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Round in circles

Fixes for fragmentation
Fibre-to-fibre recycling
ITMA 2023 round-up

THE INTERNATIONAL MAGAZINE FOR PERFORMANCE & SPORTS MATERIALS

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Front cover:

Mountain visuals specialist Max Draeger shot images for Ortovox to promote the outdoor brand's Far And Light summer collection, with a remote but beautiful location in the Alps in Piedmont as the setting.

IMAGE: ORTOVOX/MAX DRAEGER

Editor

Stephen Tierney

Deputy editor

Clare Grainger

Consultant technical editor

Sophie Bramel

Assistant content developer

Charlotte Robson

Consultant editor

David Buirski

Features writer

Shari Shallard

Publisher

Simon Yarwood

Design

Tim Button

Subscriptions manager

John Collins

Administration

Lisa Fabian-Smith

Editorial enquiries

stephen@worldtrades.co.uk

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Sales offices

Head office - World Trades Publishing

The Old Stone House, Teeton,
Northampton NN6 8LH
Tel: +44 151 928 9288
Email: wsa@worldtrades.co.uk

Global sales

Simon Yarwood
Tel: +44 151 928 9288
Mobile: +44 7887 523872
Email: simon@worldtrades.co.uk

Pakistan sales

Abdul Rab Siddiqi
Email: arsidqi@yahoo.com



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Global news

France Biorecycling company Carbios is to receive €11.4 million in funding from the French government to accelerate R&D work on its enzymatic technologies. The company will also receive an additional €30 million, plus €12.5 million for the construction of its first industrial plant in Longlaville, although some of this funding must be approved by the European Commission. The plant in the Grand-Est region will be the world's first PET biorecycling plant and is due for commissioning in 2025.

UK The UK Fashion and Textile Association (UKFT) has launched a £4 million two-year project to pilot an automated sorting and pre-processing plant for textile waste. The Autosort for Circular Textiles Demonstrator (ACT UK) will support the transition from the manual sorting of clothes and textiles to highly-automated sorting and pre-processing of materials that can then be used as feedstock for recycling processes.

Italy Athletic footwear brand ASICS has launched a limited-edition tennis shoe, in partnership with fashion brand Boss. The product is a limited-edition version of its Gel Resolution 9 shoe; ASICS and Boss designed it for Italian player Matteo Berrettini. It said the shoe would suit baseline players particularly well. It incorporates proprietary technology for extra lateral support and for stability and comfort on court. Matteo Berrettini said he liked the design and expressed hope that the footwear would help bring success to his game.

Finland Specialist fibre developer Infinited Fiber Company has revealed that it has continued its work to build a supplier network for textile waste feedstock in parallel with its plan to build a flagship factory for production of its Infinna fibre. Infinna is a regenerated fibre made from post-consumer cotton-rich textile waste. One new source of textile waste that the Finnish company will use to make the fibre is German textile sorter and recycling group SOEX. Earlier this year, SOEX entered into a new agreement with Infinited Fiber to supply 5,000 tonnes of post-consumer textile waste each year for the next three years.

Togo Germany-based standard Cotton Made in Africa (CmiA) recently held a regional workshop in Lomé, the capital of Togo, after a three-year hiatus caused by covid-19. The three-day workshop included presentations on a project for soil enrichment called CAR-iSMA, and others on water, sanitation, and hygiene. CmiA recently celebrated the 80th birthday of Dr Michael Otto, chairman of the Otto Group and the founder of the Aid by Trade Foundation.

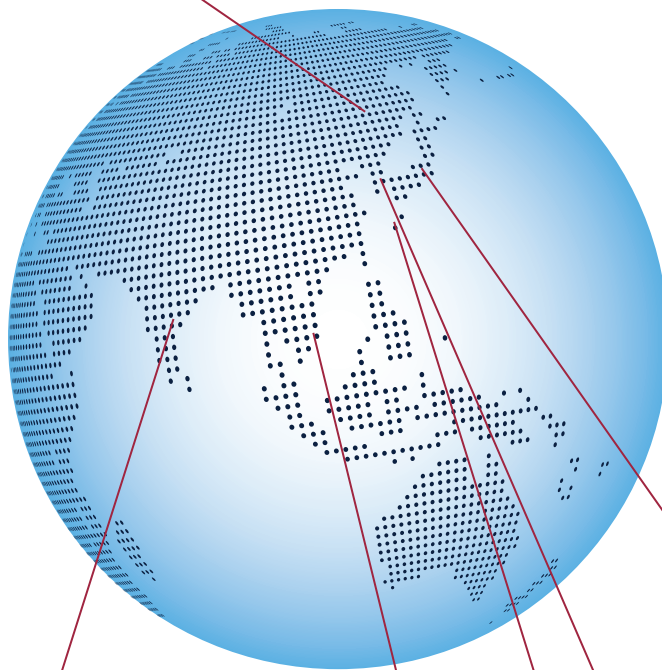
Egypt Sports company Puma has extended its partnership with the Egypt Football Association. It first began supplying official kit to Egypt's national teams in 2019. It did not state how long the new deal was for but said the partnership would be long term. Puma described Egypt as Africa's most successful football nation. It has won the Africa Cup of Nations seven times. As well as supplying kit for men's, women's and youth teams, Puma will supply official match balls for Egyptian league games.

Uzbekistan Stakeholders in the cotton industry in Uzbekistan have signed an agreement with sustainability programme Better Cotton. The agreement will help provide the industry in Uzbekistan with a roadmap towards sustainability developments. Signatories included Tanzila Narbayeva, the chair of a national commission in Uzbekistan for combatting human trafficking and forced labour. The chair of the country's textile and garment industry association, Ilkhom Khaydarov, also signed.

China Domestic fabric design and development professionals have been asked to submit entries for the 2023 China Eco-friendly Fabric Design Competition, now in its sixth edition. Participants have until July 22 to submit five 60-square-centimetre samples of their fabrics. Each product must demonstrate low impact, from raw material through to end of life. Eight categories of fabric are eligible for entry, including sportswear and casualwear.

US Outdoor footwear company Rockport has filed for bankruptcy protection. On June 14, a court in Delaware received petitions from Rockport and four subsidiary companies for relief under chapter 11 of the United States Bankruptcy Code. Immediate reports said Rockport would operate a 'business as usual' policy during the chapter 11 process, but they made it clear a specialist turnaround company, New Jersey-based PKF Clear Thinking, had been appointed "to maximise value recoveries for all stakeholders". Rockport chief executive, Gregg Ribbat, has resigned from his role, but will help PKF Clear Thinking with the transition.

Canada Vancouver-based brand Lululemon has joined The Sorting for Circularity USA consortium as an external brand partner and adidas has become the project's lead sponsor. Innovation hub Fashion for Good, together with Resource Recycling Systems, launched the 18-month consortium project in January this year.



India Indo-Dutch regenerative cotton organisation Raddis Cotton, which works directly with 18,000 smallholder farmers and their communities in southeast India, has joined hands with trims, labelling and supply chain traceability tools developer Trimco Group. Trimco's aim is to spur production of rain-fed, regenerative fibre over an extended period, and to incorporate the fibres into its trims and fabric label ranges.

Vietnam Textiles traceability technology provider FibreTrace has given details of a project in Vietnam to apply its solutions to merino wool from Australia. The technology works by applying a GOTS-approved, scannable, luminescent pigment solution to fibres, allowing these to be traced across the supply chain. Yarn manufacturer Fashion Enterprise and garment producer R&T Industry have worked together on the project and have successfully used FibreTrace up to spinning stage. They will now move ahead and test the effectiveness of the pigments through the scouring stage before bringing products enhanced with FibreTrace to market in 2024.



Japan Fastenings manufacturer YKK has launched a 3D trim configurator tool alongside Vntana, a US developer of back-end infrastructure technologies for 3D assets and augmented reality platforms. YKK's new trim creator, accessible via the zip specialist's digital showroom enables its customers to design and visualise custom 3D renderings for zippers and fasteners, explore various component options, plus generate item codes and URL addresses for their concepts, which they can then share with colleagues.

South Korea The port city of Busan has relaunched its future textile materials development council. First set up in 2017, the body had not convened since the onset of covid-19. A relaunch event in mid-June was attended by around 50 individuals, including representatives from nearby textile businesses. Organisers outlined a plan of action, new mechanisms of support for members and issued details of seminars and networking opportunities for industry professionals based in and around the city.

Taiwan Shinkong Synthetic Fibers Corporation has partnered with US-based Ambercycle to increase production of its Cycora yarns in response to increasing demand. Cycora is a regenerated polyester made from end-of-life textiles, using Ambercycle's molecular regeneration technology. Sam Hu, general manager at Shinkong, said: "Ambercycle's product quality is one of the best regenerated polyesters available in the market, or in the development phase, worldwide. We are able to make performance specialty yarn products with Cycora that are not able to be made with other materials."

Industry & Innovation

Six-week smell test

Fabric developer Polartec has launched a new product called Fresh Face, which it describes as a natural, renewable, and biodegradable odour reducer for fabric technologies. It is based on mint oil.

It will use Fresh Face first in its Delta fabrics and has said the technology will help keep wearers cool thanks to the wicking and moisture management properties it gives to fabric.

To test the idea, it had people wear garments endowed with Fresh Face for six weeks solid and subjected them to a comparative smell test. The garments then went through a 50-wash cycle to simulate ageing and were the subjected to a follow-up wear-test of another six weeks.

"The result was undeniable," Polartec stated. Fresh Face technology delivers the same level of performance of older, less sustainable odour control methods. Director of product management, Karen Beattie, said Fresh Face represented "a significant breakthrough in our quest for sustainable textile solutions".



CREDIT: POLARTEC

PET recycling start-up secures BASF funding

Chemicals group BASF has taken an investment in a Swiss start-up company called DePoly, a developer of chemical recycling technology.

Founded in 2020, DePoly has developed technology that converts mixed post-consumer and post-industrial polyester plastic waste streams, including polyester-containing fabrics and fibres, back into their precursors. Its claim is that the process delivers new precursors "at virgin-grade quality".

In addition, it says its process is energy-efficient because it operates at room temperature and standard pressure. Furthermore, there is no need for pre-sorting, pre-washing, or removal of contaminant materials.

On the strength of this, through its in-house venture capital company, BASF co-led a recent seed financing round in which DePoly secured CHF 12.3 million in funding. The funding will enable DePoly to accelerate scale-up and development of its technology, leading to the building of a demonstration plant, which it expects to be operational before the end of 2024.

Beyond fossils

Outdoor brand Vaude is to work with the biochemicals division of industrial group UPM to develop a fleece jacket made from wood-based polyester. The companies have claimed this will be an industry first, adding that it will be a step towards taking performance apparel "beyond fossils".

Resin used to make polyester for the jacket will contain 30% monoethylene glycol, which is traditionally sourced from crude oil. In the process UPM and Vaude will use, this ingredient will be entirely replaced with a bio-monoethylene glycol (BioMEG), UPM's BioPura.

UPM Biochemicals has described BioPura as a drop-in solution that can be easily implemented into existing polyester manufacturing processes because, on a molecular basis, it is identical to the MEG in use at the moment.

Indorama Ventures will polymerise and spin the polyester yarn and fabric manufacturer Pontetorto will process the yarn into the fleece fabric that Vaude will use to produce the final garment.

Time is money

Italian fibre producer Fulgar has worked with Swiss-German textile finishing and dyeing technology provider CHT Group to develop a new textile process.

Combining fibres from Fulgar and dyeing technology from CHT, the companies say the new process can result in finished textile products that require less water, less energy and less time, while maintaining colour solidity.

They said running the process with Fulgar's 100% bio-based Evo yarns with CHT dyeing systems had generated a saving of 64% in water, of 50% in energy and 50% in time compared to standard dyeing processes. Using Fulgar's Q-Cycle 100% recycled 6.6 mass-balanced nylon fibre generated savings of 32% in water, 33% in energy and 36% in process times.

One bath is enough

Pulcra Chemicals and fashion group Inditex have worked together to develop a pretreatment and dyeing process for cotton and polyester-cotton blends. They have said the new system, which they have called Sustineri Coloring, can result in savings in water, time and energy.

It is based on what Pulcra has called newly engineered process chemicals that allow a one-bath pretreatment and dyeing process for dark, medium and light shades of cotton and polyester-cotton fabrics by exhaust method. The process is already in use at selected mills and their experiences so far show reductions in pretreatment and dyeing processing time of up to 60%, with energy and water consumption down by as much as 60% and 80% respectively.

Algae action

WNDR Alpine, the outdoor brand launched by the biotechnology company Checkerspot, is releasing its Phase Series, an activewear line that uses ingredients derived from microalgae. The team has taken the microalgae oil used in WNDR Alpine skis and boards and worked with Swiss green chemistry company Beyond Surface Technologies to create miDori bioWick WA, a finish designed to move moisture away from an athlete's skin to accelerate evaporation.

Plant-derived

Fibre developer Teijin Frontier has launched a new functional fabric for sportswear, calling the product Solotex Liberte. It is partly made from plant-derived raw materials.

It offers “exceptional stretchability”, according to Teijin. Other properties it highlighted at the launch were natural swelling and high levels of colourability and lustre.

Its construction uses polytrimethylene terephthalate (PTT) polymer as the core yarn and low-shrinkage PTT monocomponent as the sheath yarn. After the core and sheath yarns are mixed using fibre processing technology, they are knitted using high-density knitting equipment.

Teijin said this “side-by-side composite yarn” achieves high stretchability by laminating two types of polymers with different heat shrinkability characteristics to form a coil-like crimp structure.

It added that apparel made from Solotex Liberte will provide comfort thanks to its soft stretch, light weight, water absorption and quick drying properties. 

Water saving

Specialty chemicals group Archroma has worked with Portugal-based textile manufacturer Somelos to develop a dyeing and finishing process for cotton that generates no wastewater.

