consistent quality at high capacity for years to come. Experience how our innovative approaches and digital services can give you more control than ever before. All this opens up new opportunities for your product development and your business success.

This is nonwoven excellence.

VISIT US AT
INDEX 2021

BOOTH 2114

ENGINEERED SUCCESS

nonwoven@andritz.com · andritz.com/nonwoven

ANDRITZ

enabled by
PicConnect

Welcome to the era of **intuitive** **weaving**

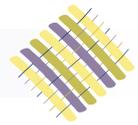


SCAN THIS
FOR APP

Watch the video
in our app.

[www.picanol.be/
intuitiveweaving](http://www.picanol.be/intuitiveweaving)

PICANOL 
Let's grow together



Long-awaited chance for nonwovens industry to meet in Geneva

Following two postponements, *Index 2020* is finally set to take place in Geneva, Switzerland, and online on 19–22 October 2021. Editor Nick Butler rounds-up some of the highlights to expect at the exhibition.



On Stand 2010, Dilo Group will discuss its ability to provide complete lines for all technologies for nonwovens made from staple fibres.

In Shanghai, China at the latest *ANEX/SINCE* exhibition (held on 22–24 July 2021), Andritz concentrated on its needlepunch technology for durable applications and the production of wipes made from biodegradable materials.

Brückner Group (see also, page 19) of Leonberg, Germany, specialises in supplying finishing and coating lines for textiles and nonwovens. The company has already begun to meet with customers face-to-face by exhibiting at *ITMA Asia*, held in Shanghai on 12–16 June 2021. Visitors to stand 1580 in Geneva can expect to learn about the latest developments relating to automation and data-exchange between manufacturing technologies, so-called “Industry 4.0”.

One recent development, for instance, is an intelligent assistance system that gives the machine operator tips on setting the individual machine parameters to achieve goals, such as saving on consumption of energy while maintaining levels of productivity. Another is a maintenance manager that monitors all processes in the background and supports the operating personnel in planning maintenance and cleaning work, as well as the timely re-ordering of parts as they wear.

Specifically for nonwovens, Brückner has developed ovens to dry and consolidate fabrics.

Eberbach, Germany-based **Dilo Group** (see also, *Technical Textiles International*, Summer 2021, page 5) can be found on Stand 2010 where it will provide information about its ability to provide complete lines for all technologies for nonwovens made from staple fibres. Fabrics made on the Group’s machinery are used for durable and disposable technical applications such as automotive, filtration, geotextiles, insulation, roofing materials and medical.

Erhardt+Leimer (see also, page 14) of Stadtbergen, Germany, will use stand 4443 to exhibit products that it

Machinery and equipment

The **Andritz Group’s** stand (2114; see also, page 7) will be home to the companies:

- **Andritz Asselin-Thibeau** of Elbeuf-sur-Seine, France, which designs, builds and supplies turnkey lines for needpunched, and thermo- and chemically bonded fabrics;
- Collecovino, Italy-based **Andritz Diatec**, which develops and manufactures machinery and technology for the hygiene industry. As well as machines for making disposable sanitary products, the company can now supply lamination machinery, spool winders and equipment for manufacturers of medical nonwovens;
- **Andritz Küsters GmbH** of Krefeld, Germany, specialising in individual parts and complete lines for wetlaid, hydroentangled and spunbond nonwovens, as well as a line combining wetlaid and hydro-entangled processes (called Wetlace). Lines include wire systems, calenders, rolls and finishing equipment (both inline and offline);
- **Andritz Perfojet**, with headquarters in Montbonnot, France, where it develops and supplies lines (neXline) for hydroentangled fabrics. A complete line includes a carding system, a hydroentanglement unit (Jetlace), a de-watering unit, a through-air dryer and a twin embossing calender. The company also supplies through-air bonding lines for high-throughput manufacture of hygiene products.



TECHNICAL

SUSTAINABLE

INNOVATIVE

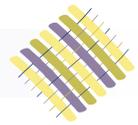


**COMMITTED TO RESEARCH & DEVELOPMENT
FOR A SUSTAINABLE FUTURE**



Visit our website to enquire about our new range of sustainable and bio-based products

www.fibresgroup.com



Trützschler's exhibit will include details about the company's latest condenser wires.

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. In Shanghai, the company introduced its latest metal detector, for instance, 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⁻¹.

Fibroline of Limonest, France, has developed and patented an impregnation method for dry powders⁽¹⁾. Using alternating electric fields, the company's D-Preg, S-Preg and T-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⁻¹. Visitors to Geneva can learn more on Stand 1383, or by listening to Chief Executive Officer (CEO) Jérôme Ville's presentation at the *Smart Nonwovens* seminar taking place during the exhibition (see also, Inside front cover).

The German machinery builder **Reifenhäuser Reicofil** (see also, page 1) is a leading supplier of meltblown and composite lines for polypropylene (PP) and polyethylene terephthalate (PET) fabrics. On its stand (2531), the Troisdorf-based company will explain that these nonwovens are used in such as the medical, agricultural and filtration markets. It will also explain that, in addition to lines for high-volume production⁽²⁾, it can now deliver machines designed for economical entry into small markets and for making soft, bulky materials.

At *ANEX/SINCE*, Reifenhäuser Reicofil focused on nonwovens made using sustainable materials.

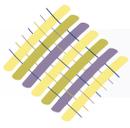
Reifenhäuser's subsidiary, **Enka Tecnica** of Heinsberg, Germany, will exhibit from its own stand (2638), displaying its spinnerets, spin packs, distributor and perforated plates, coat hangers, die tips, spinning beams and jet strips for melt-, and wet- and dry-spinning. The company will also introduce its Refresh Service for restoring customers' spinnerets.

