# Technical TEXTILES international

Autumn 2022 Volume 31, Number 3

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### Autumn 2022 (Volume 31, Number 3)

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Published by Boughton Technical Media Ltd, PO Box 54, WR15 8XN, UK.

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### 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 2022, and include airmail delivery in Europe and air-speeded delivery elsewhere.

### In the Editor's opinion

We live in uncertain times and, in many ways, this is reflected in the content of the Autumn issue of *Technical Textiles International*. The human coronavirus (covid-19) pandemic has had a significant impact on global supply chains, creating challenges for any company that needs to import and/or export goods. The war in Ukraine, meanwhile, is exacerbating already high prices for gas and electricity. Pandemic-related lockdowns in China, a key market for the textiles industry, have hit hard. These issues are making it more difficult for companies in the technical textiles industry to turn a profit.

The topic of supply-chain disruption features heavily in two of our features this month. On page 23, the Chief Executive Officer (CEO) of Freudenberg Performance Materials, Dr Frank Heislitz, tells Adrian Wilson about how the company he leads has mitigated the disruption and outlines the challenges that integrating new acquisitions into the organisation posed at the height of the covid-19 pandemic. On page 27, the President of Aurora Specialty Textiles, Marcia Ayala, describes the business adaptations she has made over past two years to cope with the pandemic, and its aftermath, to John McCurry.

Great uncertainty also remains over the planning of conferences and exhibitions. Just as this issue was heading to press, Messe Frankfurt (HK) Ltd, of Hong Kong, China, announced that it is postponing the 2022 edition of *Cinte Techtextil China*, which was due to take place in Shanghai on 6–8 September. It made the decision owing to the rapidly evolving nature of restrictions associated with the covid-19 pandemic in the city. What this might mean for the 2022 edition of *ITMA Asia* + *CITME*, which is scheduled to be held in Shanghai on 20–24 November, remains to be seen. Many exhibitors are still finalising their plans for the show, but our preview of some of the likely highlights to be found there starts on page 31. We will update these plans, as they are released, on www.technical-textiles.net

The importance of events, such as *Cinte Techtextil China* and *ITMA Asia* + *CITME*, cannot be overstated. If one thing is certain, it is that the technical textiles industry will have to do much over the next decade to reduce its impact on the environment. For many of us, the realities of man-made climate change have been made all too plain over the last two months. As I have prepared this issue, temperatures in my non-air-conditioned office have pushed 40°C at times, which is unheard of in the UK. Colleagues in Europe have had to contend with even higher temperatures, water-shortages, and associated, wide-spread wild fires. As was made clear at *Techtextil* in Frankfurt, Germany, on 21–24 June 2022, solving such a complex problem will require strong and close partnerships to be formed along the entire length of the value chains for the production of technical textiles (see also, page 17). The genesis of these bonds can often be traced back to face-to-face meetings at events; hopefully, pandemic-related disruptions to their staging will soon become a thing of the past.

### James Bakewell, Editor

**Correction:** In the last issue, we reported that International Fibres Group (IFG; see also, page 11 and page 44) has its headquarters in Bradford, UK, when the company is actually based in nearby Huddersfield.



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Many exhibitors at Techextil championed the use of biobased raw materials, such as these shown by Indorama Ventures of Bangkok, Thailand, for the production of fibres, yarns and textiles. Editor James Bakewell reviews other developments at the show, starting on page 17



Aurora Specialty Textiles Operator, Brenda Salgado, inspects Expressions Canvas. Beginning on page 27, Aurora's President, Marcia Ayala, speaks to USA Correspondent, John McCurry



*Further information at https://www.technical-textiles.net* 

### Nonwovens update



### Autoneum expands range of acoustic insulation for electric vehicles

An extended range of acoustic insulation for blocking and absorbing the sounds generated by the drives of electric vehicles has been unveiled by Autoneum of Winterthur, Switzerland.

Called Hybrid-Acoustics, the range features Hybrid-Acoustics PET<sup>(1),</sup> a multilayered nonwoven, and now includes two foam-based materials, Hybrid-Acoustics Flex and Hybrid-Acoustics Fit Flex.

Initially developed for car interiors (such as dashboard liners and floor insulation) and engine bays, the thickness and density of the materials used in Hybrid-Acoustics PET can be tailored by adjusting the deposition of the fibrous top layers. Together with three-dimensional (3D) calculations and statistical energy analysis, this allows Autoneum to vary the insulation and absorption capacity of Hybrid-Acoustics PET with a resolution of one centimetre.