In conventional cotton dyeing and finishing, water-intensive processes include one to achieve colour intensity and another to achieve a washed-down contrast. “Relying on such resource-intensive processes is of particular concern in locations affected by drought and water scarcity, like Portugal,” the companies said.

Their alternative is called the Dry Dyeing Ox Finishing process. It is based on Archroma's Pad-Ox dyeing process, which combines oxidation and fixation into one step, and the latest technologies for wash-down effects, including ozone and laser treatments.

Tests so far show that this delivers water savings of up to 97% compared to conventional cotton dyeing and finishing, only using water to prepare the dye and oxidation baths. 

Pulp progress

Fibre producer Lenzing and Swedish forest industry group Södra's joint recycling project has received a €10 million grant from the European Union. The money will help to grow a recycling system that blends textile waste, creating a pulp called OnceMore, at Södra's mill at Mörrum, Sweden.

A new plant will blend 50% recycled content with 50% renewable wood from sustainable forestry in Sweden and will be capable of processing 50,000 tonnes per year of blended post-consumer textile waste to produce 60,000 tonnes of textile pulp.

The system will use post-consumer coloured textiles containing a mix of cotton, polyester and other components, including elastane. The project will begin before the end of this year and continue for four years. 

Biosphere circulation

Japanese biotech start-up Spiber has been joined in a “biosphere circulation” initiative by long-standing brand partners Goldwin and Pangaia.

Both brands will supply unwanted textiles and apparel as feedstocks for Spiber's microbial fermentation process, out of which it produces its brewed protein polymers and fibres. Agricultural by-products are another source of important ‘end-of-use nutrients’, which the start-up upcycles into biodegradable proteins via proprietary technology. The resulting material is microbially digestible, forming part of what Spiber calls a “circular ecosystem”.

It aims to commercialise this system over the long term and has been testing the efficiency of different fibres, dyes and processing chemicals for how well they can be degraded back into useful nutrients as part of a viable closed loop.

Spiber says it will publish its findings, to which Goldwin and Pangaia will contribute, “in the near future”. It also invited stakeholders from across the industry to join in its efforts. 

Coffee time

Performance foam manufacturer Dahsheng Chemical has launched Dreamcell Xpresso. It describes the new product as “an innovative foam technology” made with spent coffee grounds. The insole material that results from this will deliver what Dahsheng has called “a superior footwear product, designed to reduce waste and greenhouse gas emissions”.

Hemp revival

UK-based machinery maker Tatham has delivered an advanced industrial hemp processing line to a customer in Turkey for the processing of staple fibres.

Director Tim Porritt said Tatham had received a high number of enquiries at ITMA about technology for the decortication, fibre opening and fabric forming of hemp.

Polyethylene demand

Chemicals group BASF has broken ground on a new polyethylene (PE) plant at its site in Zhanjiang, Guangdong province, China. The new plant will have a capacity of 500,000 tonnes of PE per year and will serve what BASF has called fast-growing demand in China. Production is scheduled to begin in 2025.

Freudenberg in China...

Performance materials developer Freudenberg has announced a new range of interlinings, the 37xx PES Series, that it says offers the feel of cotton and “the modern features of enhanced durability, increased yield and low-temperature fusing”. The materials have a 100% PES base with what Freudenberg has described only as “a special finish”. Freudenberg is producing the 37xx PES Series at its factory in Nantong, China.

...and in Italy

Performance materials developer Freudenberg has expanded a facility it already had in place at Sant'Omero in Abruzzo in eastern Italy. As part of the project it has now established a competence centre there for finishing and coating apparel interlinings. New finishing and coating technology is now in place at the site. Its specialism will be the production of base materials for apparel interlinings. Freudenberg said the expanded facility would also improve options for offering customers products guaranteed to originate in Europe. 

People

Chief executive choice

VF Corporation, the parent group of The North Face, Timberland, Icebreaker, Altra Running, Jansport, Vans and other brands, has announced that **Bracken Darrell** will be its new chief executive.

Mr Darrell takes up the role in July, moving from software developer Logitech International, where he has been chief executive since 2013.

He will replace **Steve Rendle** at VF Corporation; Mr Rendle stepped down at the end of 2022.

"Like millions of people around the world, I love VF's iconic brands," Bracken Darrell said. "I'm impressed by this organisation's sustained ability to keep its portfolio of brands at the forefront of culture. I look forward to working closely with the board, leadership team and the talented associates across VF to build on the initiatives under way to strengthen business performance and drive strong and sustainable growth. I can't wait to get to work." 🌐



CREDIT: VF CORPORATION

New chapter in China

Sports brand Puma has appointed **Shirley Li** as its general manager in China as part of the company's strategy to grow sales. Ms Li previously worked as vice-president of wholesale at adidas but joined Puma in March as commercial director.

She replaces **Philippe Bocquillon**, who becomes area manager for Greater China, which includes China, Taiwan and Hong Kong. Puma chief executive, **Arne Freundt**, said: "I am very excited that we will open a new chapter for Puma China under the leadership of Shirley."

In April, the German brand reported a return to growth in China for the first time in two years. 🌐

C-changes at Under Armour

Sports brand Under Armour has announced two new appointments to and two departures from its C-suite.

It has appointed **Jim Dausch** as chief consumer offer and **Danny Miles** as chief technology officer. Those leaving to pursue other opportunities are chief operating officer, **Colin Browne**, and chief product officer, **Lisa Collier**, with the changes to take place over July and August.

Chief executive, **Stephanie Linnartz**, paid tribute to her departing colleagues and welcomed the new arrivals. On the subject of appointing a chief consumer officer, she said it would help "transform Under Armour faster by driving sharper focus and execution". 🌐

Presidential visit

The president of France, **Emmanuel Macron**, visited the ASF 4.0 athletic footwear factory in Ardoix, south of Lyon, in mid-June. He said he wanted to show support for companies that had chosen to produce in France rather than in lower-cost overseas locations.

ASF 4.0 is a spinoff of textile group Chamatex. It has begun production at the factory and shoes it has made for Millet and Salomon will reach the market soon. Shoes for Babolat will follow next year.

The production set-up uses high levels of automation; ASF stands for 'Advanced Shoe Factory'. Its ambition is to increase capacity to 250,000 pairs per year in 2024 and to employ 80 people. 🌐

Tougher for 50 years

US fabric developer Cordura has marked 50 years of supplying industry by spotlighting key innovations and collaborations, in addition to the expansion of its digital 'fabric finder' platform. "We have continuously worked to create products that are stronger, tougher, lighter and longer-lasting," the ingredient brand's business development director, **Cindy McNaul**, said.

Switch at Sorel

Outdoor group Columbia Sportswear has announced that **Mark Nenow**, president of its Sorel outdoor footwear brand, has resigned from his position on health grounds. Mr Nenow joined the company in 2007 to lead footwear and became president of the Sorel brand in 2015. Chief executive, **Tim Boyle**, said Mark Nenow's leadership had been "invaluable to this company". The group announced that **Craig Zanon**, senior vice-president of its emerging brands, would lead Sorel while it searches for a replacement.

Sprint support

Fibres and textiles group Toray Industries has completed a four-year agreement with Japanese sprinter **Abdul Hakim Sani Brown**. Under this arrangement, he will receive support from Toray and appear in its advertisements while helping the group develop materials. Toray will also support his interest in contributing to inclusiveness in sport and society at large. Commenting on the new arrangement, president of Toray, **Akihiro Nikkaku**, said the partnership reflected "a shared desire to pursue international excellence".

Sales shuffle

Materials developer PrimaLoft has announced a series of changes to its European sales team. Key appointments include the promotion of **Leonardo Loro** to sales leader for Europe, and the recruitment of **Mario Vlietinck** to the role of territory manager for France, Denmark and Benelux. Reorganisation elsewhere means that **Bartosz Lassak** will oversee outdoor performance segment sales in the UK and North Africa, as well as Turkey and Eastern Europe.

General manager appointment

Developer of open-cell foam technology for footwear OrthoLite has announced **Vikash Bajargyan** as the new general manager of its business in India.

He has 18 years' experience of the footwear industry and, before joining OrthoLite, worked for Coats Group, leading its footwear division across India and Bangladesh. Before Coats, he worked at specialist footwear materials developer Texon in Chennai for six years. Coats acquired Texon in July 2022.

In his new role, Mr Bajargyan will lead OrthoLite's manufacturing and business development in India, as well as establishing and managing relationships with footwear brands and tier-one factory partners.

Chief executive and founder of OrthoLite, **Glenn Barrett**, said Vikash Bajargyan would be the ideal leader of the company's efforts to build new business opportunities "in this important region". Mr Barrett described India as "a thriving market both for the domestic consumer market and the export market, with tremendous potential".

OrthoLite opened a manufacturing facility in Ambur, Tamil Nadu, in June 2021. The factory is now fully operational and ready to expand, it stated. It added that 66 of the 500-plus footwear brands to which it supplies open-cell foam materials manufacture in India. 

Climate-neutral

The chief executive of clothing group H&M, **Helena Helmersson**, travelled to Bangladesh recently and held discussions with the country's prime minister, **Sheikh Hasina**, and minister for foreign affairs, **Shahriar Alam**. Discussions centred on the development of the garment industry in Bangladesh.

During the visit, Ms Helmersson, on behalf of H&M, signed a new memorandum of understanding with the Bangladesh Garment Manufacturers and Exporters Association (BGMEA), which the Swedish group described as "a partnership towards a circular and climate-neutral garment sector in Bangladesh". 

Europe move for Patagonia

Outdoor group Patagonia has named **Nina Hajikhanian** as general manager of its business in Europe.

She joined Patagonia in Amsterdam four years ago and worked first as e-commerce director for Europe and, more recently, as director of the group's direct-to-consumer business in the same part of the world. Before joining Patagonia, she spent almost eight years at adidas.

In her new role, she will oversee the work of the 12 stores Patagonia has in the region and the 300 people who work for the company.

Originally from Iran, Nina Hajikhanian grew up in Austria and describes herself as someone who loves nature and the outdoors, with a special passion for skiing, hiking, mountain biking, surfing and climbing. 

Big hitter

Sports group Pentland Brands, parent company of Speedo, Berghaus, Canterbury, Mitre and others, has appointed **Graham Burrridge** as its new chief finance officer. Mr Burrridge has more than two decades' experience in the consumer and retail sector, having held notable roles at advertising group WPP, Disney and Apple.

He is a former chief executive of Disney Stores Europe. He will now take on responsibility for the Pentland Brands finance function and will help the business deliver its business strategy and growth plans. 

Commercial adjustment

Specialist viscose fibre manufacturer Kelheim Fibres has announced that its commercial director, **Matthew North**, retired in July after nearly 30 years with the Bavarian company. Its new sales director will be **Mark von der Becke**, who joined Kelheim in January after an extensive career in sales in the chemicals industry in Germany Switzerland and China. Director of new business development, **Dr Marina Crnoja-Cosic**, will take on responsibility for marketing and communications. 

Forum Hi reimagined

Sports group adidas has worked with New York-based accessories designer **Tulie Yaito** to come up with a new "luxurious take on the Forum Hi", a basketball shoe that adidas first launched in 1984. Ms Yaito is known for vibrant designs and a creative approach to colour and materials. She said the collaboration was "a full-circle moment" for her because the Forum Hi was the first pair of sneakers she owned.

Supporting partner

Fibre developer The Lycra Company was a supporting partner of the United Nations Conscious Fashion and Lifestyle Network annual meeting in June. At the meeting at the United Nations headquarters in New York, the company's sustainability director, **Jean Hegedus**, was a panellist in a discussion on the theme of 'Industry, Innovation and Infrastructure: Designing a Better Future'.

Double challenge

Mountain sports equipment brand Rossignol has appointed **Liz Wilson** as general manager of the group's softgoods division, which has a remit of doubling clothing and footwear sales by 2026. She will be based in the group's Milan offices where she will oversee the management of teams based in Italy, France and China. She previously held roles at Nike and the North Face.

Brand president

Footwear and clothing group Wolverine Worldwide has appointed **Melissa Mullen** to the role of global brand president of Sweaty Betty. Wolverine acquired the specialist women's activewear brand in August 2021. A former Nike executive, Ms Mullen's most recent role was as general manager for the UK and Ireland for cosmetics and perfume brand Jo Malone London.

Merino move

New Zealand Merino has appointed **Angus Street** as its new chief executive officer. He replaces long-serving **John Brakenridge**, who had led the sales and marketing organisation that promotes the fibre in the international marketplace on behalf of New Zealand's wool growers since its launch in 1996. Mr Street has joined from Australian company AuctionsPlus, an online marketplace for the agricultural sector. 

Backtrack

29.06.2023

EOCA celebrates latest fundraising
Brakenridge successor at NZM announced
H1 revenues up by 9% for H&M
UN issues Sustainable Fashion
Communication Playbook

28.06.2023

Nike's winged vents autonomously adapt
to wearer

26.06.2023

Bricks bring clicks in On's experience

23.06.2023

Cotton can push for social and
environmental transformation

22.06.2023

Xtep to donate another ¥100m in
support of rural youths
Material Exchange launches online
deadstock market

21.06.2023

Renewcell 1 gets RCS 100 seal of approval

20.06.2023

ITMA visitors surpass 2019 figures

19.06.2023

BTMA hopes to capitalise on ITMF's
global ecosystem

16.06.2023

OIA launches clean chemistry network
for its membership
Global suppliers at Cinte Techtextil China
to more than double

14.06.2023

Volleyball brand spies gap in the market

13.06.2023

NTX and Dae Young to expand
waterless colouration
Teamwork creates solution for
polycotton waste

12.06.2023

Kornit's technology speaks to
nearshoring trends
Messe Frankfurt, Vietrade to launch
Vietnam fair next year

Limitations on space make it impossible for us to run more than a carefully selected sample of industry news in WSA. However, we publish hundreds more stories on www.sportstextiles.com, one of the most comprehensive archives of news anywhere on the web for textiles, apparel, footwear and equipment for sports and outdoor. Below are just some of the headlines that have appeared on the site in recent weeks.