From complete production lines to single components, Egelsbach, Germany-based **Trützschler Nonwovens & Man-made Fibers** (see also, page 13) supplies machines for opening and blending fibres, forming and bonding (hydroentangling, and thermally and chemically bonding), drying, finishing and winding webs. At its Egelsbach headquarters, customers can perform process trials at an industrial scale, visitors will learn. Products to be highlighted on stand 2327 will include:

- the company's range of carding machines, specific cards and crosslappers designed to allow customers to process numerous fibre types to create unique nonwovens;
- lines combining wet-laying and hydroentanglement to create flushable wipes⁽³⁾, which were developed in partnership with Voith Paper of Heidenheim, Germany. The exhibitor will also show such wipes made using pulp- and lyocell-based materials with sufficient strengths to compete with those made using polyester (PES)/viscose blends;
- complete production lines for making nonwovens using sustainable materials including cotton, natural fibres, viscose and wood pulp. The resulting fabrics can be used for biodegradable, single-use products such as medical textiles, face masks, wipes (wet and dry) and feminine care items.

Sharing stand 2327 will be fellow group member **Trützschler Card Clothing** of Neubulach, Germany, a specialist in high-performance clothing for cards and roller cards. In Geneva, the company will introduce its latest clothing product (Supertip).

Weko – Weitmann & Konrad GmbH & Co KG (see also, *Technical Textiles International*, Summer 2021, page 9) 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 on Stand 4171 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.

Fibres and fabrics

One of the world's largest suppliers of nonwovens, **Berry Global** of Evansville, Illinois, USA, will highlight a number of product launches on its exhibit, Stand 2631. For technical applications, these include:

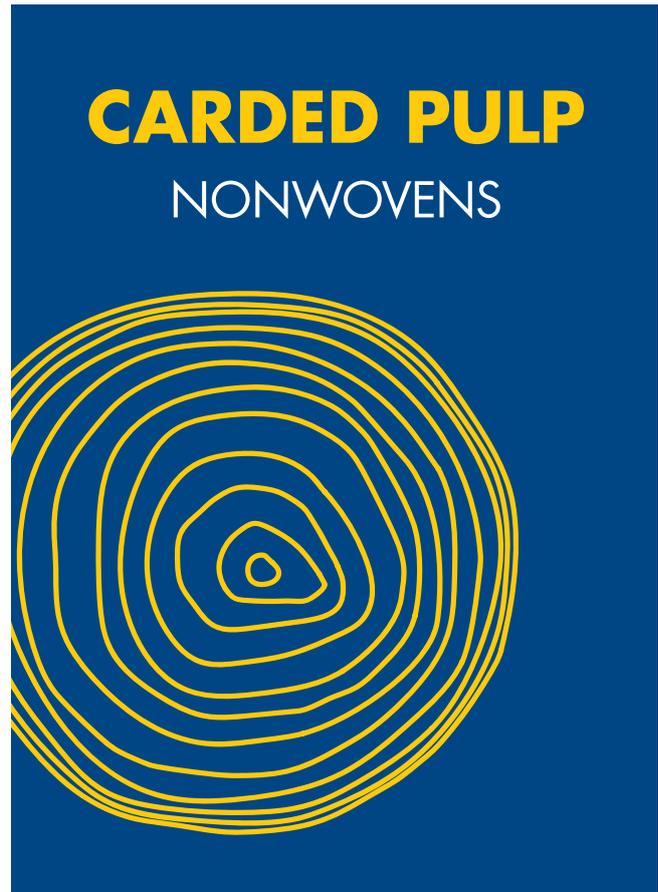
- a viral barrier that satisfies the level-4 breathability requirements stipulated by the Association for the Advancement of Medical Instrumentation (AAMI) of Arlington, Virginia, USA;
- polyethylene (PE) spunbonds (Berotex PE) derived from sugar cane-based raw materials, and used as thermobonding layers between textiles and the support media for roofing products;
- biodegradable and compostable food wipes;
- bicomponent PP/PE spunbonds (Melfab) with high strengths in the machine and cross-machine directions, and rigidity for use as pleat supports.

FiberVisions from Varde, Denmark, is a specialist in manufacturing polyolefin staple fibres for nonwovens. On Stand 2119, the company will highlight its monocomponent PP fibre (HY-AffiniT) for hydroentangled fabrics, claiming it has a high degree of hydrophilicity and a softness similar to that of a bicomponent.

Meanwhile, **ES FiberVisions**, its joint venture with JNC Corp of Tokyo, Japan, is a supplier of bicomponent fibres.

FiberVisions is part of **Indorama Ventures** of Bangkok, Thailand, which encourages all its group members and affiliates to cooperate to serve better various markets, such as hygiene, automotive and construction. FiberVisions and ES FiberVisions, for instance, cooperate to supply blends of their fibres.

Indorama, also to be found on Stand 2119, will launch its iCare staple fibres, which consist of monocomponent PET and bicomponent PET/PE versions, both claimed to be free from heavy-metal contaminants.



Already proven in service

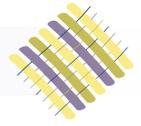
Our CP technology delivers all: low-cost raw material, top-class machinery, a proven process and soft, strong, biodegradable nonwovens.

A cooperation with

VOITH



TRÜTZSCHLER
NONWOVENS
www.truetzschler.com



International Fibres Group (IFG; see also, page 11) is based in Bradford, UK, and specialises in the global supply of polyolefin staple fibres, as well as polyamide (PA), biopolymer and recycled fibres. The exhibitor will say it focuses 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 Bradford;
- IFG Asota of Linz, Austria;
- IFG Exelto of Zwijnaarde, Belgium.

There are also two other members: IFG Cresco, a weaver of technical textiles in Lokeren, Belgium; Drake Extrusion, a supplier of PP fibres and yarns from Martinsville, Virginia, USA.

Kelheim Fibres GmbH is a supplier of specialist viscose fibres made entirely from wood pulp. On Stand 2415, the company from Kelheim, Germany, will tell visitors the fibres are fully biodegradable while offering

properties at least comparable with those made using petroleum-based chemicals. In Geneva, the company will introduce its Galaxy fibre, developed for use in the transfer layer of sanitary pads and tampons.