Containing a significant proportion (up to 50%) of recycled fibres – cotton or polyethylene terephthalate (PET) – the textile could be used to enclose electric motors, reducing the noise heard from them and, in particular, attenuating the high-frequency sounds emitted by electric drive units.

Autoneum says that parts made from Hybrid-Acoustics PET are recyclable and, when compared with conventional



*Hybrid-Acoustics PET has been used to produce this encapsulation for an electronic motor. The thickness and density of the materials used in Hybrid-Acoustics PET can be tailored by adjusting the deposition of the fibrous top layers.* 

acoustic insulators, are up to 40% lighter in weight.

Each of the two types of material – cotton felts embedded in a thermoplastic, or specially layered PET fibres – can be pressed to form numerous different shapes and sizes.

To complement Hybrid-Acoustics PET, Autoneum has launched two foam-based alternatives. By offering both fibrous and foam-based variants, the company says it is able to cater to the individual needs of its customers with regard to acoustic performance, sustainability targets and cost. Since the foam is injected in both variants, no waste is generated during production of either.

Hybrid-Acoustics Flex is based on the same acoustic concept as Hybrid-Acoustics PET, but the decoupler layer is made of foam instead of felt. Hybrid-Acoustics Fit Flex, on the other hand, comprises a foam decoupler with an injection-moulded heavy layer. As the foams can form to even complex shapes, Autoneum claims that both variants offer good acoustic performance when used to insulate electric motors and other noise sources in electric vehicles. Furthermore, the acoustic performance of the foams can be tuned to the specific needs of customers.

Autoneum sells Hybrid-Acoustics in Europe, North America and China.

#### See also:

<sup>(1)</sup>Technical Textiles International, Autumn 2021, Electric vehicles present new opportunities for textile suppliers, page 17; https://www.technical-textiles.net/node/76367

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Encapsulation for an electric motor made from Hybrid-Acoustics Fit Flex.



### Trützschler Nonwovens and Texnology form needlepunching alliance

Complete production lines for needlepunched nonwovens are to be sold under the name of T-Suprema by Trützschler Nonwovens & Man-Made Fibers GmbH and Texnology Srl, following the signing of a cooperation agreement between the two companies.

Trützschler Nonwovens, of Egelsbach, Germany, will contribute its expertise in fibre-preparation and web-forming to the partnership, while Texnology, of Fontaniva, Italy, will be responsible for supplying the equipment for the needlepunching process.

The Managing Director of Trützschler Nonwovens, Klaus Wolf, says that his company is "returning to needlepunching solutions. In the partnership, we are able to serve this interesting market segment with precisely fitting production lines."

The owners of Texnology, Nicola and Paolo Olivo, also see the cooperation as an



A T-Suprema Needlepunching line from Trützschler Nonwovens & Man-Made Fibers, of Egelsbach, Germany, and Texnology, of Fontaniva, Italy.

opportunity: "Texnology has developed its own needling technology with patents and profound know-how. Collaborating with a well-known, globalised company like Trützschler Nonwovens will significantly increase our target group."

The companies have completed their first joint project. The partnership was unveiled at *Techtextil*, which took place in Frankfurt, Germany, on 21–24 June 2022.

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### Nonwovens update



### Developing a simple method for producing self-sanitising face masks

A method for producing self-sanitising face masks is being developed by researchers at the Rensselaer Polytechnic Institute in Troy, New York, USA.

The researchers say that antiviral, antibacterial masks could be worn for longer than conventional masks, creating less plastic waste.

The researchers have devised an ultraviolet (UV) radiation-initiated grafting method for covalently attaching antiviral quaternary ammonium polymers to the surfaces of the polypropylene (PP) nonwovens that are commonly used in the production of N95<sup>(1)</sup> face masks.

The process overcomes a number of issues. Assistant Professor of Chemical and Biological Engineering at Rensselaer, Helen Zha, says: "The active filtration layers in N95 masks are very sensitive to chemical modification. It can make them perform worse in terms of filtration, so they essentially no longer perform like N95s. They are made out of PP, which is difficult to chemically modify. Another challenge is that you do not want to disrupt the very fine network of fibres in these masks, which might make them more difficult to breathe through."

