VOLUME 28
ISSUE FOUR 2022

WSA

PERFOR & SPORTS MATERIALS



Natural fibres perform

Food waste and fabrics

Study reveals PFAS Achilles' heel

Dialogue: Thomas Håkansson on reclaiming old values

THE INTERNATIONAL MAGAZINE FOR PERFORMANCE & SPORTS MATERIALS

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Front cover:
Proof, if it were needed, that garments made from natural fibres can perform at the highest level. Image from a new collection that Italian brand Salewa has developed with fabrics made from hemp.

IMAGE: SALEWA

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World Trades Publishing 2022

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UK Price £80 / ROW £135. Credit cards will be charged in GB Pounds converted at the daily bank rate. Your credit card company may charge you for this service.

Graphic origination by WTP
Printed by Bishops Printers, Walton Road, Portsmouth, Hampshire PO6 1TR

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WSA (ISSN 1356-644X) is published four times a year by World Trades Publishing, 36 Crosby Road North, Liverpool L22 4QQ, UK.

Global news

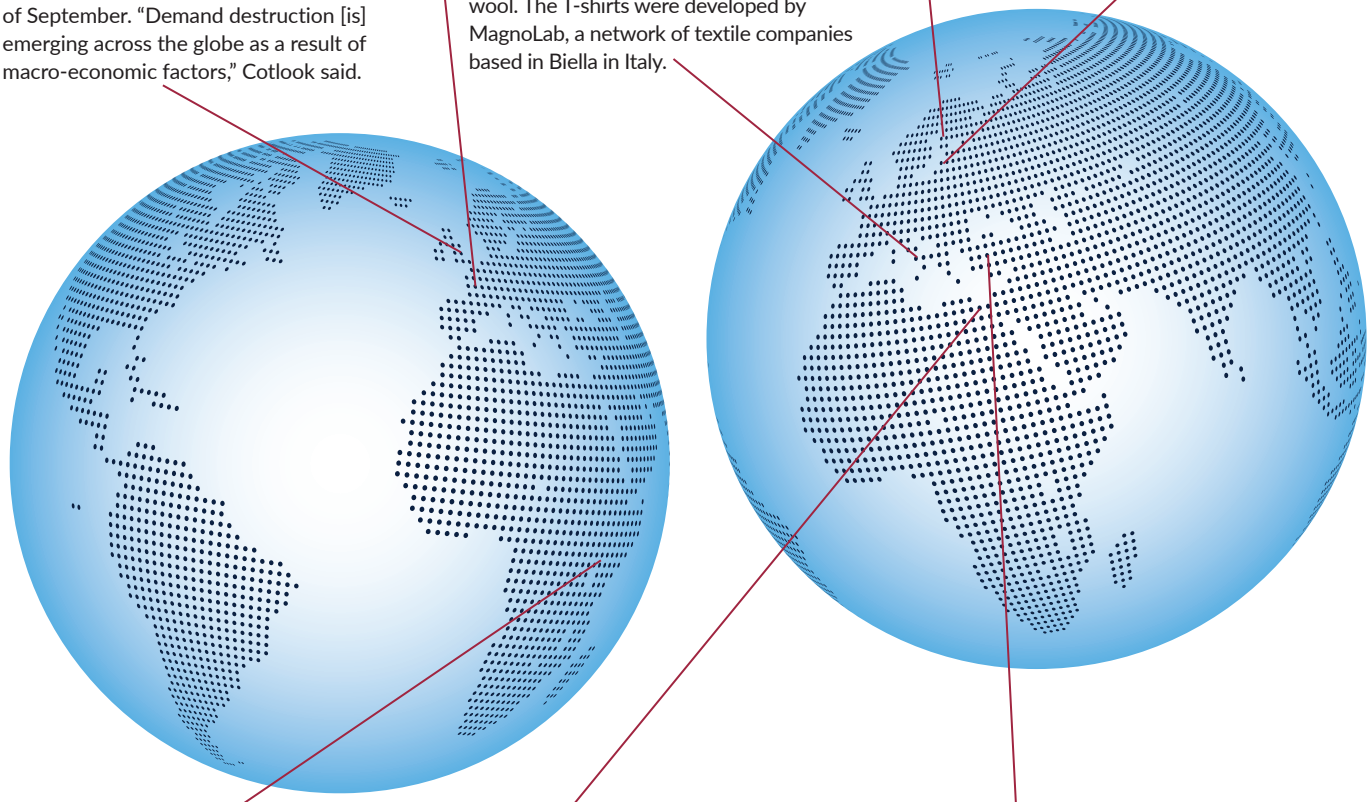
France Sports equipment manufacturing and retail group Decathlon has suggested that boxing can be a good choice for young people looking for new sports to try at the start of this academic year. It said boxing can bring physical and mental wellbeing benefits. It has added new protective products to prevent injury to its boxing range. These include a helmet with a protective bar to prevent injury to the nose and new gloves called 500 Ergo. These are part of the offering from Decathlon's dedicated combat sports brand Outshock.