09.06.2023

Colourizd and Archroma announce
collaboration

Inditex-Jeanologia air washer extracts
60% of microfibres

08.06.2023

ITMA kicks off in Milan
Equip rolls out new 'material facts tables'
for Rab

07.06.2023

Brands prepare to take part in World
Oceans Day exhibition
Lenzing finds solution for discoloration of
wood-based garments
VF's largest distribution centre is
now operational

06.06.2023

Solar energy drive continues for YKK
Christchurch wool company renews
partnership with Oritain
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Scientific research into microplastic pollution has confirmed the presence of very tiny textile fibres in air, marine and freshwater environments, soil and rainfall. Little is known of the pathways they take to blanket the planet, but new solutions to stem the flow of fibre fragments are now coming to market.

No quick fix for fibre fragmentation

Now widely recognised as critical, microfibre shedding from textiles and apparel not only taints the entire industry but specifically developments initially believed to be more sustainable. While sportswear brands have globally shifted to recycled polyester, it is suspected of being more prone to fibre fragmentation than a brand new polymer. The switch to biodegradable synthetic yarns is another solution touted as less impactful. But here again, their ability to decompose flags them as another possible source of microplastic pollution. As for natural fibres, the impacts of dyeing and finishing on their ability to fully disintegrate has yet to be ascertained.

Insights into the phenomenon, first identified in 2011, are slowly coming forward. The Microfibre Consortium (TMC) is to release a research paper on recycled polyester in this July. There is now a consensus on suitable terminology: 'fibre fragmentation' has come forward as superior to 'microfibre', a word already in use in the textile industry, and to 'microplastics', a term that could lead consumers to believe that cellulosic and natural fibres are not part of the problem. Another positive development is that authorities, in the EU particularly, now distinguish between microplastics that are *intentionally* added to a product, such as those found in cosmetics, with those that are *unintentionally* released into the environment, which is the case in textiles. This suggests that future legislation will make the same distinction. As of yet, there are few measures, with the exception of the mandatory equipment of microfibre filters on domestic washing machines in France from January 2025.

Clothes shed fragments of fibres when worn and laundered, and filters, if used properly, will help reduce this insidious form of pollution. Upstream, as well, textile mills are well aware that they need to address this issue to stem the flow as early as possible in the supply chain. Capturing their own microfibre discharge in wastewater treatment systems would conceivably have a greater impact than trapping them in home washing machines. The Microfibre Consortium, a research organisation launched in 2018 specifically to investigate solutions for the textile



industry, has been working with the ZDHC Foundation since 2021. At a panel talk at ITMA, last month, TMC founding director Sophie Mather and Prasad Pant, from the ZDHC South Asia Foundation, said a task force had been created. Mr Pant noted that the next iteration of ZDHC's wastewater guidelines would include specific recommendations for microfibres.

Hong Kong-based textiles research centre HKRITA has investigated the use of sound waves to separate and remove microparticles from wastewater and developed what it calls Acousweep with support from the H&M Foundation. It is said to be more effective than membrane-type filters that require regular replacement as the minuscule fibres tend to block their pores. A lab scale device has been built that can treat 20 litres of water per hour. A larger sized model is expected to be able to handle 5,000 to 10,000 litres of water per hour.

Italian mill Trerè, the maker of Uyn performance baselayers, has taken measures to mitigate the release of microfibres in its facility by upgrading its wastewater treatment plant. It says that it now retrieves 425,000 microplastic fragments every day, the equivalent of more than 100 million every year. The company has also developed a new treatment that reduces microplastic shedding by 20% during consumer use and washing.

Hong Kong-based textiles research centre HKRITA is in the process of scaling up a new filter-free device known as Acousweep that uses sound waves to separate out microfibres from wastewater.

CREDIT: HKRITA

US activewear brand Under Armour has joined The Microfibre Consortium and is testing all of its textiles to quantify their shed rate. Its goal is that 75% of the fabrics in its products be made of low-shed materials by 2030.

CREDIT: UNDER ARMOUR



Testing and comparing

Progress in assessing fibre shedding from textiles has led to the development of a series of standardised tests in recent years. While it is not yet known which of the countless parameters in a textile's make-up – fibre composition, yarn or fabric construction – contribute the most to microfibre loss, it is now possible for a mill or brand to compare different fabric references before deciding which one to integrate into a collection. Three protocols, developed by TMC, the American Association of Textile Chemists and Colorists (AATCC), and the Hohenstein Institute, are now available (see box). A fourth one, a certified CEN/ISO (EU) standard, is in the works.

The samples tested using TMC's protocol feed a database and knowledge hub that should, in time, help give a better understanding of the elusive phenomenon. "It is an industry-first that currently has more than 6,000 data points and is growing. It will help us begin to understand the contributing factors in fibre loss," says Ms Mather. At this stage, it remains difficult to posit any single factor, notes Diana Wyman, AATCC executive vice-president, but she agrees that "we'll start to see trends as we do more testing."

Sports brands are feeling the heat and taking measures to address fibre loss in their product lines. The Microfibre 2030 Commitment launched by TMC now counts 83 industry signatories. Among these, Patagonia had chosen a fleece fabric created by Tessile Fiorentina and made from a blend of 42% recycled wool, 52% recycled polyester, 3% recycled polyamide and 3% other fibre, which was found to shed at a level above its internal threshold for knit fabrics. After a series of tests, using TMC's method, yarn quality was identified as the greatest contributor to shedding and a new fabric developed that reduced fibre emissions by 44%. Swedish outdoor brand Fjällräven is said to have added fibre fragmentation as a selection requirement for all existing and new synthetic fabrics used in its ranges, which it tests using the TMC protocol.

Sports brand Under Armour has also decided to test all fabrics it uses for fibre shedding and is working with TMC. Its goal is that 75% of the fabrics in its products be made of low-shed materials by 2030. It expects to bring products that have been improved through this process to market in 2024. It has said that while consumers find soft fabrics to be more appealing, these are regrettably the ones that shed the most.

Very much aware that its legacy fleece is considered a high-shed fabric, Polartec has been working on fixes since 2018, the year it launched Polartec Power Air, a three-layer thermal knit designed to minimise microparticle discharge. Further research has led to the creation of Shed Less Fleece, launched this year. Tested using the AATCC method, it has been found to reduce fibre shedding during home laundering by an average of 85% compared to a baseline fabric. This, the company says, is the result of new processes that combine yarn construction, knitting, chemistry and



The Microfibre Consortium test method was developed by scientists at the University of Leeds.

CREDIT: ALICE DAVIES AT UOL

manufacturing techniques. These are now applied to Polartec's 200 Series fleece, whose fuller hand feel is reminiscent of the first polar fleeces the company launched back in 1981.

Innovation in processing

Textile technology providers are also working on the issue and developing systems that mitigate fibre loss during manufacturing. UK-based technology provider Xeros, a maker of laundry machines, has developed filters for domestic and industrial washing machines. "We are developing a range of filtration solutions based on our core technology that addresses microfibre pollution across all wet processes in the textile industry," says Dr Paul Servin, company CSO. Xeros has recently partnered with the University of Surrey to explore the possibility of recycling the captured



Performance fabric maker Polartec, a division of Milliken, has applied its 'eco-engineering' expertise to upgrade its iconic 200 Series fleece. The new Shed Less version reduces fibre fragmentation during laundering by an average of 85%.

CREDIT: POLARTEC



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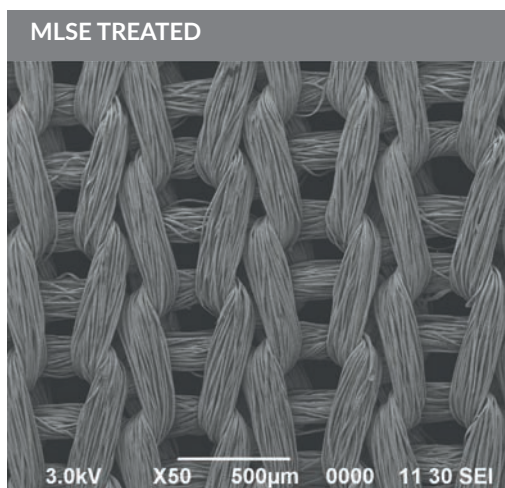
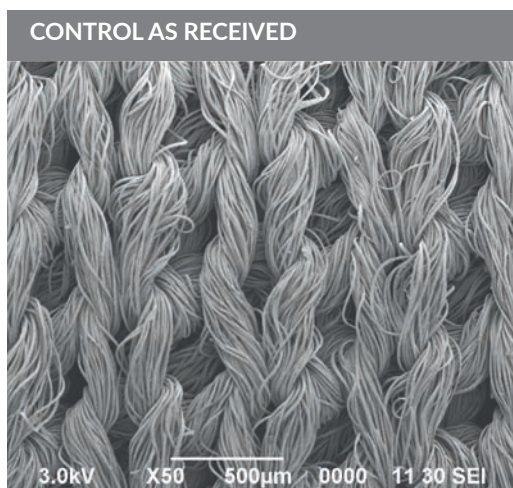
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THE MATERIALS SHOW



The multipurpose Multiplexed Laser Surface Enhancement (MLSE) machine developed by MTIX Limited combines laser and plasma technologies and is said to be able to remove up to 55% of loose microfibrils in one pass.

CREDIT: MTIX LIMITED

microfluff to make a new 'carbon material'.

Multiplexed Laser Surface Enhancement (MLSE), a technology developed by MTIX Limited, also based in the UK, takes a radically different approach to mitigating fibre loss from fabrics, before cutting and sewing. It was one of the award winners of the Conservation X Labs' Microfibre Challenge with lifestyle brand Pangaia in 2022. Invented by laser specialist Pravin Mistry, the patented digital processing machine uses a combination of technologies that include laser and plasma to treat textiles. A near waterless and chemical-free solution, it can remove microfibre fluff from the surface of a fabric but can also be used to prepare a textile for dyeing or apply a water-repellent, fire-retardant or antibacterial finish. "Our technology can remove up to 55% of microfibrils in one pass," Phil Mansour, chief executive of MTIX International, the owner of MTIX Limited, tells WSA. Each specific function is the result of a proprietary process algorithm, he says. A specific algorithm thus needs to be elaborated for each function desired and each type of fabric. The innovative technology also comes with a novel business model, as MTIX installs the machine for free in a factory and charges a fee by metre processed. Mr Mansour points out that treating a fabric at the mill before dyeing would stem fibre migration further down the line and lift the load off consumers' home laundering.

Similar thinking has inspired Jeanologia, a technology provider for the textile industry based in Valencia, Spain. At ITMA, it presented a new device, the Air Fiber Washer, which uses air, as its name implies, to force out loose microfibrils from a garment before it goes on sale. Developed with support from Spanish fast-fashion retailer Inditex, it is designed to be installed in cut-and-sew facilities. "The first wash is the one that releases the most microfibrils. During manufacturing, loose fibres tend to stay in a fabric or garment, and these will come out in the first wash," says Begoña García, project manager at Jeanologia. The patented device sends air through a specially designed polyhedral drum and is said to dislodge up to 60% of the loose microfibrils.

New solutions are thus coming to market to

address the issue of unintentional microfibre release. Believed to account for 15% to 35% of global microplastic pollution, fibre loss from clothing is not a small contributor to the problem. Treating fabrics upstream does seem to be the best way to capture the minuscule loose ends that we, like all living species, breathe in and ingest every day. 

TIME FOR TESTING

Counting the nano-sized fibrils that escape from a yarn, fabric or garment is an incredibly tricky task. From the preparation of the specimen samples to creating lab conditions that will not contaminate the results, the development of a test protocol for assessing microfibre shedding has been a long process. The methods now available are based mostly on laundering and colour fastness tests. Basically, they involve weighing a filter before and after filtering the wash water, and measuring the increase expressed as a percentage of the mass of the original specimen or in absolute weight. The Microfibre Consortium Test Method was released in 2021. "Using the pre-established ISO 105-C06 at its core, it has been developed to use standard lab equipment and provide accurate comparable data, in a manner that can be scaled commercially across a range of laboratory facilities," Sophie Mather, TMC founding director tells WSA.

Fiber Fragment Release During Home Laundering, the test developed by the AATCC, is nearly identical to TMC's, and is based on an accelerated laundering procedure, says AATCC executive vice-president Diana Wyman. It is important to note, she adds, that "it is not an exact representation of what will happen in real life. It is a relative measure that should be used to compare two fabrics made with different yarns, two vendor options or two generations of a same reference." With regards to expressing the result in a percentage or absolute weight, she points out that "a heavy fabric will usually shed more fibre mass, so a percentage may provide a fairer result. But sometimes you want to know the net amount of fibre fragment shedding."

German testing service provider Hohenstein released its own test method (DIN SPEC 4872) earlier this year. In addition to fibre release, it assesses their biodegradability and ecotoxicity. Hohenstein assigns a classification code on tested materials that "reflects the degree of fibre discharge, the biodegradation rate and the ecotoxicological potential of the textile product under investigation".

As part of the Cross Industry Agreement (CIA) for the prevention of microplastic release during washing, European textile and apparel industry body Euratex released a document comparing the TMC, AATCC and forthcoming EU protocols. It notes that a collaborative approach has been employed throughout to align parameters. "Using a harmonised test method is critical for removing variables related to washing conditions, enabling product-to-product comparison and root-cause analysis," says Ms Mather.



New fibres in the loop

Tellingly, the European Commission's directive for the fashion industry is called the EU Strategy for Sustainable and Circular Textiles. It is part of the European Green Deal, as well as the Circular Economy Action Plan. The need to increase the rate of recycling textiles into textiles, from barely 1% today, is central to its policy. Measures in discussion span the entire lifecycle of products, from mandatory minimums for the inclusion of recycled fibres in textiles, which would be part of the Ecodesign for Sustainable Products Regulation, to the revision of the Waste Framework Directive, with the goal of removing barriers to the creation of a transnational recycling infrastructure.