The team use only UV radiation and acetone in their process, which are widely available, which makes it easy to

implement. Further, the process can be applied to existing PP filters. Zha says: "The process that we developed uses a really simple chemistry to create this nonleaching polymer coating that can kill viruses and bacteria by essentially breaking-open their outer layer. It is very straightforward and a potentially scalable method."

The team did see a decrease in filtration efficiency when the process was carriedout directly on the filtration layers of N95 masks, but the solution is straightforward. The user could wear an unaltered N95 mask together with another PP layer with the antimicrobial polymer on top. In the future, manufacturers could make a mask with the antimicrobial polymer incorporated into the top layer.

Thanks to a National Science Foundation Rapid Response Research (RAPID) grant, Zha, together with Associate Professor of Materials Science and Engineering at Rensselaer, Edmund Palermo, started their research in 2020 when N95 face masks were in short supply. Healthcare workers were even re-using masks that were intended to be used once.

In 2022, face masks of all types are now widely available. However, rates of infection with human coronavirus (covid-19) are still high, the occurence of another pandemic in the future is a distinct possibility, and single-use, disposable face masks are piling up in landfills. Zha says: "Hopefully, we are on the other side of the covid-19 pandemic, but this kind of technology will be increasingly important. The threat of diseases caused by airborne microbes is not going away. It is about time that we improved the performance and sustainability of the materials that we use to protect ourselves."

#### See also:

<sup>(1)</sup>N95 face masks are capable of filtering at least 95% of particles of 0.3 μm and above, while masks rated N99 can filter 99% or more.

ACS Applied Materials and Interfaces, Volume 14, Issue 22, pp 25135–25146, Virucidal N95 respirator face masks via ultrathin surface-grafted quaternary ammonium polymer coatings, https://doi.org/10.1021/acsami.2c04165

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### Eliminating odours in nonwovens for absorbent hygiene applications

Odour-capturing molecules from Aqdot of Cambridge, UK, have been shown to reduce malodours associated with urine and sweat in nonwovens for feminine hygiene and baby-care applications by up to 95%.

Called AqFresh, the barrel-shaped molecules (cucurbiturils) have a hydrophobic cavity and polar portal that capture and hold odour molecules.

Cucurbiturils cannot be felt when impregnated into nonwovens and Aqdot says that, unlike existing anti-odour solutions, AqFresh works in wet environments (such as those to which feminine hygiene products and diapers are exposed). It eliminates the need to use sensitising or allergenic fragrances and antibacterial agents in these products.

In testing conducted by Aqdot, a section of an AqFresh-treated nonwoven was placed in a gas chromatography headspace (HS-GC) vial. Triethylamine or isovaleric acid were added to the nonwoven. The headspace was then evaluated and compared with a control (100% malodour before adding to the AqFresh-impregnated nonwoven). The results showed that the level of malodour was reduced by up to 95% in the nonwoven treated with AqFresh.

AqFresh has been proven to capture a wide range of malodours<sup>(1)</sup>, including: putrescene and cadaverine (wounds);

isovaleric acid (sweat); trimethylamine (urine); skatole (faeces). It has also been shown to capture volatile organic compounds (VOCs), enabling nonwovens – such as those used in car headliners – to meet the VDA-270 standard odour-testing materials for automotive interiors.

#### See also:

<sup>(1)</sup>*Technical Textiles International*, Summer 2022, Innovations combined to create odour-capturing wound dressing, page 47; https://www.technical-textiles.net/node/76752

### Aqdot.

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### Andritz updates pilot line for the production of plastic-free wipes

Andritz has updated its wetlaid/hydroentaglement (wetlace) carded pulp (CP) pilot line for the production of wipes from carded staple fibres, pulp and combinations of the two, at its competence centre in Montbonnot, France.

The Montbonnot pilot line has been rebuilt so that a new headbox can be integrated into the hydroentanglement (spunlace) line. Pulp can be fed in and entangled with carded staple fibres to produce unique nonwovens for wipes.

Andritz's automated CP lines combine drylaid and wetlaid technologies in a single feed, and are supplied from a single source. The company, of Graz, Austria, says that lines start with equipment for the blending and opening of the stock, then highly uniform webs are formed on the TT card.

The pulp stock is then prepared and formed on the carded web, before a

dewatering step and wetlace hydroentanglement are carried-out. These lines can achieve speeds of 300 m.min<sup>-1</sup> for the production of 50-g.m<sup>-2</sup> products at widths of up to 3.3 m at the winder, with the carded webs consisting of viscose, or alternatively cotton fibres, and softwood pulp of lengths of up to 1.5 mm.