Sandler AG of Schwarzenbach/Saale, Germany, will be exhibiting on Stand 2431, offering information about its nonwoven roll-goods for: personal care (including wipes, diapers, and feminine care and adult incontinence products); medical textiles; filtration; construction and transportation. The company's fabrics are made using many different nonwoven technologies, including parallel carding, crosslapping, hydroentangling, thermobonding, air-through bonding, meltblowing and needlepunching. Visitors will also be told about the numerous different fibres Sandler uses, such as PP, PET, copolymerised polyethylene terephthalate (coPET); PPcoPP, PA, polylactic acid (PLA), bicomponents, viscose and cotton. The manufacturer can also apply a variety of finishes and coatings to the fabrics, and emboss and laminate them. The company reported it had a highly successful year in 2020, despite the economic impact of the pandemic, generating sales of €328 million and hiring 60 new

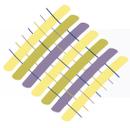


Automation and Vision Systems



ELCUT Edge cutting system

- Reliable shear cutting
- Minimum waste
- Automatic blade follow-up



members of staff⁽⁴⁾. During this period, it provided its expertise to efforts to make materials for face masks⁽⁵⁾, particularly for Germany's Bavarian region.

Technical Absorbents Ltd (see also, Outside back cover) is based in Grimsby, UK, where it developed a unique technology called SAF for making superabsorbent fibres⁽⁶⁾. Visitors can learn about the fibres' properties, which include an ability to absorb up to 200 times their own weight in water or 60 times their own weight in saline solution. The company will also describe the fibres' applications, such as medical textiles, protection for cables, food packaging and filtration. More recently, Technical Absorbents has introduced a range of fabrics made from the fibre⁽⁷⁾ and its most recent development, fabrics made from a SAF fibre with a high gel-strength (HGS), will be the focus of the exhibit on stand 1118.

References

- ⁽¹⁾*Technical Textiles International*, Supplement on Textile Coating and Laminating, *Dry powder impregnation takes the heat out of processing*, page 17;
<https://www.technical-textiles.net/node/74288>
- ⁽²⁾*Technical Textiles International*, December 2019, *First RF5 line from Reifenhäuser starts-up successfully in Czechia*, page 30;
<https://www.technical-textiles.net/node/75219>
- ⁽³⁾*Technical Textiles International*, Summer 2021, *Albaad invests in line for the production of biodegradable nonwovens*, page 34;
<https://www.technical-textiles.net/node/76176>
- ⁽⁴⁾*Technical Textiles International*, Summer 2021, *Pandemic fails to halt growth and innovation at Sandler*, page 37;
<https://www.technical-textiles.net/node/76138>
- ⁽⁵⁾ *Production line for face-mask material inaugurated by Sandler*;
<https://www.technical-textiles.net/node/75814>
- Bavarian alliance secures certification for face mask*;
<https://www.technical-textiles.net/node/75978>
- New partners join German face-mask production initiative*;
<https://www.technical-textiles.net/node/75959>
- ⁽⁶⁾*Technical Textiles International*, July 2015, *Technical Absorbents targets superabsorbent nonwovens*, page 17;
<https://www.technical-textiles.net/node/71510>
- ⁽⁷⁾*Technical Textiles International*, Autumn 2020, *Shrink-resistant superabsorbent fabrics*, page 38;
<https://www.technical-textiles.net/node/75748>

Further information

Magali Fakhry Dufresne, Exhibition Manager, Palexpo SA.
Tel: +41 (22) 761-1061. Fax: +41 (22) 798-0100.

Email: index@palexpo.ch;
<https://www.indexnonwovens.com>

List of exhibitors:
<https://www.indexnonwovens.com/en/pages/exhibitor-s-list-123>

Full programme including seminars:
<https://www.indexnonwovens.com/en/pages/programme-3#sector-section>
(See also, Inside front cover)

Association for the Advancement of Medical Instrumentation (AAMI). <https://www.aami.org>

Petra Wolf, Group Finance, Corporate Communications & Investor Relations, Andritz AG.

Tel: +43 (316) 6902-2722.
Email: petra.wolf@andritz.com;
<https://www.andritz.com>

Jean-Philippe Dumon, Sales and Marketing Director, Andritz Asselin-Thibeau.

Tel: +33 (2) 3296-4207. Fax: +33 (3) 2024-1933.
Email: jean-philippe.dumon@andritz.com;
<https://www.andritz.com/nonwoven>

Laurent Jallat, Marketing Manager, Andritz Perfojet.

Tel: +33 (4) 7652-5103. Fax: +33 (4) 7652-2173.
Email: laurent.jallat@andritz.com;
<http://www.andritz.com/nonwoven>

Caroline Goetschkes, Marketing & Communications, Nonwoven Division, Andritz Küsters GmbH.

Tel: +49 (2151) 34-2564.
Email: Caroline.Goetschkes@andritz.com;
<http://www.andritz.com>

Amy Waterman, Global Marketing Manager, Berry Global Group Inc.

Tel: +1 (812) 306-2435.
Email: amywaterman@berryglobal.com;
<https://www.berryglobal.com>

Verena Ruckh, Head of Advertising & Marketing Department, Brückner Trockentechnik GmbH & Co KG.

Tel: +49 (7152) 12-334. Fax: +49 (7152) 12-9334.
Email: vrukh@brueckner-textile.com;
<https://www.brueckner-textile.com>

Andrea Wunder, Marketing Department, Dilo Group.

Tel: +49 (6271) 940-239. Fax: +49 (6271) 940-266.
Email: wunder@dilo.de; <https://www.dilo.de>



Drake Extrusion Inc.
Tel: +1 (276) 632-0159. Fax: +1 (276) 634-0224.
Email: info@drakeextrusion.com;
<https://www.drakeextrusion.com>

ES FiberVisions ApS.
Tel: +45 7994-2200. Fax: +45 7994-2201.
<https://es-fibervisions.com>

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>

FiberVisions A/S.
Tel: +45 7994-2200. Fax: +45 7994-2201.
Email: fbv@fibervisions.dk;
<https://www.fibervisions.com>

Jérôme Ville, Chief Executive Officer, Fibroline.
Tel: +33 (4) 7286-1637; Fax: +33 (4) 7286-1695;
Mobile/cellular: +33 (6) 7408-2184.
Email: jville@fibroline.com; <http://www.fibroline.com>

Richard Barker-Poole, Group Sales & Marketing Director, IFG.
Tel: +44 (113) 285-2202.
Email: rbarker-poole@ifgdrake.co.uk;
<https://fibresgroup.com>

IFG Drake.
Tel: +44 (113) 285-2202. Fax: +44 (113) 285-2575.
<https://fibresgroup.com>