The aim, the Commission plainly states in its communication to the EU parliament, is to "mobilise designers, producers, retailers, advertisers and citizens in re-defining fashion".

This has led, for instance, to the installation of bins in stores for consumers to drop off the goods they no longer want, seen at adidas, Uniqlo, H&M and Ikea, to name just a few. But these schemes have been found to be less than adequate. Most often, the discarded items are redirected to charities and waste collectors; the likelihood that they might be recycled into new fibres is low. There is probably a better chance they will show up in the heaps of clothes polluting the beaches of Ghana or the deserts of Chile.

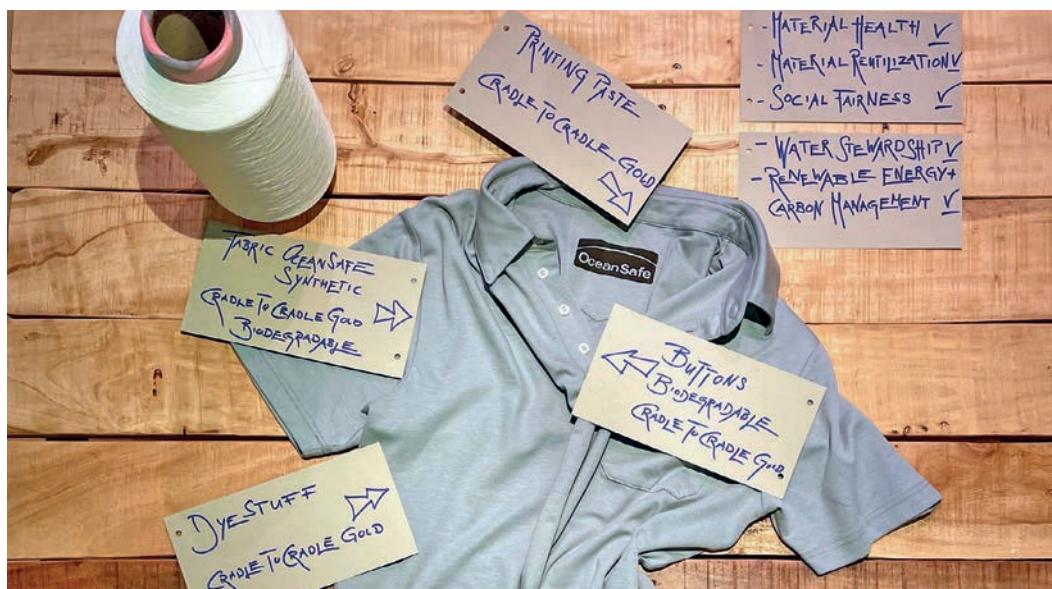
The need to increase fibre-to-fibre recycling and lack of progress in achieving this is being called out by every sustainable fashion industry coalition and report. A few forward-thinking entrepreneurs have devised inherently circular business models, offering services and solutions to bring a product from A to Z and back again.

Re-defining fashion

Re-defining the fashion system itself may be what is needed to make the industry shift from a linear to a circular economy. Companies, such as OceanSafe and Noosa Fiber, have already begun to offer brands and retailers a fast-track solution to keeping textiles in the loop. Each has created a new, all-encompassing approach to product management. They share some common characteristics. Both have developed a novel fibre that is a polyester alternative and both guarantee that they can trace, retrieve and recycle the products made through their systems into new fibre. Both companies were founded in 2019 and claim to have secured industrial-scale production for their novel material.

Noosa Fiber has patented both its fibre and its chemical recycling process.

CREDIT: NOOSA FIBER



Part of OceanSafe's concept includes a full kit of Cradle-to-Cradle Gold certified components for designers and product developers.
CREDIT: OCEANSAFE

The two main pillars of the closed-loop system devised by Noosa Fiber founders Luna Aslan and Hélène L'Ebrelllec are, for one, a fully biobased polylactic acid fibre (PLA) derived from corn, and, second, a patented chemical recycling process that turns it back into virgin-grade PLA. The fibre is currently produced in China and in Austria, but the Brussels-based start-up is also seeking funds to establish its own plant in Belgium, or possibly in the north of France. "Our partners have the capacity to produce as much as we need," Luna Aslan tells WSA. The young team has been working with spinners and knitters to help them integrate the fibre, which is not widely used in textiles, and thus expand its supplier base. Convincing mills to adopt a new polymer is a long process. "It is a new fibre in apparel, so we are having to provide our partner mills with guidance in dyeing and processing," she says. Enlisting weaving mills is next on Noosa's to-do list.

Manuel Schweizer, a textile industry veteran who worked mainly in home textiles, is the founder of OceanSafe, headquartered in Switzerland. He introduced the first Cradle-to-Cradle (C2C) certified home textiles and has adopted that framework as the basis for the OceanSafe system. Its core product is a new polyester-based copolymer he developed called naNea. "It is the first synthetic yarn to obtain C2C gold certification," says Matthias Fuchs, chief marketing officer. "Our founder believes Cradle-to-Cradle to be the most coherent and strongest certification, and the only one that can make circularity a reality." All products available within the OceanSafe ecosystem, which includes components and trimmings, are certified C2C gold or platinum, as the silver and bronze levels do not make the cut. "Gold and platinum cover all chemicals used in the products; this means we know every single chemical and additive used, and we can offer full, gapless transparency," says Mr Fuchs.

There may be some advantages to developing these disruptive concepts from a clean slate, but it has also created "tonnes of restrictions," he says, noting that C2C certification takes a holistic

approach covering criteria related to water usage, carbon emissions, social conditions, chemicals, global warming, health and more. "We have created a new polymer, and polymers often involve the use of hazardous chemicals. It has been a difficult goal to achieve, but it was absolutely our ambition to do so. We consider ourselves a textile technology company and we are based in Switzerland, a country known for its engineering skills," he says.

NaNea is produced by established international synthetics manufacturers in south-east Asia. OceanSafe doesn't reveal the name of its partners, but says its polymer is a drop-in solution that does not require any special equipment, can easily be scaled and is market-ready. "It is slightly more expensive than a conventional polyester, but mostly because of scale," says Mr Fuchs. "If we scale up, our prices will align with those of other branded polyesters."

Performance properties

As variations on polyester, both fibres have properties similar to the world's most used synthetic yarn. "NaNea is slightly more hydrophilic than conventional polyester, and has similar pilling values. It is quick-drying, durable and inherently flame-retardant. There is no compromise on quality," says Mr Fuchs. From its initial focus on home textiles, OceanSafe has since widened its scope to apparel, upholstery, automotive and technical textiles. As evidence of its high performance, naNea will be used by the Swiss army in some of its uniforms. "There was a long and meticulous testing process, but we passed. We wouldn't want to make inferior-quality products with OceanSafe; increasing wear is the single most effective way to reduce a product's impact," he says.

Ms Aslan says that Noosa Fiber's PLA is breathable and does not retain odours. It can also claim to be bacteriostatic and hypoallergenic, and possesses UV-stability and low-flammability. The company does not recommend blending it with polyester, as "that would cancel out the useful



The polyester alternative developed by Swiss start-up OceanSafe is produced by industrial scale partners in south-east Asia.
CREDIT: OEANSAFE

properties of our fibre,” she says, adding that PLA is used for surgical sutures, a sign that it is safe and can be absorbed by the body.

Both fibres are biodegradable. Neither company emphasises this characteristic, though it does, to a certain extent, inform their strategies and policies. “If an additive is needed, we recommend it be biosourced and biodegradable,” says Ms Aslan.

In the early stages of the development of OceanSafe, “biodegradability was one of the end-of-life scenarios we promoted,” says Mr Fuchs. Tests were even conducted at industrial composting facilities that would take clothes. “But according to the notion of waste hierarchy, disposal is the last resort before incineration. When we saw the possibilities of chemical recycling, which is not downcycling, we shifted to that option,” he says. The company did not want consumers to imagine they could dispose of their clothing themselves by composting them. “Biodegradability is essential,” insists Mr Fuchs, “but not for the end of life of a product. It provides a solution for fibre-shedding. If an OceanSafe garment releases microfibres, these will biodegrade and won’t be toxic, as we know that all the chemicals we use are safe for biological systems.”

Circular business models

The business models developed by both start-ups have embedded circularity into their make-up. From the very start, Noosa Fibers says it guarantees that every textile made from Noosa that is made available for collection will be fully recycled into a 100% virgin fibre using its patented chemical recycling technology. The process involves shredding and solubilising the feedstock to extract Noosa fibres from other compounds, and a hydrolysis process that turns them back into lactic acid, which is then purified and polymerised to be extruded into a virgin fibre.

The Belgian start-up’s closed-loop concept is not closed per se but open to varied solutions. “We can take back industrial waste, as well as overproduction and leftover stock,” says Ms Aslan.

Post-industrial waste is already recycled by its partner in China, a vertically integrated producer. She says that 50% of textile waste is generated during manufacturing, and easy to recycle, as “we know the material”. Recycling the remaining 50% will depend on the strategy of its brand customers. “They can set up take-back systems in exchange for coupons, and they can offer repair services. When used Noosa-made clothing comes back to us, it may actually be embarking on a third life,” she notes. The company is also open to mechanical recycling, but Ms Aslan says this has limitations. “You can only integrate 30% of recycled content into a new yarn. The remaining 70% would need to be chemically recycled.”

OceanSafe’s naNea can be mechanically or chemically recycled with conventional polyester and PET. “We are not creating a new or different waste stream,” says Mr Fuchs. The company is also focusing on chemical recycling as a way to maintain the high quality of its fibre.

Its business model offers customers two solutions. The easier of the two is to simply source naNea fibres or yarns from licensed manufacturers in Asia, and integrate them into their own supplier network. The end product will carry a composition label that says “100% polyester, biodegradable” but not the OceanSafe Certified or Cradle-to-Cradle Certified Gold logos.

The second, full-circle solution for brands is that they source not only a material but a finished product that will be manufactured according to Cradle-to-Cradle Gold guidelines from start to finish. Each individual component will be 100% Cradle-to-Cradle Gold certified, down to the sewing thread, print, embroidery, care label, and so on. OceanSafe has put together a component kit that designers and brands can choose from when developing their ranges. This scenario also demands that a brand set up a take-back system; this is a rule in its licensing agreement, says Mr Fuchs. A QR code on the products will provide consumers with information on how to return them at their end of life. OceanSafe will then take care of recycling them. This is, in a nutshell, the

“gapless” and transparent framework that OceanSafe has set up.

The Swiss company may soon be adding a second circular fibre to its product line-up. This new polymer, coNea, will be a cotton alternative. “NaNea is not perfect,” says Mr Fuchs. “It is petrochemical. Our next generation fibre will be 100% biobased, biodegradable and Cradle-to-Cradle Gold certified.” The patented polymer was developed with the Technical Textile Institute (ITA) of the University of Aachen and is now in industrial trials. OceanSafe expects to launch it in early 2024. Mr Fuchs says it has a different, softer hand-feel compared to naNea.

Best use cases

These novel circular systems may become common when the notion of an extended producer responsibility becomes the norm. But until then, brands and retailers may consider the restrictions they imply, on composition and make, as too complicated and disruptive. Workwear, however, is a sector where closed-loop systems are already in place. So-called ‘merch’, the assorted T-shirts, tote bags and other merchandise sold at concerts, events or festivals, is another area where these concepts could work well. Noosa Fiber already sells thousands of white T-shirts for events looking for a circular solution for their goodies. It was used to make the tops worn by the volunteers at the recent edition of ChangeNow in Paris. “It is a way to test

the concept in real life,” says Ms Aslan.

An easy entry point into these novel closed-loop systems is to choose to make a simple product, such as a T-shirt or a fleece jacket, as Mr Fuchs points out. Sports and outdoor brands that are looking for a solution to their “polyester issue” are keeping their doors open, he says. These brands will not be able to rely on recycled polyester made from PET bottles and may be happy with a greener polyester alternative. “NaNea is perfect for outerwear. It offers quality, longevity, moisture management, UV resistance, and resistance to wear and tear,” he says. Ultimately, he argues that OceanSafe should be used for mainstream products, not luxury items. “Our fibres should be fast fashion fibres, and not only for Western markets, but also for India, China and Indonesia.”

While demand is high, Ms Aslan notes that “there are very few truly circular business models and they haven’t been proven to be economically viable”. Yet, she says: “If no one creates them, we won’t know if they work or not.” The rare new fibres to come to market have included circularity as a founding principle, as Swiss chemicals company HeiQ has done for its manmade cellulosic fibre AeoniQ. Furthermore, brands and retailers may in time be required to manage the entire lifecycle of the products they market. Meanwhile, EU regulation and legislation is paving the path to make these all-encompassing circular systems a reality. 



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Transforming the World of Textiles



Future-proofing the industry

Transforming The World Of Textiles was the motto of ITMA 2023, held at the Fiera Milano Rho. The top six countries for visitors were Italy (29%), followed by Turkey, India and Germany (6% each), France (4%) and Brazil (3%).

CREDIT: ITMA

Humming aisles, busy booths, lively discussions, the 1,717 exhibitors at the latest International Textile Machinery Association (ITMA) exhibition have good reason to be satisfied with this edition, the first one to take place since the pandemic. Shaping a more sustainable industry, as can be expected, was the main message put forward by the machinery, fibre and chemicals suppliers that called Milan home for a full week. Italy, not unexpectedly, topped the podium in terms of exhibitors (30%) and of visitors (29%). It was a performance due in no small part to the efforts of Alex Zucchi, president of the Association of Italian Textile Machinery Manufacturers (ACIMIT), and to the creative engineering skills of the Italian textile and fashion industry. The colours of the country's flag, green, white and red, could be seen throughout the show's six huge halls, across booths, machines and displays of products proudly made in Italy. Germany came second in the exhibitor count, with 198 companies booking 15% of the total floor space, followed by Turkey, with 191 exhibitors occupying 12% of the halls. Chinese (7%) and Indian (6%) companies also made a strong showing.