Speaking at *Go Wipes 2021*<sup>(1)</sup> (which was organised by Leatherhead, UK-based consultancy Smithers and took place on 13–14 December 2021), Sales Manager at Andritz, Ioannis Lappas, said: "At our pilot line in Montbonnot in France we can work with customers on the development of new products at speeds close to that of a full production line.

"The benefits of our CP process include the strict separation of the wet and dry processes and the full integration of the pulp fibres into the carded web with minimal linting – a critical parameter – for a very homogeneous web."



Andritz's neXline wetlace carded pulp line combines drylaid and wetlaid technologies in a single feed.

#### See also:

<sup>(1)</sup>Technical Textiles International, Spring 2022, The challenge of going plastic-free in the midst of a pandemic, page 11; https://www.technical-textiles.net/node/76653

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### Shirts for prison personnel produced using recycled lyocell fibres

Lyocell fibres made from cotton scrap and wood pulp by Lenzing (see also, pages 10 and 18) are to be used by Utexbel for the production of shirts for prison personnel in Belgium.

Utexbel, of Ronse-Renaix, Belgium, will provide 80 000 shirts, which also incorporate recycled polyester (PES) fibres, to the Belgian Federal Public Service for Justice (FPS Justice).

Lenzing says that it will be the first time the lyocell fibres (Tencel) it manufactures using its recycling technology (Refibra)<sup>(1)</sup> have been used to produce garments for the public sector. The fibre manufacturer, of Lenzing, Austria, says that its Refibra technology enables it to produce lyocell from a mixture of virgin wood pulp and a substantial proportion (up to 30%) of cotton scraps from garment production. The fibres the company will supply for the shirts will also feature its fibreidentification technology<sup>(2)</sup>, which can be used to identify fibres in finished products, confirming their provenance and providing reassurance for companies worried about inferior counterfeit products finding their way into their goods.

Business Development Manager for Workwear at Lenzing, Alexandra Steger, says: "By utilising Tencel Lyocell fibres with Refibra technology, Utexbel is able to reduce the use of new resources and create workwear products that are more sustainable, yet durable and comfortable at the same time."

Steger adds that the European Commission (EC) has been looking to drive responsible design and the use of sustainable raw materials in textiles, "so it is exciting to see that this has reached the public sector with FPS Justice. While we rely on private-sector consumers to adopt a personal sense of responsibility, the authorities can make a strong impact by mandating sustainability in public tenders." This shirt for prison personnel in Belgium is made from recycled polyester fibres and lyocell fibres produced by Lenzing from cotton scrap and wood pulp.

#### See also:

<sup>(1)</sup>Producing lyocell fibres from postconsumer cotton waste, https://www.technical-textiles.net/node/75306

<sup>(2)</sup>*Fibre-identification system for beauty products,* https://www.technical-textiles.net/node/76493

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### **Events diary**

### Dates correct at the time this issue went to press

### September 2022

### **European Geosynthetics**

4–7 September 2022 Warsaw, Poland Mazurkas Congress & Conference Management; Tel: + 48 (22) 536-4600; Fax: +48 (22) 536-4610; info@eurogeo7.org; https://eurogeo7.org

### Fibre-Reinforced Polymer Composites in Construction

6–8 September 2022 Southampton, UK Composites UK; Tel: +44 (1442) 817502 info@fpcc-conference.com; https://www.fpcc-conference.com

#### **Nonwovens Introduction**

13 September 2022 Online Anaëlle Schütz, EDANA; Tel: +32 (2) 740-1811 anaelle.schutz@edana.org; https://www.edana.org/trainings/nonwovenslearning-cycle/nonwovens-introduction

### Textile Rental Services Association (TRSA) 109<sup>th</sup> Annual Conference

13–15 September 2022 Nashville, Tennessee, USA Susie Jackson, Textile Rental Services Association; Tel: +1 (540) 632-1933 sjackson@trsa.org; https://web.cvent.com/event/c071cff4-6692-45ed-ab36-198fe47e456a/summary