IFG Asota.
Tel: +43 (732) 6985-0; Fax: +43 (732) 6985-5526.
<https://fibresgroup.com>

IFG Exelto.
Tel: +32 (9) 2414-437. Fax: +32 (9) 2414-562.
<https://fibresgroup.com>

IFG Cresco.
Tel: +32 (9) 340-9811.
Email: info@ifgcresco.com; <https://ifgcresco.com>

Stuart Kelly, Communications, Indorama Ventures.
Tel: +66 (2) 661-6661, x 508.
Email: stuart.k@indorama.net

Naweensuda Krabuanrat, Communications, Indorama
Ventures.
Tel: +66 (2) 661-6661, x 247.
Email: naweensuda.k@indorama.net;
<https://www.indoramaventures.com>

Shinji Itoh, Deputy GM of Sales, JNC Corp.
Tel: +81 (6) 6441-3307. Fax: +81 (6) 6441-3347.
Email: sito@jnc-corp.co.jp;
<https://www.jnc-corp.co.jp>

Stefanie Heigl, Corporate Communications, Kelheim
Fibres GmbH.
Tel: +49 (9971)-99-63659. Fax: +49 (9441)-99-1475.
Email: stefanie.heigl@kelheim-fibres.com;
<https://www.kelheim-fibres.com>

Claire Landsmann, Head of Global Communications,
Reifenhäuser GmbH & Co. KG Maschinenfabrik.
Tel: +49 (2241) 481-9325. Mobile/cellular: +49 (151) 61637-666
Email: Claire.Landsmann@reifenhauser.com;

Michael Ziegler, Communications, Reifenhäuser Group.
Tel: +49 (2241) 481-523.
Email: Michael.Ziegler@reifenhauser.com;
<https://reifenhauser.com>

Reifenhäuser Heinsberg GmbH.
Tel: +49 (2452) 98896-0.
Email: sales@reifenhauser.com;
[https://reifenhauser.com/en/company/
reifenhauser-group/extrusion-systems](https://reifenhauser.com/en/company/reifenhauser-group/extrusion-systems)

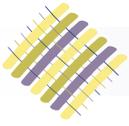
Kristina Müller, Marketing Manager, Sandler AG.
Tel: +49 (9284) 60-114. Fax: +49 (9284) 60-205.
Email: Kristina.Mueller@sandler.de;
<https://www.sandler.de>

Anita Bemrose, Marketing Executive, Technical
Absorbents Ltd.
Tel: +44 (1472) 245205. Fax: +44 (1472) 245244.
Mobile/cellular: +44 (7827) 290339.
Email: anita.bemrose@techabsorbents.com;
<https://www.exploresaf.com>

Jutta Stehr, Group Marketing Manager, Trützschler
Nonwovens & Man-made Fibers GmbH.
Tel: +49 (6103) 401-321; Fax: +49 (6103) 401-440.
Mobile/cellular: +49 (172) 936-6213.
Email: jutta.stehr@truetzschler.de
<https://www.truetzschler-nonwovens.de>

Julia Schaefer, Global Communication Manager, Voith Paper.
Tel: +49 (7321) 376995.
Email: Julia.Schaefer@voith.com; <https://voith.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>



Electric vehicles present new opportunities for textile suppliers

With or without an internal combustion engine, future vehicles will need tailored packages for noise, vibration and temperature control. As a result, major suppliers of textiles and nonwovens to the automotive industry remain optimistic, reports Adrian Wilson.

For businesses that are currently grappling with unprecedented change, as well as enduring an extremely turbulent 2020, key manufacturers of technical textiles for automotive thermal and acoustic insulation components are decidedly upbeat about the future. Having enjoyed many years of rapid growth, as well as developing numerous innovations, stimulated by the needs of automobile manufacturers to reduce the weight of vehicles, the industry now faces fresh challenges.

Over two decades or more, the desire to reduce a car's weight has been the automotive industry's response to consumer demands and increasingly stringent legislation to lower the fuel consumption and carbon dioxide (CO₂) emissions of their internal combustion



Global production of cars and light vehicles in 2020 was just 77.6 million, down 21% on 2019.

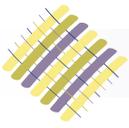
Digital Competence you can count on

ZUND
swiss cutting systems

- Individually configurable
- Easily integratable into digital workflows
- New possibilities on individualization



www.zund.com info@zund.com T +41 71 554 81 00



In depth: Automotive textiles

first six months in 2020, seeing its revenues for the period fall to €472 million, but, after a general economic recovery during the second half, saw sales climb by 48.7% to €702 million—a total of €1.17 billion for the year.

According to the Group, the automotive industry is going through substantial change, principally as a result of the desire to develop connected, autonomous, shared and electrically powered vehicles, a future scenario sometimes referred to by the acronym CASE.

In addition, Adler Pelzer believes electric vehicles will claim a market share of 20–30% by 2030 and is excited about the opportunities these shifts represent. Chief Executive Officer (CEO), Pietro Lardini says: “We decided to embrace these disruptive changes a long time ago and have already been active in developing solutions for more than 50 new-energy vehicle (NEV) platforms.”

So far in 2021, for instance, Adler Pelzer has:

- acquired the Acoustic and Soft Trims business of Nanterre, France-based Faurecia (Faurecia AST);



Contoured and precisely cut insulation components are available from Adler-Pelzer.

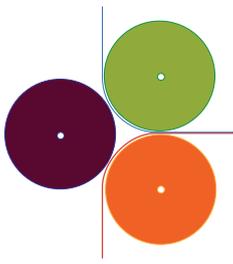
- established its own plastics division for hard trim, following its acquisition of a controlling interest in STS Group, which has its headquarters in Munich, Germany, from the previous owner, Mutares SE & Co KGaA of Munich, Germany.

The acquisition of Faurecia AST includes a research and development (R&D) centre in Mouzon, France, and

Quality makes the difference!