Anticipation was high before ITMA opened its doors at Fiera Milano Rho on June 8. Visitors, in numbers of over 110,000, flocked from all corners of the world of textiles and garment making, looking for faster, smarter and more efficient equipment and supplies to power next-generation materials.

Held every four years, ITMA is the place where exhibitors showcase truly innovative machinery and processes. Dyeing, considered one of the textile and apparel industry's environmental hot spots, was the focus of much effort. Tonello, a maker of washing, dyeing and finishing equipment, featured a new lab-scale ultrasound garment dyeing machine on its booth. The use of high-frequency sound waves is emerging as a promising solution to dye yarns, fabrics, and, as seen here, even finished garments using less energy, dyestuff and chemicals. "This is an

industry-first, as ultrasound has never been applied in a washing machine,” Alberto Lucchin, Tonello marketing and sustainability manager, tells WSA. The Italian company worked with Israel-based ultrasound specialist Sonovia to create the new device. “Ultrasounds have many advantages: they increase the penetration of dyes and this makes it possible to reduce chemicals and allows processing at lower temperatures,” he says, adding that it also improves the light-fastness of natural dyes, which the company offers in its Wake range.

Officina39, based in Biella, Italy, showcased Recycrom Ready To Dye, a new iteration of its pigments made from recycled textiles. The palette of 15 colours is made from a minimum of 65% pre- and post-consumer textiles, and can be used to dye cotton, wool, nylon or any cellulosic and natural fibre or blend. “Recycrom Ready To Dye is available on stock and the pigments can be mixed to create any dark or bright shade. This makes it easier for brands to adopt the concept,” says Andrea Venier. “It will also help our clients increase the recycled content of their products.”

Exhibiting in the new Start-up Valley section of the show, Colourizd, a company based in the US and Hong Kong, featured its latest warp dyeing device, the QuantumCOLOUR Denim Machine. Using the company’s ‘direct colour application method’, it is said to deliver high consistency, reduce energy use by 50% and radically cut down water consumption (by 98%), to the point of not generating wastewater. The company has seen high interest for the technology, particularly from mills based in water-stressed regions, such as Uzbekistan, whose president was part of a national delegation that made the trip to Milan.

Innovation in denim processing was a big focus of ITMA 2023, with many new products and machines, such as those on display at the booth of



Italian denim processing machine maker Tonello displayed a lab-scale ultrasound garment-dyeing machine on its booth.

CREDIT: WTP

Yilmak. The laundry machine maker based in Istanbul has a long history of breaking new ground in the field. It invented a pumpless, and therefore energy-saving, water circulation system featured in its EcoGreen EG range. This series has now been upgraded to integrate an XDrum and XOrbs-delivering-and-harvesting technology developed by UK laundry equipment supplier Xeros. The company has created special polymer beads designed to replace pumice stones. “XOrbs can be reused for 10 years, they last much longer than pumice, and are much safer for workers. They also reduce friction between garments which speeds up cleaning and reduces wear,” Jamie Harrison, the company’s licensing director for commercial products, tells WSA. The patented technology “fits well into our line-up”, notes Yilmak general manager for sales and marketing, Furkan Civelek, who says the company is “always looking for bright ideas”. Yilmak’s Eco-friendly 2020 HNS tumbler dryers feature another instance of smart engineering: their energy-saving closed-circuit system is designed to keep steam in circulation while fresh air is added. “Instead of needing to heat water from 0°C to 90°C, we only need to heat it from 40°C to 90°C, which basically cuts steam use by half,” says Mr Civelek.

On demand and digital

This edition of ITMA, like the one before it in Barcelona, featured a wide array of digital printing technologies. Kornit ushered in its new single-step Apollo Platform which furthers streamlined operations. An evolution of the Israel-based company’s Kornit Max printer, it is designed to simplify on-demand manufacturing, reduce inventory, and to offer a solution for nearshoring short and medium production runs, the company says.

First-time exhibitor at the show, Singapore-based NTX presented the latest version of Cooltrans. First developed for manmade

Recycrom Ready-to-Dye is the latest range of dyes to be developed by Officina39 from textile waste. It comes in a palette of 15 shades, on stock, and has a minimum recycled content of 65%, with the remainder being conventional dyestuffs. CREDIT: OFFICINA39

cellulosic and synthetic fabrics, its 'engineered printing' technology can now be applied on cottons. This unlocks the possibility of printing denims, on both sides, in a single pass. "The way I describe the new Cooltrans is that it is a ridiculously precise colour-dosing technology. Extreme precision is our differentiation point," Jeffrey Hsu, chief innovation and marketing officer, tells WSA. Application precision can go up to 3200dpi, and the on-demand, fully digital, AI-driven process is discharge-free and uses standard dyes. Among its many promises, "it can reduce minimum order quantities (MOQs) to a single piece," he notes.

NTX is also taking an innovative approach to commercialisation. "In our business model, we don't sell the machines, but rather partner with companies by creating a joint venture in which NTX is the majority shareholder," says Mr Hsu. The company has already formed six such joint ventures. Mr Hsu expects two more to be signed this year. All of the jointly owned enterprises then work together, share information on processing, debugging, and can even allocate machine time to each other if needed. This is an example of a new ecosystem thinking in the textile industry, another ITMA 2023 buzzword.

Progress in recycling

Digital and on-demand processes were, along with lower-impact solutions, a key focus of an event whose motto was 'transforming the world of textiles'. The presence of fibre producers was slightly less prominent at the exhibition. Finnish company Infinited Fiber did make an appearance. Its booth highlighted the need to build up post-consumer garment recycling facilities to address demand for cotton-like recycled fibres, estimated to be 4.5 million tonnes per year. This number is based on the volume of garments discarded in Europe and the likelihood of future legislation imposing a proportion of recycled content in products, says chief marketing manager, Tanja Karila. Infinited Fiber turns cotton-rich textile waste into Infinna fibre using a urea-based viscose production process, which is cleaner and safer than conventional viscose production, she notes. The company is currently operating a pilot facility that produces 150 tonnes of Infinna yearly, and is fully sold out, she says. A flagship factory will begin operating in 2026 at a scale of 30,000 tonnes per year. "But this would still be far from addressing future needs. If we had four large-scale factories we could produce 0.5 million tonnes yearly," she posits, but that would still only cover a portion of demand. Ms Karila said that the company made the trip to Milan looking for partners and investors.

Textile-to-textile polyester recycling was on show at PureLoop, a division of Austrian recycling machinery maker Erema. "We are one of the few companies to have set up a working fibre-to-fibre recycling line for polyester sportswear," Merlijn van Essen, sales manager, tells WSA. The project is featured in this issue of the magazine (see Rise



To The Challenge). To make the system work as smoothly as possible, garments need to be made from pure polyester, which he says, is rare. "A garment labelled 100% polyester is never really 100% polyester, it will have tags, trimming, and assorted other non-polyester components," he says. Blends are difficult but not impossible to recycle, he notes, mentioning a prior project involving swimwear made from a blend of nylon with a Lubrizol X4J stretch yarn with French sports retailer Decathlon. "The X4J yarn melts like polyester and polyamide, so we can obtain granules from the processing line, but these cannot be used to make fibres. They can, however, when blended with a virgin polymer, be used for injection moulding."

Mechanical recycling solutions were prominently displayed on the booths of Andritz, from Austria, and Swiss companies Trützschler and Rieter. Demand for yarns made from recycled content is high, but achieving good yarn quality is a major challenge that Rieter believes its new Com4recycling spinning system solves. It enables customers to produce fine, high-quality ring and compact yarns from challenging raw material. This holds true even with a relatively high proportion of mechanically recycled cotton fibres, the company says. "We have focused on addressing the issue of shorter fibres that have a lot of neps after the shredding process," Sathyanarayanan Subramanian, technology and process analytics manager for Rieter's machines and systems business group, tells WSA. In ring spun yarns, he says that recycled content can rarely go higher than 15% to 20% of a yarn. "Our technology can now handle 50% recycled content and maintain the performances of a non-recycled ring spun yarn." A project with Recover was featured on Rieter's booth, which is also a topic covered in this issue of WSA (see Newcomers).

Turkey-based Yilmak presented its newest denim processing machine outfitted with the XDrum and XOrbs technology developed and patented by UK company Xeros.

CREDIT: WTP

Ecosystem thinking

Collaboration was another buzzword often heard during the week-long textile industry Olympics, as ITMA dubs itself. Building a more sustainable ecosystem for textiles was one of the key messages that Valentina Superti, a director within the European Commission's directorate for industry and SMEs, insisted upon during her visit to the show. Discussing the commission's 'Transition Pathway for a Textiles Ecosystem', she says that an "ecosystem approach" has been very effective. "Collaboration across the industry and with the Commission gives added visibility to entrepreneurial and innovation projects," she said. "We can facilitate these by helping companies find partners across the European Union and gain access to funding. We share all useful information."

The textiles pathway document was itself a collaborative effort with European textile body Euratex. "The exchange of information is increasingly done in real time, as we have seen at the show," says Euratex president Alberto Paccanelli, adding that, with the development of artificial intelligence, it will only be more effective. The introduction of a digital passport, he went on to say, will increase traceability and allow brands to better know their suppliers.

Lutz Walter, secretary general of the European Technology Platform for the Future of Textiles and Clothing (ETP) shares a similar point of view. "Transparency is going to become ever more

WHAT'S NEXT FOR ITMA?

Hanover has been chosen as the setting for the next edition of the "Olympics" of textile machinery in 2027. This is news that German machinery makers applaud; it marks a return to the capital of Lower Saxony after 36 years. In the interim, and after several postponements, the next ITMA Asia, co-organised by ITMA, the European Committee of Textile Machinery Manufacturers (CEMATEx), and the China Textile Machinery Association (CITME), will be held in Singapore from October 28 to 31, 2023. The show will occupy a new venue covering 70,000 square-metres of exhibition space. Organisers aim to attract 700-plus exhibitors and some 30,000 visitors.

important. Like the 'know your customer' concept in banking, it will be transposed to the textile and apparel industry, in the form of 'know your suppliers.'" Brands will need to engage more deeply with their supply chains, much like the luxury sector does when it acquires or invests in its suppliers. "Due diligence over one's supply chain implies relying on audits or creating true trust through long-term partnerships," he says. Technology makes it easier to implement transparency, which will no longer be just an option or just useful to protect from greenwashing charges, and, these, he adds, will begin to be costly for brands. A fitting description of what brought the crowds to ITMA that also encapsulates what lies ahead for an industry intent on futureproofing itself. 

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RISE TO THE CHALLENGE

Team work involving a machinery supplier, a yarn producer and a garment manufacturer has resulted in a circular cycling shirt, for which the fibres are 100% derived from used polyester clothing.

Polyester fibre-to-fibre recycling proves possible

European fibre producer RadiciGroup has worked with sportswear manufacturer Sportstex to test an idea for polyester fibre-to-fibre recycling. Their early efforts proved successful enough for them to be able to put on display at ITMA in Milan in June a sports garment made from polyester fibre, with all of the fibres, in turn, from old polyester apparel.

The two companies began discussing this idea some time ago. They share a desire to find a way of reusing polyester textiles from garments such as shirts for football, volleyball and other sports that are in danger of going to waste. These products are often subject to rough treatment in harsh conditions and can end up in waste streams quite quickly.

RadiciGroup has a wider strategy in place for making textiles “increasingly sustainable” and, in 2019, set up a new division called Radici Innova to focus on “innovation for circularity” (see panel). For its part, Sportstex, which launched in South Tyrol in 1987, has extensive experience of developing apparel for athletic activity, specialising mostly in cycling, running, triathlon and winter sports. Each year, more than 7,000 cycling, triathlon and running teams source kit from Sportstex and the company

says now that it wants to grow its business and establish itself as a supplier of kit to clubs in football, handball, basketball and other team sports.

Technology provider

To be successful in their bid for fibre-to-fibre recycling, the two Italian companies realised quickly that working with the right technology partners would be essential. This led to discussions with PureLoop, a division of Austrian group Erema, which specialises in recycling technology for manmade fibres. Now a three-way partnership of the research and development teams from each of the companies joined forces to determine the best way of achieving their goal.

PureLoop suggested its ISEC evo FibrePro:IV system as technology that would be up to the task, describing it as an established PET fibre-to-fibre recycling system “with added flexibility”. A specialist in collecting and sorting used garments, Erdotex, came on board to supply raw material for the project. This material went into the ISEC evo FibrePro:IV system for shredding and extruding. The “added flexibility” that the system allows came into play here because it provides accurate information about the polymer molecular weight

In RadiciGroup's hands, recycled polyester pellets turn into high-quality yarn, which can be knitted into recycled polyester fabric for Sportstex to cut and sew.

CREDIT: RADICIGROUP

(IV) of the feed material, which, as we shall see, the partners were then able to adjust to achieve the same IV as virgin polyester.

Recommended dose

They came up with a product with good technical properties quite quickly. However, initial success came from a technique of adding polyester chips from recycled bottles to chips from recycled fabrics. They have used the word 'dosing' to describe the way they gradually reduced the quantities that came from bottles, fine-tuning the process until, eventually, the bottles' share was reduced to zero and they achieved recycled polyester pellets that were 100% derived from recovered textile waste.

RadiciGroup used the pellets to make high-quality recycled polyester yarn and Sportstex cut and sewed the resulting fabric (knitted by an existing Sportstex partner) to make sample garments. Cycling brand Shimano was the first company to embrace the project. It agreed to put its brand name on the garment that went on show at ITMA, a recycled cycling jersey, a perfect fit for Shimano's core market.