UK Cotton market information resource Cotlook has said in its market report for September that international cotton prices "reversed direction in dramatic fashion" during the month. It said that, influenced by macro-economic headwinds and a weak demand situation, prices declined by more than 20% from the end of August to the end of September. "Demand destruction [is] emerging across the globe as a result of macro-economic factors," Cotlook said.

Italy At the Filo yarns and fibres exhibition in Milan in September, Asahi Kasei introduced a new fibre under its Bemberg label. In staple fibre form, the new product is the result of a process that uses cotton linters in a closed-loop process. A first collection of garments also went on show at Filo: a range of T-shirts that has the staple fibre as its top ingredient, combined with organic cotton and wool. The T-shirts were developed by MagnoLab, a network of textile companies based in Biella in Italy.

Finland Textile fibre developer Spinnova has won a grant of up to €1.6 million to help fund a research project it will carry out between now and the end of 2024. The money is from Business Finland, a government organisation for funding innovation. Spinnova is embarking on what it calls follow-up research on its fibre technology with the aim of finding new application areas and product segments for it. Potential developments include scalable dope-dyeing of the Spinnova fibre. The company has said the grant will cover up to 50% of the project costs.

Latvia Latvian polyethylene terephthalate (PET) recycling firm PET Baltija has announced plans to purchase Silon spin-off Tesil Fibres, a Czech fibre producer that specialises in manufacturing recycled PET (rPET) products from post-consumer plastic bottles. PET Baltija's revenues are expected to more than double following the merger. The deal will also take the Latvian company international. Last year, Tesil Fibres registered sales of €27 million ($27 million).



Kenya Cycling and snow sports safety helmet brand POC has announced limited-edition helmets designed in partnership with Team Amani, an initiative that seeks to enhance inclusivity in cycling and to create opportunities for riders based in Africa. Sales will support work to increase access to cycling in East Africa. POC explained that Team Amani was still coming to terms with the loss of its captain, Sule Kangangi; the Kenyan rider suffered a fatal accident in a race in the US in August.

Egypt Traceability solutions provider Haelixa has piloted a new programme to trace Egyptian cotton from source to premium shirts. To make shirts traceable, Haelixa has developed a DNA marker to label the raw material, premium Egyptian cotton. The marker has been applied as a fine spray to Goza 96 lint cotton in Borg Al Arab. Swiss manufacturer Weba used the cotton to weave fabric for shirts. In this case, the marked fabric was used to make shirts for Hugo Boss.

Turkey A service facility that textile machinery developer Rieter runs in Kahramanmaras in south-central Turkey has moved to a new site, covering 2,000 square-metres. The new set-up includes an R70 fully automatic rotor spinning machine and an Autoconer X6 winding machine. Rieter said it represented one of the largest test-spinning facilities for textile manufacturers in the region. Customers would be able to run yarn comparison tests and analyse the impact of different technologies to optimise their operations.

China China's seven-day Golden Week holiday, which follow the celebration of National Day on October 1, resulted in major gains for three domestic down jacket brands this year. Bosideng, Xuezhongfei and Duck Duck all exceeded a gross merchandise value (GMV) rate of 100% on Alibaba-powered e-tailing platform Tmall over the period, analysts said.