FASCINATING TEXTILE MACHINERY
www.brueckner-textile.com

BRÜCKNER



CONFERENCE ON SUSTAINABLE FINISHING OF TEXTILES

- reducing the carbon footprint of the textile finishing industry

Online 30 September-1 October & 7-8 October 2021

The textile industry is committed to action and investment in material technology and machinery to abate its detrimental impacts on the environment. For all the latest developments in aiding this process we are holding a special conference to consider all aspects of the Sustainable Finishing of Textiles. Presentations will take place online over 4 afternoons (BST), followed by live Q&A forums and a Networking Lounge for group and 1:1 chat making this a must-attend event.



Photos courtesy of Fibroline, Huafeng & Schoeller



CONFERENCE PROGRAMME TO DATE

KEYNOTE

- Phil Patterson, Colour Connections, UK: *On a knife edge - making quality textiles responsibly*

INTRODUCTION AND OVERVIEW

- Adrian Wilson, Technical Textiles International, UK: *Emerging technologies and processes - can they truly provide sustainable manufacturing?*

SUSTAINABLE CHEMISTRY

- Lance Li, Microban International Inc, USA: *Sustainable alternatives for odour control on garments*
- Elisabete Silva, Mehler Engineered Products GmbH, Germany: *An innovative, bio-based adhesive for mechanical rubber goods*
- Theo Verweerden, Lamoral Coatings BV, The Netherlands: *Sustainable, durable water-repellent treatments*

KEYNOTE

- Catherine Tubb, Planet Tracker, UK: *A view from Planet Tracker*

INNOVATIVE TECHNOLOGIES AND PROCESSES

- Rick Stanford, Baldwin Technology, USA: *Revolutionizing and applying real sustainability to the Textile Finishing Department*
- Kushtrim Daci, Weber Ultrasonics AG, Germany: *Ultrasound processing - cutting operating costs and resource consumption by around one-third*
- Ricardo Vega Ayora, ITA Academy GmbH, Germany: *How artificial intelligence can help assets autonomously reduce energy consumption during textile manufacturing*

KEYNOTE

- Tricia Carey, Lenzing, USA / Günther Widler, DyStar, Germany / Alex Penadés, Jeanologia, Spain: *Collaborations for change from fibre to finish - how innovation can impact resource savings*

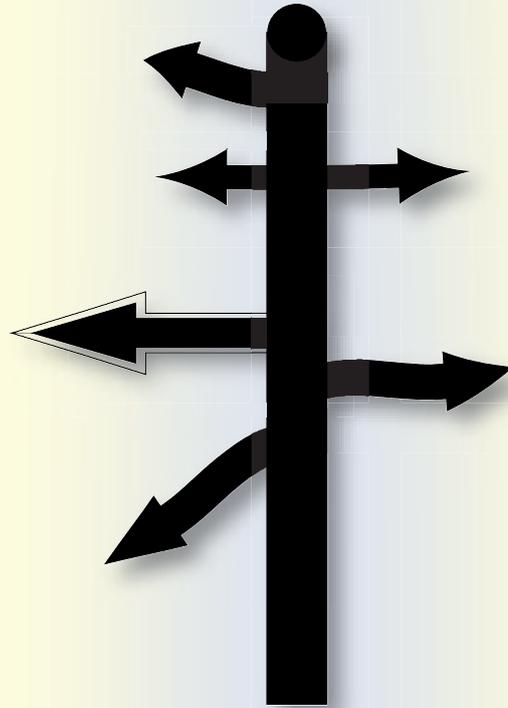
DENIM, DYEING AND COLOURING

- Mary Ankeny, Cotton Inc, USA: *Reduction of resources (water, energy and chemicals) during cotton dyeing*
- Kasper Nossent, DyeCoo Textile Systems BV, The Netherlands: *Waterless dyeing technology*

PLUS further speakers to be announced soon, topics include in-situ thread-colouring technology; an overview of the potential of digital printing and finishing; chemical companies developing bio-based inks; fabric manufacturers and coaters and laminators developing sustainable substrates.

Register now at www.technical-textiles.online/WCTC

All avenues are open



Technical-textiles.net and **Technical Textiles International** magazine are established and trusted channels which can help you to continue to achieve your commercial goals.

Magazine and Web advertising to maximise your impact AND save - series discounts available.

Contact:

Jill Gwinnutt Tel: +44 (0)870 1657210 - Email: jill.gwinnutt@intnews.com

Maria Box Tel: +44 (0)1273 423512 - Email: dkay@fastnet.co.uk

**Request our Media Data and Editorial Calendar
and get your advertising plans heading in
the right direction**

www.technical-textiles.net



Published continuously since 1992, **Technical Textiles International** is **THE** foremost magazine dedicated to all aspects of the international technical textiles industry.

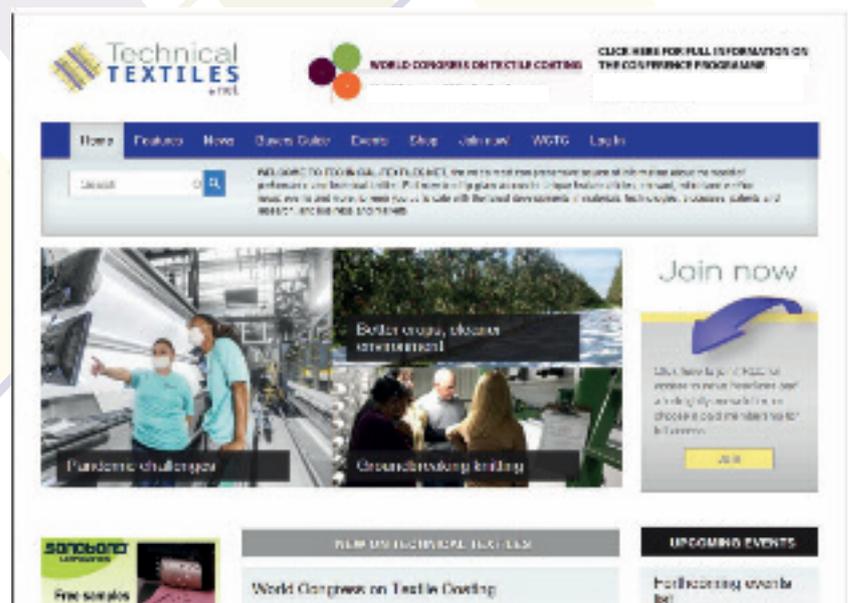
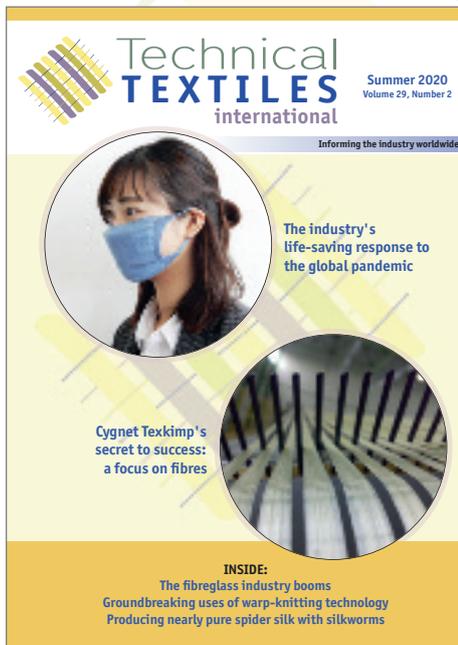
It is relied upon by senior executives and research entities for the latest on new products and processes, technologies, markets and applications for the advanced and high-performance textiles and nonwovens industry.