Industrial scale

Once scaled-up, the system will make it possible to produce recycled polyester garments that, at the end of their life, can be recovered again, RadiciGroup and its partners have said. They want this to become the norm for garments such as sports tops. It may still take a few years for there to be functioning systems for collecting and sorting these garments in sufficient quantities to take this to the industrial scale, but the success of the pilot project has generated high levels of optimism. "There are many issues to be considered," RadiciGroup says, "and big brands will have to work with their supply chain partners to put collection and sorting systems in place. For example, although we have end-of-life thermo-mechanical recovery



systems, they are often incompatible with garments composed of different materials. Brands need to bear this in mind."

The partners' conclusion is that, because so many sports shirts are made from 100% polyester, at the end of their life, this polyester can, and ought to be, the starting point for something new. The key is knowing how best to recover the fibres and how best to use them. The companies involved in this project are convinced that, in a market that talks unceasingly about eco-design, players across the textile supply chain that want to turn the talk into action now have a viable solution they can embrace. 

PureLoop's ISEC evo
FibrePro: IV system.
CREDIT: PURELOOP



This Shimano cycling shirt, proof that polyester fibre-to-fibre recycling can work, went on display at ITMA 2023.

CREDIT: PURELOOP, RADICIGROUP, SPORTSTEX AND SHIMANO

INNOVATION FOR CIRCULARITY

When he talks about this polyester fibre-to-fibre recycling breakthrough, Gianni Todaro, who leads research and development for specialist and technical apparel at RadiciGroup, makes it clear that it is the fruit of a wider, ongoing programme. He says: "For some time now, we have been designing innovative solutions with high technical performance that respect the environment, working with our customers and suppliers and sharing our knowledge in the recovery of textile waste. Achieving increasingly sustainable textiles is at the heart of the strategy of Radici Innova."

The group set up Radici Innova at the end of 2019 to drive research and innovation activities across its three business areas (specialty chemicals, high-performance polymers, and advanced textile solutions). It said at the time that the specific goal of Radici Innova would be to strengthen sustainability, which it described as the main driver of development for the RadiciGroup.

Innova is strongly focused on the development of solutions for the circular economy and managing the end-of-life process of products is a major factor. It wants to increase the useful life of textiles by making them longer-lasting and by promoting recycling.

Areas of work so far are the development of industrial processes for the synthesis of chemical intermediates from materials of biological origin. "These are the building blocks for the production of sustainable polymers," RadiciGroup says. Specifically, Innova has worked on the development of polyamides obtained from renewable materials destined for applications in a variety of sectors, including textiles and apparel.

It has also focused on optimising industrial processes to increase sustainability and improve performance, and to measure those benefits objectively "with renewed commitment to rigour, transparency and a scientific approach". Innova is also involved in identifying new business opportunities for the group, including new market opportunities for existing group products.



A fine line

Major news from recycled cotton fibre and blends producer Recover, based in Spain, Swiss textile machinery developer Rieter and Portuguese spinning, weaving, knitting and finishing specialist Polopiqué at ITMA in Milan in June centred on an important industry breakthrough: the doubling of recycled fibre content in fine ring-spun cotton yarns from 20% to 40%. The recycled fibres used are from post-industrial cotton fabric scraps, processed by Recover in Banyeres de Mariola via mechanical means.

It has long been tricky to manufacture quality ring yarns from heterogeneous, recycled raw material with high short-fibre content, explains head of sales and marketing for Rieter's machines and systems business, Franziska Häfeli, to WSA. Compared to rotor-spun yarn, ring (or compact) spinning is more sensitive to the proportion of short fibres, she says, which has typically inhibited the extent to which recycled fibres, shortened through tearing and shredding, can be incorporated into blends. "There is a limit to how much the percentage can be increased," concurs global technology support lead at Recover, Carlos Rico, "because the final yarn quality will drop drastically in terms of yarn imperfections and yarn strength". He uses a 100% cotton ring Ne 30/1 yarn count with between 25% and 30% recycled content as an example, suggesting that, ordinarily, quality can begin to be "seriously affected" from this point onwards.



NEWCOMERS

Advancements in recycled cotton ring yarns for knits unveiled at ITMA are likely to inspire a sizeable ripple effect.

Therefore, recycled ring yarns usually contain around 20% recycled fibres at most, the long-standing collaborators, all well-known to the sportswear industry, say. The prevalence of virgin-fibre ring yarn in a textile and apparel market increasingly measured by sustainability metrics, however, convinced them to take up the challenge. They expect the market opportunity for recycled ring yarns will only broaden over time, in step with changing customer demand, local legislation and the resulting value chain impact.

The right ratio

Stronger, straighter and therefore smoother and softer, ring-spun cottons are especially well-suited to direct-to-garment, heat-transfer and screen printing, as they tend to provide a more even surface texture. The process of continually twisting the fibres together so tightly also makes for an especially durable textile versus rotor (open-end) spinning. Hence the significance of what Ms Häfeli calls the "rapid increase in

Next on the agenda is securing Global Recycled Standard certification for the co-developed 40% recycled cotton ring yarns.

CREDIT: ANA PALACIOS

unevenness and imperfections”, such as neps, that can become entangled with the fibres, as recycled content is added to blends.

Working together with Recover and Polopiqué, whose respective teams brought knowledge and experience of the latest mechanical recycling and yarn manufacturing technologies on board, Rieter turned to its Comber E 90 ring spinning machine, originally developed for producing as much as 100 kilos of combed sliver per hour. The company’s Compact Drum device was used in tandem. According to Ms Häfeli, this complete system, when used to spin a 50-50 blend of Recover-made recycled cotton fibres and virgin cotton, removes unwanted short fibres and neps, resulting in “significantly improved” levels of imperfections and unevenness. These shorter fibres or comber noil, the excess shaved off by the comber, are suitable for processing in Rieter’s rotor spinning systems. Returning to the ring spinner, the machine notably features “special components and settings” to further improve the yarn’s uneven qualities, she adds, as well as its own internal spinning stability and running behaviour.

Mr Rico describes their method as “a totally different concept of yarn spinning”. Combing the cottons made it possible to attain yarns of higher quality, which in turn made it possible to boost the proportion of recycled material in the blend. Taking away these shorter fibres, the main cause of yarns being less uniform and having lower tensile strength, made it easier to maintain a higher percentage of recycled fibre, even for yarns as fine as Ne 30/1, he states. In its initial experiments with Rieter, Recover trialled recycled and virgin cotton blends in a 50-50 ratio, as detailed above, but this amount was later toned down to “at least 40%”. The partners stuck to ring Ne 30/1 yarn count throughout. Ultimately, they landed on an Ne 30/1 compact yarn with “similar quality parameters”, especially in the areas of strength and tolerance for imperfections, to a ring Ne 30/1 carded yarn with 20% recycled fibre content.

Gaining ground

All this work is expected to open the door to increased recycled fibre percentages in ring yarns for knitted applications, “maintaining and even improving final fabric quality” for customers, Mr Rico continues. Having presented a “high-quality, sustainable” knit garment made from their co-developed yarn at ITMA, the collaborators will next seek to secure Global Recycling Standard approval for the process from Textile Exchange. For Ms Häfeli, the collective goal is to “make recycling mainstream” through scaled-up adoption. Expanding on why, chief executive at Recover, Alfredo Ferre, framed their work on recycled cotton ring yarns as “spearheading a new era of sustainability” regarding environmental awareness and accountability when announcing their progress on the first day of ITMA.

That three such well-established industry players are now so enmeshed in an undertaking



of this kind indicates how quickly the pace can pick up in the realm of textile innovation. It is important for ideas to be shown to be scalable, and thus commercially viable, outside of the lab, not just potentially impactful. As collaborations continue to form, evolve and begin to bear fruit, onlookers can only be encouraged as they witness how some sustainable textiles talk has roots deep enough to push past surface-level marketing hype, rendering certain investments capable of causing real disruption to the complex, less visible mechanisms that power today’s intertwined, interconnected and, of course, international supply chains. 🌍

Some of the team behind the Rieter-Recover-Polopiqué tie-up at ITMA in June. Ms Häfeli is pictured fourth from left.

CREDIT: ANA PALACIOS



After stopping by the collaborators’ display at ITMA, WSA technical editor, Sophie Bramel, reported back that the resulting polo shirt had a good hand-feel.

CREDIT: WTP



On-demand gets directional

Among the aisles of exhibits showcasing the latest in textile machinery innovation from 1,709 international suppliers at quadrennial industry trade fair ITMA in June, an intriguing, new 3D-printed athletic shoe concept caught the footwear manufacturing community's eye. A collaborative effort between French sports retailer Decathlon, US printing technologies developer HP and Italian knitting machinery maker Lonati, the partners' digital-first, mouldless and glue-free method promises to "reshape" the sustainable footwear landscape, they claim. This will come through improved customisation and repairability, more localised production, faster disassembly and simpler end-of-life recycling.

Stepping forward

Head of footwear for HP's personalisation and 3D printing business, Barcelona-based Don Albert, tells WSA that work only began on the project earlier this year. He describes his team's interactions with colleagues from the other two companies as exceptional, citing their "shared commitment to innovation and to pushing the boundaries of technology in the sports industry". Throughout the development process, weekly calls took place between Decathlon and HP, whose HP Jet Fusion 5200 printer was used to produce the shoe's midsole and outsole, during which research and development ideas, materials progress and sustainability updates were all discussed and exchanged.

Separately, Lonati's XT-Machine and Double Cylinder E1530XS systems produced the all-black trainer's sleek, sock-like upper, made



FOOTWEAR TECHNOLOGY

A multi-stakeholder team of designers, developers and engineers got together to reconsider 3D-printed sports shoe models, just in time for ITMA.

from digitally adjustable, single or double-layer knit fabrics that hug the foot. The knitted sock has an almost animal print surface texture. Together with the HP-printed cushion component, these easily separated parts combine to deliver "unparalleled comfort, lightness, performance and quality", in the collaborators' words. Lonati acquired Santoni, the domestic knitting machinery manufacturer responsible for inventing the XT-Machine, back in 1989.

Mr Albert frames HP's industry-ready 3D printing technology as "a significant step forward" for the sector. In place of more complex assembly, typically involving 12 different materials for sports shoes, each Jet Fusion 5200 printer has the capacity to handle up to three jobs per day, depending on the materials choice. Each job represents ten pairs of trainers. No matter where it is installed, one printer alone makes for a commercially viable operation, he suggests, adding that the pair displayed at ITMA "already holds commercial viability". In terms of performance, HP is especially focused on developing footwear suitable for runners, he shares. The Reebok and adidas alum further states that certain shoe materials work

The sports shoe manufacturing concept meets Decathlon's "desired performance requirements" and "already holds commercial viability".

ALL CREDITS: HP!

particularly well with the printers, resulting in what he calls superior cushioning and energy return for athletes, although he does not elaborate on which materials this refers to. On the sustainability side, the on-demand model makes for an intrinsically lower waste and less-energy-consuming production process.

Materials versus machines

“The choice of specific machines and materials in 3D printing is closely intertwined,” Mr Albert explains. Various technical considerations come into play, from temperature range to system compatibility, which inevitably influences materials selection. In turn, end-product performance and functionality ultimately limits designers’ choice of materials, which then feeds into decisions around which machines can be used. For the Decathlon concept trainer, the Jet Fusion 5200’s versatility in printing multiple materials was key, he notes, allowing the sporting goods retailer’s “desired performance requirements” to be met. The series was HP’s very first industrial-grade 3D printer. First released in 2019, it was built for cost-efficient scalability and increased accuracy, repeatability and flexibility at factory level, based on “new systems, data intelligence, software, services and materials innovations”.

The digital technology furthermore enables full footwear customisation, without additional costs. Without the need for a traditional mould, the manufacturer is free to adapt rapidly and tailor each trainer to Decathlon customers’ individual order requirements with precision, according to Mr Albert. This goes beyond colour and design, extending to fit, support and other technical adjustments. From the perspective of Decathlon ‘exploration leader’, Phillipe Seille, “a new era of sustainable and innovative manufacturing” awaits those who follow HP’s 3D printing lead. In terms of materials, the retailer opted for Ultrasint TPU01, a BASF-produced thermoplastic polyurethane (TPU) powder specially designed for HP’s Multi Jet Fusion portfolio, of which the Jet Fusion 5200 printer is a part. The powder is converted into midsoles and outsoles inside the machine.

Recyclability was one of the two main decision-making factors that led to Ultrasint TPU01 making the final cut. The substance has an 80% post-consumer reusability rate, meaning it meshed well with the team’s vision for lower-resource-intensity shoe manufacturing. Second, what Mr Albert calls the material’s “excellent comfort properties” made it “highly suitable” for athletic footwear. Other properties include a Shore A 88 level of hardness. Germany-headquartered BASF has been developing similar concepts since 2010, when it launched its own concept shoe, Pure 1.0, made solely from polyurethane (PU), but incorporating TPU for the laces, inside top layer, chassis, heel cushion, outsole and logo inlays. PU was used for the lower insole, upper and heel. Back then, the



HP’s 3D-printed footwear lead, Don Albert, previously spent more than 17 years at Reebok, after beginning his career at adidas.

significance of the concept, to BASF, was to present customers with an early-stage version of an easier-to-recycle product before they knew they needed it.

A productive relationship

Mr Albert says his team was happy to receive frequent, constructive feedback from Decathlon and Lonati, supplying HP with valuable insights that have already helped tweak its printing systems and processes for the better. The partners are actively working together to ready the Jet Fusion 5200 for larger-scale production, first exploring how to make it eco-friendlier and even more efficient. “This iterative process of collaboration and refinement will ultimately contribute to the development of cutting-edge 3D printing technologies that meet the demands of the sports shoe industry,” he concludes. 



Made solely from BASF’s Ultrasint TPU01, the HP-printed parts consequently have an 80% reusability rate.