US Sports brand Under Armour has published a new sustainability and impact report, outlining 23 goals and targets that the company said would drive progress. It said it would build sustainability and circular design principles into at least half of its products by 2027 and develop chemistry and processes that can enable a circular footwear programme to be launched in market, at scale, by 2030. At the end of 2021, approximately 40% of fabrics used in the company's apparel and accessories were made from materials capable of being recycled.





Brazil Activewear brand BiaBrazil will use graphene formulations from UK engineering company Versarien in a new range of athletic apparel for men and women. Ahead of an expected global launch in early 2023, the collaborators revealed that they have been conducting joint trials with supply chain partners for the past 16 months. Founder and chief executive at BiaBrazil, Beatriz Dockhorn, called the resulting products "next-generation".

Bangladesh Industry body the Bangladesh Textile Mills Association (BTMA) has said that export-oriented mills across the country are cutting or even halting production owing to fuel shortages. A knock-on effect of this, BTMA said, is that spinning, weaving, dyeing, printing, finishing, and knitting operations that have reduced production are now no longer earning enough to pay workers' and other costs.

South Korea Stakeholders from across South Korea have come together in the tech cluster of Pangyo, near Seoul, to form a consortium engaged specifically in the development of eco-friendlier fibres from chemically recycled plastics. The group comprises Korea Textile Development Institute (KTDI), chemicals producer SK Chemicals and sustainable fashion platform Art Impact. SK Chemicals will make its SkyPET CR polyester, derived from chemically recycled waste plastics, available to KTDI researchers, who will use it to create new yarns.

Australia Australian cotton growers appear certain to sell out their 2022 cotton crop within weeks and are well positioned for the 2023 crop, despite global volatility, industry body Cotton Australia has said. With a crop of around 5.5 million bales produced in the country this year, the biggest on record, and with good prices per bale, farmers are expecting a positive economic return. Industry sources have said 95% of the 2022 crop is now sold and 36% of the 2023 crop is forward-sold, in spite of falling consumer confidence, rising interest rates, inflationary pressures, the impact of China's covid-19 lockdowns and war in Europe.

Cambodia The Cambodian Chamber of Commerce has opened a representative office in Toronto as the Asian country strives to grow its exports of apparel to Canada. In 2021, Canada imported clothing worth just over US $1 billion from Cambodia, an almost 11% share of all Canada's garment imports. The authorities in Cambodia have said that, as new clothing factories open and existing facilities increase their production capacities, they believe their country could overtake Vietnam and Bangladesh as an exporter of apparel to Canada, although China would still have by far the biggest share of that market.

People

Patagonia pledges to "protect the source"


CREDIT: CAMPBELL BREWER

Outdoor brand Patagonia has announced new ownership. Founder, **Yvon Chouinard**, who launched Patagonia almost 50 years ago, and his family have now transferred ownership of the company to two new entities, the Patagonia Purpose Trust and the Holdfast Collective. These companies will invest all money that Patagonia makes from now on either back into the brand or into "dividends to protect the planet".

Under the new set-up, the Patagonia Purpose Trust will help ensure that there is no "deviation from the intent of the founder" and to continue to demonstrate that "capitalism can work for the planet". Profits that are not reinvested back into Patagonia's business will pass as a dividend to the Holdfast Collective. Depending on the health of the business, projections are that this will amount to around $100 million per year.

The Holdfast Collective will use every dollar received from Patagonia "to protect nature and biodiversity, support thriving communities and fight the environmental crisis".

Commenting on these changes, Yvon Chouinard said: "Instead of extracting value from nature and transforming it into wealth, we are using the wealth Patagonia creates to protect the source. We're making earth our only shareholder. I am deadly serious about saving this planet." Patagonia will remain a B Corp and continue to give 1% of sales each year to grassroots activists.

Gas-price frustration for Euratex

Euratex, the Brussels-based body that promotes the design, development, manufacture and marketing of textile and clothing products in the European Union, has renewed its call for support for manufacturers over high energy prices.