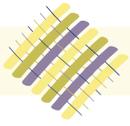
Since its launch as an online subscription service in 2015, **technical-textiles.net** has provided a unique one-stop information source for all areas of technical and advanced textiles, high-performance nonwovens and advanced composites.

Every item is written or edited by experts in the field, ensuring the readership sees TNet as a timely, authoritative and trustworthy information source.

Your partners in technical textiles



PLUS Conferences and Industry Reports
For full details on our product range visit
www.technical-textiles.net



Information correct at the time this issue went to press

August 2021

Techtextil North America

23–25 August 2021
Raleigh, North Carolina, USA
Kristy Meade, Show Director, Messe Frankfurt Inc;
Tel: +1 (770) 984-8016, x 2428
kristy.meade@usa.messefrankfurt.com;
<https://techtextil-north-america.us.messefrankfurt.com>

September 2021

Emergency Services Show

7–8 September 2021
Birmingham, UK
David Brown, Event Director, Broden Media Ltd;
Tel: +44 (20) 8947-9177
davidbrown@brodenmedia.com;
<http://www.emergencyuk.com>

Istanbul Textile Machinery Fair

8–11 September 2021
Istanbul, Turkey
Yusuf Akbolat, ECR Fuarçılık Ltd Sti;
Tel: +90 (212) 573-0662
yusuf@ecrfuar.com.tr;
<https://www.tmeexhibition.com/en/homepage>

Aircraft Interiors Expo

14–16 September 2021
Online
Polly Magraw, Event Director, Reed Exhibitions;
Tel: +44 (20) 8439-5138
aixoperations@reedexpo.co.uk;
<https://www.aircraftinteriorsexpo.com>

Heimtextil Russia

14–16 September 2021
Moscow, Russia
Ekaterina Tydykova, Messe Frankfurt RUS;
Tel: +7 (495) 649-8775, x. 116
ekaterina.tydykova@russia.messefrankfurt.com;
<https://heimtextil-russia.ru.messefrankfurt.com>

Techtextil Russia

14–16 September 2021
Moscow, Russia
Oksana Anikeeva, Director Techtextil Russia, Messe Frankfurt RUS;
Tel: +7 (495) 649-8775, x. 125;
Oksana.Anikeeva@russia.messefrankfurt.com;
<https://techtextil-russia.ru.messefrankfurt.com>

Dornbirn Global Fiber Congress

15–17 September 2021
Online
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>

FESPA Mexico

23–25 September 2021
Mexico City, Mexico
Lynda Sutton, Marketing Manager, Federation of European Screenprinters Associations (FESPA);
Tel: +44 (1737) 228350
lynda.sutton@fespa.com;
<https://mexico.fespa.com>

Automotive Interiors

27–28 September 2021
Aachen, Germany
Andreas Wibowo, Director of Business Development, Red Cabin;
Tel: +49 (3099) 40489-11
andreas.wibowo@redcabin.de;
<https://automotiveinteriorandintuitivevehicles.redcabin.de>

Med-Tech Innovation Expo

28–29 September 2021
Birmingham, UK
Magda Brzegowy, Rapid News;
Tel: +44 (1244) 680222 x 518
magda@rapidnews.com;
<https://med-techexpo.com>

Research, Innovation & Science for Engineered Fabrics (RISE)

28–30 September 2021
Online
Tracie Leatham, INDA (Association of the Nonwoven Fabrics Industry);
Tel: +1 (919) 459-3726
tleatham@inda.org;
<https://www.riseconf.net>

Cleaning Products US

29–30 September 2021
Washington, DC, USA and online
Brittany Norton, Marketing, Smithers;
Tel: +1 (330) 762 7441
bnorton@smithers.com;
<https://www.cleaningproductsconference.com/cleaning-products-us>

Circular Nonwovens Forum

30 September 2021
Brussels, Belgium
Christelle Tuncki, EDANA;
Tel: +32 (2) 740-1820;
christelle.tuncki@edana.org;
<https://www.edana.org/events>

Impact of the Pandemic on the Future Development and Use of Technical Textiles

30 September 2021
Online
Stefan Schmidt, IVGT eV;
Tel: +49 (69) 2556-1723;
Fax: +49 (69) 2556-1725;
stefan.schmidt@ivgt.de;
<https://eutt.net/5-agenda-09-2021>

World Congress on Textile Coating special edition: Conference on Sustainable Finishing of Textiles

30 September–1 October 2021 and 7–8 October 2021

Online

Jill Gwinnutt, Marketing Manager, International Newsletters Ltd;
Tel: +44 (3301) 335450
jill.gwinnutt@intnews.com;
<https://www.technical-textiles.online/STF>
See also, page 23

October 2021

Outdoor by ISPO

5–7 October 2021
Munich, Germany and online
Aleksandra Solda-Zaccaro, Messe München GmbH;
Tel: +49 (89) 949-20730
aleksandra.solda-zaccaro@messe-muenchen.de;
<https://www.ispo.com/en/outdoor>