Trash into treasure

“I’m on mission to replace polyester,” says Bloom Labs founder Sim Gulati. The bold statement from the US entrepreneur comes after years of witnessing the material’s impact first-hand through working with his family’s factories in India and Asia — not only in the way it uses up non-renewable resources and its subsequent proliferation in the environment, but also how artificially low prices have driven the fast-fashion phenomenon and resulted in a glut of over-consumption and overproduction.

Graduating with an economics degree at Oxford University combined with his family history in textiles enables him to “connect the dots” between fashion and sustainability, he says. His previous start-up, Dropel, created a waterproof coating for cotton that won backing from Fashion for Good, but it became clear a fresh idea was needed to make impact at scale. “I realised that, just as there needed to be alternative foods to combat the carbon impact of meat, there also needed to be alternative textiles to combat the effects of the textiles industry, which accounts for 10% of global carbon emissions and 35% of microplastic pollution in waterways. I’m looking at the macro trends of demand increasing as the population increases and I realise there needs to be a new feedstock, but where there is no feedstock risk.”

His new company, Bloom Labs, claims it has found a solution in proteins. It has licensed intellectual property on protein research from



SUSTAINABILITY

**Could proteins provide the building blocks for a new fibre to rival polyester and silk?
Bloom Labs believes it has found a solution.**

universities and received funding from the National Science Foundation, the innovation arm of the US government. Dr Walter Schmidt, a US Department of Agriculture scientist who has patented plasticised proteins, joined as an advisor at the start of this year. “I knew the feedstock had to come from agricultural waste, because that sector is so enormous,” explains Mr Gulati. “The feathers we are using come from textile producers like pillow manufacturers that have excess waste, we use soy proteins as well as textile waste and cashmere, linen and wool that we can regenerate.”

Bloom’s proprietary technology uses bio-manufacturing, protein engineering and molecular biology to plasticise the waste, regenerating it into pellets. These can then be spun into high-performance fibres that Bloom describes as being “as plush as cotton, as lush as silk and as functional as polyester”. Its system treats the protein fibres as thermoplastics, although they are 100% biobased. Pellets can be shipped around the world, ready for manufacturers to drop into melt spinning lines and

Bloom Labs is using waste feathers as feedstock for its new fibre.

CREDIT: JULIAN HANSLMAIER / UNSPLASH

“I knew the feedstock had to come from agricultural waste, because that sector is so enormous.”

SIM GULATI, BLOOM LABS

create the fibre. “That’s one of the reasons we selected proteins based on plasticising and melting proteins, so that it can be a drop-in replacement for polyester production lines, with the same efficiency and the same scalability.”

Protein shake

Mr Gulati is targeting two markets: replacements for polyester and silk — polyester because it makes up around half of fibre use for clothing, according to the Textile Exchange, and silk because it has the highest carbon emissions and cost per kilogram. “Proteins are highly malleable and we can control the aesthetic and mechanical properties. Through processing we can make our proteins behave the way we want them to behave.” Mr Gulati estimates there is 6 billion kilograms of this kind of bio waste available annually.

The resulting fibre could be used on its own, or blended, and one of the bonuses will be the potential for biodegradability at the end of the clothes’ useful life. Bloom will be conducting a lifecycle analysis later in the year to measure the impacts. “We’re using proteins because they are ubiquitous in nature and they biodegrade. Similarly, many of the additives that we’re using are amino acids that are found in nature, so we believe that through recycling we can accelerate the degradation process, not only accelerate it but reuse the material and have perpetual utilisation opportunities.”

Agriwaste model

Like most new materials, the cost will be higher than that of polyester but, at scale, he believes it will be competitive. “It will be cost competitive with recycled polyester, that’s something that we’re quite excited about,” he adds, suggesting it could be cheaper than silk and cashmere but with added desirable qualities such as being washable. The agriwaste model could also suit local supply chains and reshoring, as there are waste facilities all over the world.

The appetite for finding sustainable fibres and materials is driven partly by changing consumer attitudes, by brands and their commitments to reducing emissions and to Sustainable Development Goals targets, but it will also be shaped by regulations, in time. “This next decade or so will be the time when brands will be trying to use sustainable materials if they are available. I think that’s the key thing: scalability and availability has been a challenge because sustainability is not as cost effective and it’s not as scalable and so brands are reluctant.”



Sim Gulati, CEO of Bloom Labs, says the question he asks of new sustainability initiatives is: “Are they economically viable, are they scalable, and can brands and consumers get excited?”

CREDIT: BLOOM LABS

For the time being, he says the as-yet unnamed technology has been proven to work and it is now a question of larger-scale development through various partners. The company is setting up a lab in north-eastern US and is putting together a consortium of brands and early adopters to test the technology and mould it around their needs.

“I think it’s incredibly important that as brands get more interested in sustainable solutions that they be economically viable, for everyone in the supply chain, not just brands and the material supplier but also the manufacturer,” he adds. “Consumers want to see sustainable materials and have a better understanding of where materials are coming from. I only see that increasing over time.”



Although at an early stage, Bloom Labs describes its material as having ‘infinite possibilities’.

CREDIT: BLOOM LABS

The team at New Zealand-based TMC spent five years looking for a way to add durability to wool garments without relying on synthetics. The answer was closer than they thought.

Herculean effort

“Why do garments made from merino wool-based Nuyarn need to have a synthetic core, when it makes the fabric noisy and reflective?” asked the CEO of a big outdoor brand during a conversation with Andy Wynne, CEO of TMC (The Merino Company) and maker of Nuyarn. “It’s simply to add durability,” Mr Wynne replied – but it got him thinking.

For the next five years, the team at TMC in New Zealand tested ways to add strength to Nuyarn. It is a spinning technology the company acquired in 2013, after using it for several years and recognising the potential in the novel technique. Merino wool has many natural performance benefits, including thermoregulation, breathability and anti-odour properties, but the traditional ring-spinning way of creating the yarn inhibits some of these natural qualities, according to TMC.

Rather than spinning with a twist, Nuyarn’s specially designed machinery drafts merino fibres along a high-performance filament, resulting in two-ply yarns with more volume and aeration. This offers some substantial benefits, according to the company: the fabric dries five times faster, has 85% more elasticity, 35% more thermal retention, is 53% more air resistant, has 50% more burst strength and 120% more seam strength.

“There’s a direct correlation between elasticity and comfort,” says Mr Wynne. “The clothing industry tends to use elastane, spandex or Lycra, but these absorb moisture and retain it. Nuyarn has a mechanical stretch that is a consequence of the spinning technique and is there for the life of the product. The likelihood of developing a hole is also significantly reduced because there are no weak points due to the twist-free technique.”

A top made from Nuyarn would be 8.8 times more durable than an equivalent merino top, generating savings in raw materials, energy, transport and disposal. Added to this, the sheer speed of the spinning (250 metres per minute, up to 16 times faster than traditional machines) means 73% less energy is used, according to TMC’s measurements. What these numbers mean



The Pinebury brand put Nuyarn to the test in its cycling apparel. CREDIT: PINEBURY

is that clothing made of Nuyarn offers extra performance attributes, making the material highly suitable for the sports and outdoorwear sectors in both winter and summer categories.

Outdoor brands that have chosen Nuyarn include The North Face, Salewa and Ortovox. Swiss brand Odlo won the Base Layer Award at ISPO 2022 for its Nuyarn-based Revelstoke PW 150 Base Layer, and US brand Pinebury selected it for its cycling apparel launch this summer, with founder Kyle Rancourt describing the fibre's potential as "boundless".

Innate strength

So far, so impressive. But TMC was determined to find an alternative to the nylon core for durability and to offer brands increased options. The team tested fabrics with Dyneema and Kevlar but the resulting material was too tough to cut. "We stumbled upon the flooring industry – it intrigued us that there was a natural fibre that had such a high degree of durability," says Mr Wynne. However, the New Zealand strong wool (or carpet wool) was not suitable for clothing, or easy to work with. Historically, this type of fibre has gone into interior textiles, flooring and upholstery. "We brought it into our facility at Nuyarn, but this material in the top form [raw material] was a significant longer fibre, so we had to modify our spinning machines."

They found using the Nuyarn technique they were able to create a thinner yarn that produced fabrics with varying weights and performance levels, making it suitable for clothing, socks and even shoes. The material, Herculan, can be laminated or bonded to the sole of a shoe, or used in double-sided fabrics, with a merino layer next to the skin.

"We currently see the greatest benefit with the sock and footwear industry due to its high durability and moisture management," says Mr Wynne. Replacing the polyamide in the toe and heel of a sock with Herculan increases the natural fibre content from around 50% to 80% and stops the slippage and the resulting blisters. Intertek Vietnam tested these socks with a Martindale abrasion test and it was not until a million rubs that a hole appeared. For comparison, the New Zealand transport sector stipulates abrasion resistance for its socks must be 40,000 rubs. "Abrasion resistance has been a big deliverable for us in this."

TMC is also working with a backpack company to replace the shoulder straps and hip belts with Herculan, reducing the potential for slippage when wet and performing better next to the skin.

Farm gate

As well as being readily available, this industrial wool could provide a new income stream for sheep farmers. A byproduct of the food industry, it can be sold to the carpet industry but, with that sector increasingly dominated by synthetics such as polypropylene, the wool often ends up in landfill.



The novel spinning technique adds volume to the wool and creates a yarn that is 35% lighter: Nuyarn versus conventional merino.
CREDIT: TMC

“When we first started working to transition carpet wool into the apparel sector, everyone thought we were mad.”

ANDY WYNNE, TMC

To set it in a global context, total wool production increased in 2022, helped by a record sheep population, according to the International Wool Textile Organisation. There was an 11% jump in wool production in Australia, the largest wool-producing country, as it recovered from drought, but a 4.5% drop in New Zealand, the third-largest producer, due to continued low prices for carpet wool. While production of Merino wool increased by 5.2%, production of the interior textiles wool was flat at 0.8%. Mr Wynne points out growers have historically got very poor prices at the farm gate for this inferior grade; "Herculan gives them a better return."

Herculan's potential did not go unnoticed by the judges at specialist publication Fast Company, which ranked TMC number six in its list of 'Most innovative manufacturing companies of 2022', "an honour" for Mr Wynne. "When we first started working to transition carpet wool into the apparel sector, everyone thought we were mad because it has never been done before. But we had a vision and were determined, and ultimately our team found the solution."

TMC's contacts within a vertical supply chain means the ability to supply from fibre to final product. Adding Herculan to the portfolio means it can also offer a way to supersede the nylon core for certain applications. "This is a really exciting initiative for us," concludes Mr Wynne. "We believe it will have a positive effect on the wool industry as well as help deliver a new era of products that perform better and last longer." 



Moving along nicely

A circular issued by China's State Council in August 2021, heralded the beginning of a mass fitness programme to coincide with the country's 14th five-year plan (2021-2025) for social, economic and "green" environmental development. The broader guidelines had already been endorsed by its National People's Congress that March. Specific objectives include engaging 38.5% of the population in regular physical activity and growing the sports industry to a value of more than \$715 billion per year, plus either constructing or expanding more than 2,000 public sports parks, fitness centres and stadia, all before the end of 2025. Everybody, down to those living in administrative villages and communities, will be living within a 15-minute walk of a "full-coverage" exercise facility by then, according to the plan.

Doors to all school stadia must be open to the public in a covid-safe manner and physical education should extend to an hour of sports, both on and off campus, every day. Active lifestyles will be presented as an essential tool for tackling widespread health challenges such as myopia and obesity, in addition to enhancing mental wellbeing. There should also be increased integration between higher-end manufacturing and services, to bring about "a modern sports industry system". The young, elderly and disabled alike should experience improved access to "barrier-free fitness facilities" and China will initiate a campaign to encourage sports participation, targeted at its youth.

China is pushing ahead with its five-year national fitness plan, announced two years ago, after a less-than-certain start in the midst of national and international covid-19 lockdowns.

To this end, sports brand adidas notably signed a three-year strategic deal with the China Literature and Art Foundation in Beijing last November, as part of celebrations to mark 50 years since their two countries officially established diplomatic relations. Targets include staging health-and-fitness-themed cultural activities aimed at the 18-22 age group, using the concept of "century masters" to build brand awareness and loyalty, as well as connecting with 10,000 Chinese schools annually and developing exclusive university programming. The company expects to further ramp up sales of locally designed adidas products to around one-third of all articles it sells in China over time.

Official state news agency Xinhua revealed in November 2019 that China's General Administration of Sport, the National Development and Reform Commission and other departments had formally discussed whether a dedicated sports investment fund might be introduced around the time of the 2021-2025 plan, in line

Picking out a clear path forward within a soon-to-be ¥5 trillion sports market presents both a challenge and an opportunity.

ALL CREDITS: MESSE FRANKFURT (HK)

with efforts to “turn the industry into one of the pillars of the national economy”, but this does not appear to have materialised as yet.

Steady progress

Not disregarding covid's long shadow, overseas suppliers of sports textiles and performance wear applications have already noticed a change in appetite among their China-based customers, says general manager at Messe Frankfurt (HK), Wilmet Shea. The trade show organiser wrapped up the latest editions of its International Shanghai Apparel Fabrics (Intertextile Apparel) and Yarn Expo fairs in March; neither event took place in spring 2022. Messe Frankfurt runs its in-country events in partnership with China's Textile Industry Sub-Council (CCPIT) and the China Textile Information Centre.

Momentum towards healthier, more active lifestyles has really been growing since the 2008 Summer Olympics in Beijing. Ms Shea acknowledges, but the goals of the 2021-2025 plan do tie in with what she has seen on the ground, walking the halls of major exhibition centres across the country. Citizens' increased pursuit of health and fitness has noticeably stimulated improvements in functional coatings and treatments such as waterproofing, ultraviolet (UV) protection and antimicrobial applications, she tells us, on top of a wider array of sportswear and comfort-oriented athletic leisurewear styles, including from some luxury brands. The rise in local consumers' disposable income over the years has certainly helped.