### **Dornbirn Global Fiber Congress**

14–16 September 2022 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

#### International Textile Manufacturers Federation (ITMF) Annual Conference

18–20 September 2022 Davos, Switzerland Secretariat, International Textile Manufacturers Federation (ITMF); Tel: +41 (44) 283-6380; Fax: +41 (44) 283-6389; Secretariat@itmf.org; https://www.itmf.org/conferences/ annual-conference-2021

#### InnoTrans

20–23 September 2022 Berlin, Germany Messe Berlin; Tel: +49 (30) 3038-2376; Fax: +49 (30) 3038-2190; innotrans@messe-berlin.de; https://www.innotrans.de

#### **International Composites Summit**

21–22 September 2022 London, UK Composites UK; Tel: +44 (1442) 817502 info@fpcc-conference.com; https://compositesuk.co.uk/events/ international-composites-summit

#### **The Emergency Services Show**

21–22 September 2022 Birmingham, UK David Brown, Event Director, Nineteen Group; Tel: +44 (20) 8947-9177 dbrown@nineteengroup.com; https://www.emergencyuk.com

### **Circular Nonwovens Forum**

22 September 2022 Brussels, Belgium and online 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/ circular-nonwovens-forum

### 11<sup>th</sup> International Textile Coating & Laminating Congress

22–23 September 2022 Ghent, Belgium Unitex; Tel: +32 (9) 355-2388 secretariat@unitex.be; https://www.unitex.be

#### **FESPA** Mexico

22–24 September 2022 Mexico City, Mexico Leighona Aris, FESPA; Tel: +44 (1737) 228160 Leighona.Aris@Fespa.com; https://www.fespa.com

#### Research, Innovation and Science for Engineered Fabrics (RISE) 2022

27–28 September 2022 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



### Nonwovens Intermediate Course

27–29 September 2022 Brussels, Belgium Anaëlle Schütz, EDANA; Tel: +32 (2) 740-1811 anaelle.schutz@edana.org; https://www.edana.org/trainings/ nonwovens-learning-cycle/nonwovensintermediate-course

### **Innovate: Textile Innovation**

28–29 September 2022 Amsterdam, The Netherlands and online World Textile Information Network; Tel: +44 (113) 819-8155 info@wtin.com; https://innovate.wtin.com

### October 2022

#### **Textile Discovery Summit**

4–6 October 2022 Charlotte, North Carolina, USA Kim Nicholson, AATCC; Tel: +1 (919) 549-8141 education-dept@aatcc.org; https://aatcc.org/events

### The Global Digital Textile Conference

5–6 October 2022 Como, Italy and online World Textile Information Network; Tel: +44 (113) 819-8155 info@wtin.com; https://gdtc.wtin.com

#### World Filtration Congress

5–9 October 2022 San Diego, California, USA Lyn Sholl, Executive Director, American Filtration and Separations Society (AFS); Tel: +1 (615) 250-7792 lyn@afssociety.org; https://www.wfc13.com

### **Turk Kompozit**

6–8 October 2022 Istanbul, Turkey Turkish Composites Manufacturers Association; Tel: +90 (216) 685-1268; Fax: +90 (216) 685-1268; info@kompozit.org.tr; https://turk-kompozit.org/en/home

### **IFAI Expo**

12 October 2022 Charlotte, North Carolina, USA Jennifer Fisher, Registration, Industrial Fabrics Association International (IFAI); Tel: +1 (651) 222-2508; Fax: +1 (651) 631-9334; jarfisher@ifai.com; http://ifaiexpo.com



### **Aachen Reinforced**

17–19 October 2022 Aachen, Germany Institut für Textiltechnik der RWTH Aachen University; info@aachen-fibres.com; https://www.aachen-fibers.com

#### **PCIAW Summit**

18–19 October 2022 London, UK Yvette Ashby, Chief Executive Officer, Professional Clothing Industry Association Worldwide; Tel: +44 (1908) 411415 yvette@pciaw.org; https://pciaw.org/summit

#### **Outlook**

19–21 October 2022 Saint Julian's, Malta 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-2022

#### **Absorbent Hygiene Products**

24–27 October 2022 Online Anaëlle Schütz, EDANA; Tel: +32 (2) 740-1811 anaelle.schutz@edana.org; https://www.edana.org/trainings/onlinenonwoven-training/online-absorbenthygiene-training-course

### November 2022

#### **Innovate: Zero Carbon**

1–3 November 2022 Online, Chinky Tyagi Khare, World Textile Information Network; Tel: +44 (113) 360-9860 ctyagi@wtin.com; https://events.wtin.com/event/f5bac4f2d902-41ba-9153-a4d80622877c/summary