FESPA Global Print Expo/ European Sign Expo/ Sportswear Pro

12–15 October 2021
Amsterdam, The Netherlands
Lynda Sutton, Marketing Manager, Federation of European Screenprinters Associations (FESPA);
Tel: +44 (1737) 228350
lynda.sutton@fespa.com;
<http://www.fespa.com>

INDEX

19–22 October 2021
Geneva, Switzerland and online
Delphine Rens, Marketing and Communications Coordinator, EDANA;
Tel: +32 (2) 740-1822;
delphine.rens@edana.org;
<http://www.edana.org>

Milipol

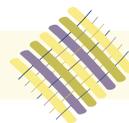
19–22 October 2021
Paris, France
Comexposium;
Tel: +33 (1) 7677-1329
Vanessa.galvez@comexposium.com;
<https://en.milipol.com>

Smart Nonwovens (High-performance Applications of Nonwovens)

20 October 2021

Geneva, Switzerland and online

Jill Gwinnutt, Marketing Manager, International Newsletters Ltd;
Tel: +44 (3301) 335450
jill.gwinnutt@intnews.com;
<https://www.technical-textiles.online/NHPA>
See also, Inside front cover



Advertiser	page
Andritz	7
Brückner Textile Technologies	19
Erhardt + Leimer	14
IFG International Fibres Group	11
Picanol	9
Reifenhäuser Reicofil	1
Technical Absorbents Ltd	Outside back cover
Trützschler Nonwovens	13
Vandewiele Sweden	4–5
Zünd Systemtechnik	17

Forthcoming advertising features

Issue	Advertising features	Bonus distribution	Order deadline
Winter	BUYER'S GUIDE Medical Architecture and construction Geotextiles Sports and leisure Testing and standards	<i>Distribution at all major events during 2022, including: Heimtextil, JEC World, IDEA, FiltXPO, Hightex, Techtextil/Texprocess and ITME</i>	29 October
To advertise, contact: Jill Gwinnutt. Tel: +44 (3301) 335450. Email: jill.gwinnutt@intnews.com David Kay or Maria Box. Tel: +44 (1273) 423512. Email: dkay@fastnet.co.uk			

Copyright statement and legal notices

This journal and the individual contributions contained in it are protected by the copyright of International Newsletters Ltd, and the following terms and conditions apply to their use:

Photocopying: Single photocopies of single articles may be made for personal use as allowed by national copyright laws. Permission of the publisher and payment of a fee is required for all other photocopying, including multiple or systematic copying, copying for advertising or promotional purposes, resale, and all forms of document delivery. In the USA, users may clear permissions and make payment through the Copyright Clearance Center Inc, 222 Rosewood Drive, Danvers, MA 01923, USA; Tel: +1 (508) 750-8400; Fax: +1 (508) 750-4744. In other countries where a local copyright clearance centre exists, please contact it for information on required permissions and payments.

Derivative Works: Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the publisher is required for resale or distribution outside the institution. Permission of the publisher is required for all other derivative works, including compilations and translations.

Electronic Storage: Permission of the publisher is required to store electronically any material contained in this journal, including any article or part of an article. Contact the publisher at the address indicated. Except as outlined above, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

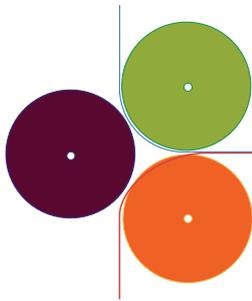
No responsibility is assumed by the publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein. Although all advertising material is expected to conform to ethical standards, inclusion in this publication does not constitute a guarantee or endorsement of the quality or value of such product or of the claims made of it by its manufacturer.

©2021 International Newsletters Ltd. All rights reserved.

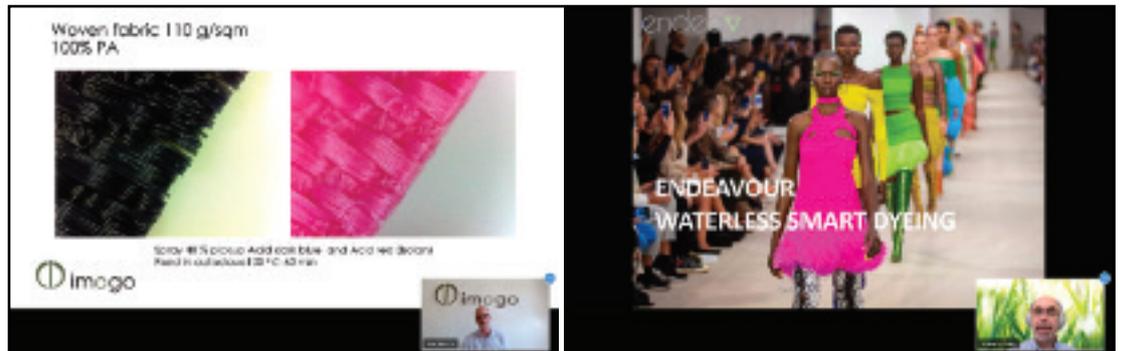
ISSN 0964-5993: Printed in the UK by Blackmore, Shaftesbury.

Technical Textiles International is published in four issues a year: Spring, Summer, Autumn and Winter, in one volume, by:

International Newsletters Ltd, PO Box 50, WR15 8XN, UK. The annual subscription in the USA is \$459. *Technical Textiles International* is distributed by Blackmore Ltd, Longmead, Shaftesbury, Dorset, SP7 8PX, UK. Postmaster, please send address corrections to International Newsletters Ltd, PO Box 50, WR15 8XN, UK.