Conversations with multiple exhibitors at concurrently-run Intertextile Apparel and Yarn Expo indicated that domestic buyers were keen to discover innovative performance fibres, yarns and fabrics, especially those blended with sustainable elements, Ms Shea continues. She singles out Chinese manmade cellulosic fibre producer Sateri and Austria's Lenzing as two important destinations for supply chain decision-makers seeking out eco-friendlier material at its shows, which also include technical textile trade fair Cinte Techtextil China. From speaking to representatives from Swiss materials innovation specialists HeiQ in Shanghai, the Messe Frankfurt (HK) team learned that, from the supplier's perspective, China's sports and outdoor market “still has room to grow”. US-headquartered Ascend Performance Materials told them it had observed “a trend towards Chinese consumers purchasing more athleisure and sportswear, especially since the pandemic”.

Pole position

General manager at Yinshan Sportswear, Evan Qiu, is similarly confident. Yinshan, based in the city of Ningbo, Zhejiang province, had been solely focused on manufacturing white-label or OEM performance wear for export on behalf of overseas customers such as Formula One, Formula E, MotoGP, Nascar, Boston Marathon and Basketball Queensland for the past 20 years. Yet, despite four design studios, five factories and 25 production



lines dedicated to OEM exports, the domestic sportswear market's upward trajectory convinced the business to explore opportunities closer to home, too. Mr Qiu says the demand for fitness apparel in China is booming. Even among his own friends, he says, most have now adopted the habit of going jogging, exercising at the gym or playing ball games. Yinshan has therefore been working to develop its relationships with local universities, colleges and textile technology labs accordingly.

The company has already made great strides towards establishing itself in China, not only as a supply partner, but as a recognised consumer-facing sports brand itself, having recently launched its own label, InPace. The aim is to start relatively small, working on honing brand management and small-batch manufacturing skills that would similarly make sense for international customers, Mr Qiu tells WSA.

Chinese shoppers will be able to choose from at least 300 new InPace activewear styles a year to begin with. Only several years ago, he recalls, it was not uncommon to see locals wearing casual tees or even polo shirts to practice “all sports exercises”. Now, people wish to always have the right kit to hand, no matter the activity. Research published by investment firm Goldman Sachs in early May projects that the Chinese market's biggest players, Anta and Li-Ning among them, could see a 15-21% rise in income this year alone.

Emboldened by top-down backing from the national government, the future looks bright for sportswear consumption in China. It is not insignificant that today's market leaders are homegrown, however, nor that the country's younger generation has formed particularly strong bonds with their more culturally nuanced branding. This segment typically demonstrates “more confidence” in their buying behaviour when it comes to the likes of Anta, Li-Ning, Peak Sport and others, in Mr Qiu's words. But, as adidas, whose group-level revenues declined by 36% in China last fiscal year, would surely concur, the Chinese customer is no monolith. Time-honoured tactics such as patience, longer-term planning and heritage-minded investment are most likely to pay off for those who stay the course. 

An “overwhelming visitor flow” at Intertextile Apparel this March pointed to China's “back-to-business mentality” following nearly three years of covid lockdowns, according to Messe Frankfurt's general manager in Hong Kong, Wilmet Shea.



DIALOGUE

Binita Bhuta, vice-president for marketing and sustainability at CovationBio.

Biobased options

After a 17-year career at chemicals group BASF, Binita Bhuta joined DuPont Biomaterials in April 2022, just before its spinoff into a new company named CovationBio. She is its vice-president for marketing and sustainability.

Many observers insist that there can be no going back now on moves towards more sustainable fibres and a more sustainable apparel industry. What are the signs that this dynamic really is here to stay, that the brands will not backtrack on this?

CovationBio is proud to offer sustainable solutions at scale that support this critical shift as brands are increasing their commitments. As consumers become more educated, we are seeing demand for materials that address their environmental concerns and the role they can play to mitigate the impact. The entire value chain needs to be working together to enable this shift. We like to say it's not us or them, it's us *and* them. I think specific legislation and mandates such as those we've seen in Europe are not only specific to the textile industry but are providing detailed expectations with timelines. As a result, we are experiencing more transparent dialogue and journey-mapping with brands to develop a timely plan to enable impactful, sustainable solutions. And among the signs that brands will not backtrack, we are seeing a continuation of interest in and use of products such as our Sorona polymer, which is 37% biobased, and our propanediol (BioPDO) products, Susterra and Zemea, which are 100% biobased. Biomaterials are in demand as a pathway to decrease our reliance on fossil fuel-based resources.

To what extent might this have influenced the decision in June 2022 of an important group such as Huaфон to invest in products such as Sorona and Susterra?

Huaфон is a highly successful materials company that is well positioned to expand the reach of our current products and help us accelerate the introduction of new offerings and technologies to the market. It also recognises that, to make an impact, this needs to be done at scale. We are proud to have Huaфон's support to further enable our mutual mission for CovationBio to continue to deliver high-performance, sustainable biomaterials, such as Sorona and Susterra at scale and accessible to all.



CovationBio's vice-president for marketing and sustainability, Binita Bhuta.

ALL CREDITS: COVATIONBIO

What are the advantages of a programme such as Truterra, the farmer-driven regenerative agricultural programme that CovationBio enrolled in last year?

The programme focuses on the land and on ways of contributing back to the land. Currently, more than 1.2 million acres (almost 500,000 hectares) of sustainably grown row crops are being farmed responsibly in the Midwest of the United States, and, among the crops being harvested are the building blocks for our products. The Truterra programme will deliver insights integrated with the US Department of Agriculture's conservation practices. This will give us baseline information on the environmental impact of the farms, and we can look for improvements from there. It is a clear commitment from us to drive improvements particularly by reducing greenhouse gas emissions at the farm level, and by improving soil health with efficient nutrient management practices, water efficiency and quality. Through our collaboration with Truterra, we are helping to replace fossil fuel-based materials with a plant-based alternative that is not only a renewable resource, but also one that is being produced in a way that helps capture carbon from the atmosphere. That type of circularity is an excellent example of how we are doing our part to fight climate change.

“We are investigating ways of creating a more sustainable Sorona polymer from renewable and recycled resources,”

BINITA BHUTA

What are the main challenges in implementing a programme that aims to guarantee that the feedstock for your plant-based polymers is from responsible agriculture?

We know regenerative agriculture farming methods benefit the environment and want to encourage widespread adoption of these practices. Yet, it can take multiple years of investing in these practices for measurable impact. Truterra enables a customised solution for each field and farm, based on their unique circumstances and needs. Through the programme, we are investing in the technological advancements that will measurably benefit these farms, the environment and, ultimately, the textile industry at large.

We note the project with Indian apparel brand Killer to treat fabrics containing Sorona in a hank-dyeing process for the first time. What other innovations are on the horizon?

The Killer example is interesting and fun. They have been able to eliminate some of the steps in the dyeing process and still offer a bright colour palette in their fabrics. We also just announced a spandex-free, yarn-dyed Sorona option that offers two-way and four-way stretch through Oscar Chandler & Company, which serves North and Central America. This is the importance of having great brands innovate with Sorona, demonstrating its versatility. In terms of other innovations, we have announced that we are investigating ways of creating the Sorona polymer from renewable resources, recycled resources or both. We currently use our biobased propanediol monomer, and that contributes 37% biobased content to Sorona. Close collaboration with peer companies, and through the entire value chain, is a key to bringing innovative, impactful and sustainable solutions to market.

Has CovationBio considered presenting recyclable stretch as a possible advantage that Sorona could offer over spandex? Could the use of Sorona instead make garments or fabrics easier to recycle?

The way CovationBio talks about recycling and stretch fibre as it relates to Sorona is that, to-date and at lab scale, we have proven that Sorona is mechanically recyclable. Another way to think about this is to consider durability again. Fabrics made with Sorona may last longer and this can help keep garments in use and out of landfills. I hope to inspire more people to integrate sustainable solutions into their businesses and in their home lives. 

Brazilian fitness brand Live is one of a number of supply chain partners that are choosing fabrics made from Sorona for their versatility, stretchability and durability.





A shoe for high achievers

Veneto-based outdoor footwear group Scarpa has a new style of footwear in its spring-summer 2023 collection that it describes as its most eco-friendly long-distance trail-running shoe ever. Part of the Planet range, the new Spin Planet is a shoe with high enough levels of performance and durability to meet the needs of even the most seasoned competitors.

It has an upper that is constructed from 100% recycled fibres, while the ethylene-vinyl acetate (EVA) midsole contains 45% recycled material and the rubber outer sole 30%. Scarpa says the midsole is thick enough to absorb impact and protect the foot and provide comfort throughout long-distance runs, especially in summer.

Record-breaker

Scarpa worked on the design of this shoe with Hillary Gerardi, an athlete who knows more than most about the need for high-performance footwear for an endurance trail-running event on rocky terrain and in challenging conditions (even in summer). Originally from Vermont in the US, Ms Gerardi now has her base in the Alps. She has an impressive list of recent wins in sky-running and

Footwear brand Scarpa picked a special athlete to help it develop its latest trail-running shoe, the Spin Planet.

long-distance events to her name, including the Tromsø Skyline race in Norway, the Trofeo Kima in Italy and the Glencoe Skyline in Scotland.

In 2021, running with friend and fellow athlete Valerie Fabre, she established a new record time for the ultra-marathon Haute Route course from Chamonix to Zermatt, completing, by skiing and running, the challenging 110-kilometre Alpine route, with its elevation gain of more than 8,000 metres, in 26 hours and 21 minutes. A new record implies that there was an existing record to beat, but there was none for women; it could be that women had completed the ski-traverse before, but there was no official time for this until 2021.

This feat features in a documentary called 'The Traverse', made by film-makers Ben Tibbetts and Jake Holland, which has been well received at mountain festivals in different parts of the world in the months that followed.

“Long-distance running in the Alps has given Hillary Gerardi a new way of being in the mountains.”

Specialist skyrunner Hillary Gerardi worked with Scarpa on the development of the Spin Planet shoe.

CREDIT: JOSÉ MIGUEL MUNOZE/SCARPA



On foot

Hillary Gerardi co-designed the Spin Planet shoe with Scarpa and is an official ambassador for the brand and for this new product. She talks often, as in a recent episode of a podcast called 'Go Mountain Goats', of her love of the mountains and of climbing and says that "not running" is what she likes best about the running events in which she excels. She even says that it took her a long time to describe herself as a runner.

She points out that what we describe as trail-running covers a multitude of different specialisms: mountain-running, fell-running, 10-13-kilometre events, 20-kilometre events, 50-kilometre, 100-kilometre on a huge range of trails. She also remarks on the difference between traversing these courses on foot rather than "hitching a lift up" and then skiing back down as an alpinist. On foot, you have time to see fully how the landscape changes, (valley, deciduous forest, coniferous forest, shrubland, grassland, rocky terrain, then ice) and what risks each stage might present.

Responsibility at heart

Alpinism is far from without serious risks of its own, of course, as Ms Gerardi knows only too well, having suffered a potentially serious accident some years ago owing to a binding malfunction. She escaped significant injury that day, but says now that the incident forced her to change her way "of looking at the mountains and of being in the mountains". Her opinion now is that trail-running is more conducive to forcing people to be more independent during these events, to take responsibility for where they are and for what they are doing.

Responsibility is close to her heart, too, which is why she engaged enthusiastically with Scarpa on the Spin Planet project. Before becoming a full-time athlete in 2022, she worked for a research organisation focused on monitoring the impact of global warming on mountain environments. At a hands-on level, she has long been a champion of 'plogging', the practice of



Scarpa's new trail-running shoe uses 100% recycled fibres in the upper material, 45% in the midsole and 30% in the outer sole.

CREDIT: JOSÉ MIGUEL MUNOZE/SCARPA

picking up litter from the pathways while jogging, for years. She says she has long been an admirer of Scarpa precisely because it is a company that has "its DNA rooted in the mountains".

She says that when she began working with the footwear brand on the Spin Planet shoe, she found great willingness among members of the Scarpa team to engage with her in dialogue about durability and reducing impact on the environment from the shoe's manufacture. She declares herself delighted to have been involved in the process of creating a shoe that uses recycled materials extensively and still meets strict technical requirements while remaining lightweight (the shoe weighs 520 grammes in women's size 38). "The shoe is very innovative," she concludes. 🌍



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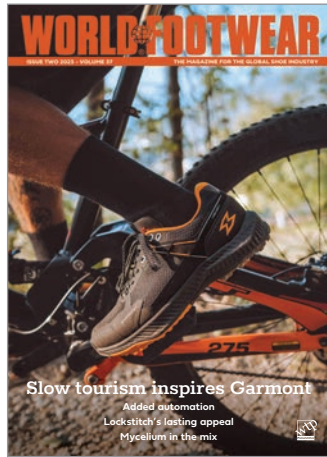
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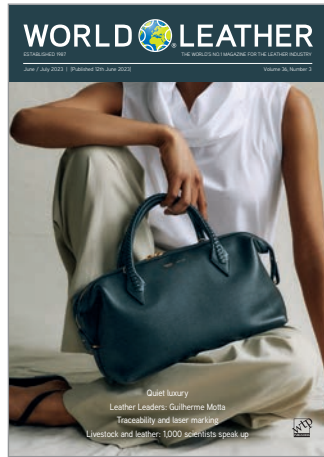
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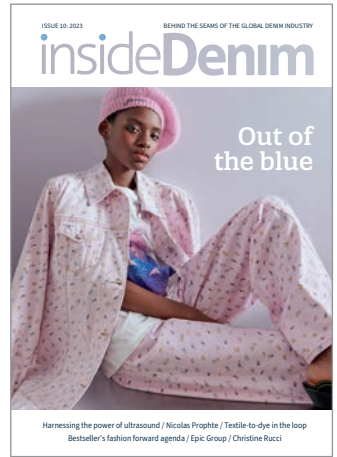
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