#### **Advanced Engineering**

2–3 November 2022 Birmingham, UK Alison Willis, Divisional Director, Easy Fairs; Tel: +44 (20) 3196-4303 alison.willis@easyfairs.com; https://www.advancedengineeringuk.com

#### **Performance Days**

3–4 November 2022 Munich, Germany Design and Development GmbH Textile Consult; Tel: 49 (89) 9394-6060 info@performancedays.com; https://www.performancedays.com

#### Filtrex

8–9 November 2022 Berlin, Germany Delphine Rens, Marketing and Communications Coordinator, EDANA; Tel: +32 (2) 740-1822; delphine.rens@edana.org; https://www.edana.org/events/filtrex/ filtrex-europe

### **Railway Interior Innovation Summit**

8–9 November 2022 Frankfurt am Main, Germany Andreas Wibowo, Business Development Manager, Red Cabin; Tel: +49 (162) 256-7382 andreas.wibowo@redcabin.de; http://redcabin.de

#### Hygienix

14–17 November 2022 New Orleans, Louisiana, USA Tracie Leatham, INDA (Association of the Nonwoven Fabrics Industry); Tel: +1 (919) 459-3726 tleatham@inda.org; https://www.hygienix.org

#### 25<sup>th</sup> Annual Carbon Fiber Conference

15–17 November 2022 Greenville, South Carolina, USA Tori Schneller, Conference Manager, Gardner Business Media, Inc; toris@gardnerweb.com; https://www.carbonfiberevent.com

#### Space Tech Expo Europe

15–17 November 2022 Bremen, Germany Gordon McHattie, Smarter Shows; Tel: +44 (1273) 916309 gordon.mchattie@smartershows.com; http://www.spacetechexpo.eu

#### **Filtrex Asia**

16–17 November 2022 Shanghai, China 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/filtrex/ filtrex-asia

#### **Nonwovens Advanced Courses Carding**

16–17 November 2022 Tourcoing, France Anaëlle Schütz, EDANA; Tel: +32 (2) 740-1811 anaelle.schutz@edana.org; https://www.edana.org/trainings/nonwovenslearning-cycle/advanced-course-carding

#### Expo Producción

16–18 November 2022 Mexico City, Mexico Lorie Gross, Show Director, ExpoDevCo; Tel: +1 (404) 449-4227 Lorie.Gross@ExpoDevCo.com; https://www.expoproduccion.mx/2021/en

#### ITMA Asia + CITME

20–24 November 2022 Shanghai, China Daphne Poon, ITMA Services; Tel: +65 9478-9543 daphnepoon@itma.com; https://www.itmaasia.com

#### Cleanzone

23–24 November 2022 Frankfurt, Germany Anja Diete, Show Director, Messe Frankfurt GmbH; Tel: +49 (69) 7575-6290 anja.diete@messefrankfurt.com; https://www.cleanzone.messefrankfurt.com

### Nonwovens Advanced Courses

Meltblown/Spunbond 23–24 November 2022 Tourcoing, France Anaëlle Schütz, EDANA; Tel: +32 (2) 740-1811 anaelle.schutz@edana.org; https://www.edana.org/trainings/nonwovenslearning-cycle/advanced-coursemeltblown-spunbond

#### **ISPO** Munich

28–30 November 2022 Munich, Germany Sabine Wagner, ISPO; Tel: +49 (89) 949-20802 sabine.wagner@messe-muenchen.de; https://www.ispo.com/en/munich

### December 2022

### Aachen-Dresden-Denkendorf International Textile Conference

1–2 December 2022 Aachen, Germany Sabine Keller, Deutsche Institute für Textilund Faserforschung Denkendorf (DITF); Tel: +49 (711) 9340-505 add-itc-2022@ditf.de; https://www.aachen-dresdendenkendorf.de/en/itc

#### **GO Wipes Europe**

7–8 December 2022 Amsterdam, The Netherlands Ellie Baker, Events and Sponsorship Sales, Smithers; Tel: +44 (1372) 802291 ebaker@smithers.com; https://www.go-wipes.com

### Autumn 2022—Technical Textiles International

### **Events diary**

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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: Boughton Technical Media Ltd, PO Box 54, 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 Boughton Technical Media Ltd, PO Box 54, WR15 8XN, UK.



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