WORLD CONGRESS ON TEXTILE COATING



NOW AVAILABLE ON DEMAND

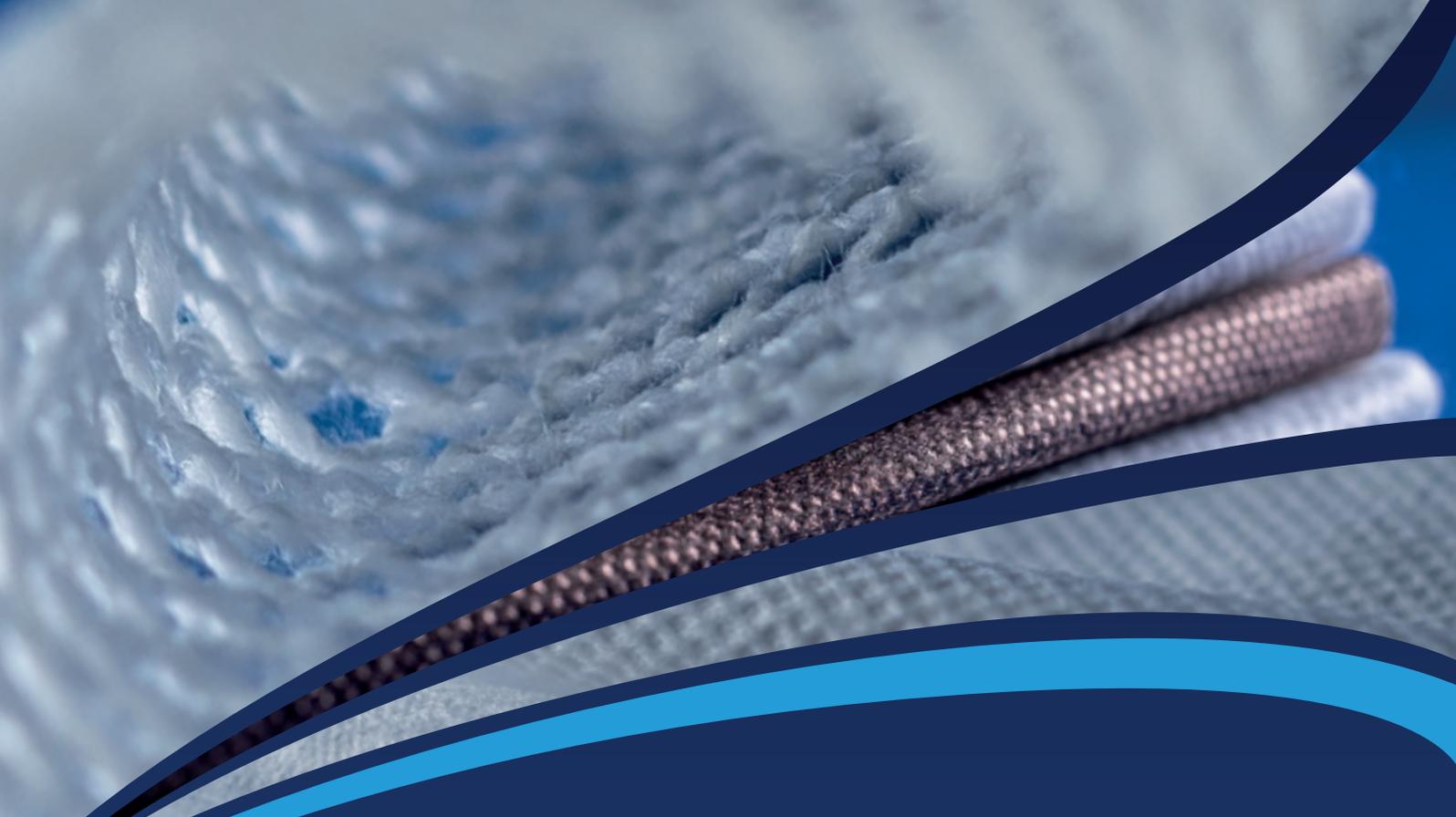


The **World Congress on Textile Coating** is available to purchase. The conference consists of 25 presentations and Q&A after each of the Five Sessions - **over 16 hours of live talks and group discussions** available to view at the time of your choosing. For immediate download please visit our Shop at www.technical-textiles.net.

CONFERENCE PRESENTATIONS

- *Using a cohesive supply chain to develop new concepts and ideas* - **Mascoe Coating Systems**
- *A review of 2020 and the implications for the future of the industry* - **Adrian Wilson, Conference Chair**
- *Haptic cushion coatings* - **Huafeng** • *Silicones for the textile industry: applications and advantages* - **Elkem**
- *Colloidal silica and percentage play for optimum purchase in textile coating* - **Advanced Flexible Composites Inc**
- *Digital dyeing technology* - **imogo AB** • *A novel plasma enhanced chemical vapour deposition technology for hydrophobic/oleophobic durable coatings* - **AGC Plasma Technology Solutions** • *Magnet roller coating: a versatile coating system for coating and minimal applications of textiles and nonwovens* - **Monforts** • *Fibroline S-Preg: a new technology for powder coating* - **Fibroline** • *Tactile sensation analyser* - **emtec Electronic GmbH** • *Next generation dyeing and finishing technologies for a connected low-carbon future* - **Alchemie Technology UK**
- *A novel finishing process for nanoparticle binding to a textile interface for improved antiviral performance against Covid-19* - **Mica NanoTech Ltd** • *Durable transparent treatment that can kill the novel coronavirus* - **Affix Labs**
- *Anti-viral coatings for filters* - **University of Houston** • *The sonochemical coating of textiles with antiviral nanoparticles* - **Bar-Ilan University of Israel** • *Making personal protective equipment safe and sustainable* - **Krüss**
- *From the fabric to the finishing: an all-round approach to the sustainable production of artificial leather with waterborne bio-based polyurethane dispersions* - **Lamberti SpA** • *How to be sustainable in the new European scenario: FAITGREEN experience* - **Fait Plast** • *Energy-efficient drying technology for textile manufacturing* - **adphos Digital Printing GmbH** • *A water-saving hybrid manufacturing approach for functionalizing technical textiles* - **STFI** • **Saxon Textile Research Institute e.V.** • *Reinforcement and enhancement of composites through cross-laminated nettings made from renewable raw material* - **ANCI SAS and more**

To buy online visit www.technical-textiles.net



SAF™ Fabrics

The new wave of technical absorbent fabrics

At Technical Absorbents we are focused on creating fabrics that are not only superabsorbent, but engineered to meet specific application requirements. A number of parameters such as GSM, thickness, absorbency rates and additional layers/functionality can all be tailored accordingly. A wide range of off-the-shelf fabrics are also available to aid the initial product development process.

SAF™ - more than just a fibre.



WASHABLE



THERMO-CARDED



AIRLAID



NEEDLEPUNCH



SAF™ HGS

**Technical
Absorbents**
The Absorbent Solutions Provider

explore **SAF**.com