It issued an initial appeal for help at the end of August, saying producers of synthetic and cellulosic manmade fibres were particularly at risk from energy price-hikes because of the sector's reliance on natural gas. It pointed out that companies involved in textile dyeing and finishing as being under intense pressure.

Now it has said EU energy ministers "missed the point" when they met at the end of September to discuss the energy crisis. Member-state ministers approved European Union calls to reduce electricity prices and electricity demand. Euratex said the ministers had meant well but that bringing gas prices down would be "the one measure that would have the biggest impact on European industry".

The organisation's director general, **Dirk Vantyghem**, went further. He said hesitation over adopting a price cap on natural gas and on setting up subsidies to help companies overcome high gas prices amounted to "a dereliction of duty".

A share of €50 billion

French technical textiles cluster Techtera has named **Philippe Sanial** as its new president. Mr Sanial is the technical director of Chomarat, a textile coatings specialist. On making the announcement, Techtera said its new president had in-depth knowledge of "the levers of collaborative innovation", particularly for small and medium companies.

It said he faced particular challenges as president of Techtera, focusing especially on connecting France's textile manufacturers to France 2030, an investment plan that the government launched in October 2021.

France 2030 has a budget of more than €50 billion and aims to help make key sectors of the economy function in a sustainable way.

New CEO at Reebok

Reebok veteran **Todd Krinsky**, whose tenure is 30 years strong after first joining the Boston-based sportwear brand as an intern, has been named chief executive following **Matt O'Toole's** move over to company owner Authentic Brands Group (ABG).

C-changes

VF Corporation-owned outdoor brand The North Face (TNF) has appointed, **Sophie Bambuck** and **Jennifer Ingraffea** to its C-suite. Ms Bambuck has assumed the role of chief marketing officer, while Ms Ingraffea has joined as the company's chief product and merchandising officer.

Severance package

Former executive chairman **Peter Cowgill** has reached a severance agreement with sports retail business JD Sports. He stepped down from the role in May and JD announced a successor, **Andrew Higginson**, in July. Mr Cowgill will receive several million pounds in salary and other benefits. He has agreed to act as a consultant to the group for the next two years.

Deputy CEO at Lacoste

French sports brand Lacoste has named **Catherine Spindler** as its deputy chief executive. Ms Spindler was previously the company's chief brand officer. Although she has been based in France for much of her career, the executive also spent almost four years in China, where she was responsible for marketing for French beauty, skincare and perfume brand Yves Rocher.

Spanx CEO steps down

Activewear brand Spanx has announced a change in leadership. Kim Jones has taken over as chief executive from the founder, Sara Blakely. Ms Jones has worked at Spanx for 15 years and was, most recently, company president and chief finance officer.

Shark attack

Activewear brand Gymshark has revealed that **Mat Dunn** will become its chief financial officer in early 2023. Mr Dunn most recently served as chief operating officer and chief financial officer at Asos, having also spent a period as interim chief executive.

Award for senior figure at Carbios

Chief scientific officer of bioplastics specialist Carbios, **Alain Marty**, has received a prestigious biotechnology industry award. At the tenth International Congress of Biocatalysis (Biocat), which took place at the Technical University of Hamburg, the Biocat Award for industry went to Mr. Marty in recognition of his achievements in the field of enzymatic recycling of plastics and PET fibres.

Twenty years

Sports brand Nike has introduced a new shoe in the range it offers in honour of basketball star **LeBron James**. It describes this shoe, the LeBron XX, as the first in the range to debut as a low-top. It has a carbon fibre midfoot shank and the company's proprietary Air Zoom technology for cushioning and impact protection. Senior footwear designer for men's basketball at Nike, **Jason Petrie**, said the shoe aims to celebrate LeBron James's professional career, which will have spanned 20 years in 2023.

Bantle becomes Bauer CEO

Outdoor brand Eddie Bauer has a new chief executive. Sparc Group, which is owned by Authentic Brands Group, has confirmed the appointment of **Tim Bantle** as the Eddie Bauer new chief executive. Mr Bantle has more than two decades of experience in outdoor retail, technical apparel and equipment. Most recently, he was general manager of VF Corporation's outdoor and action sports business in Canada.

Vintage advantage

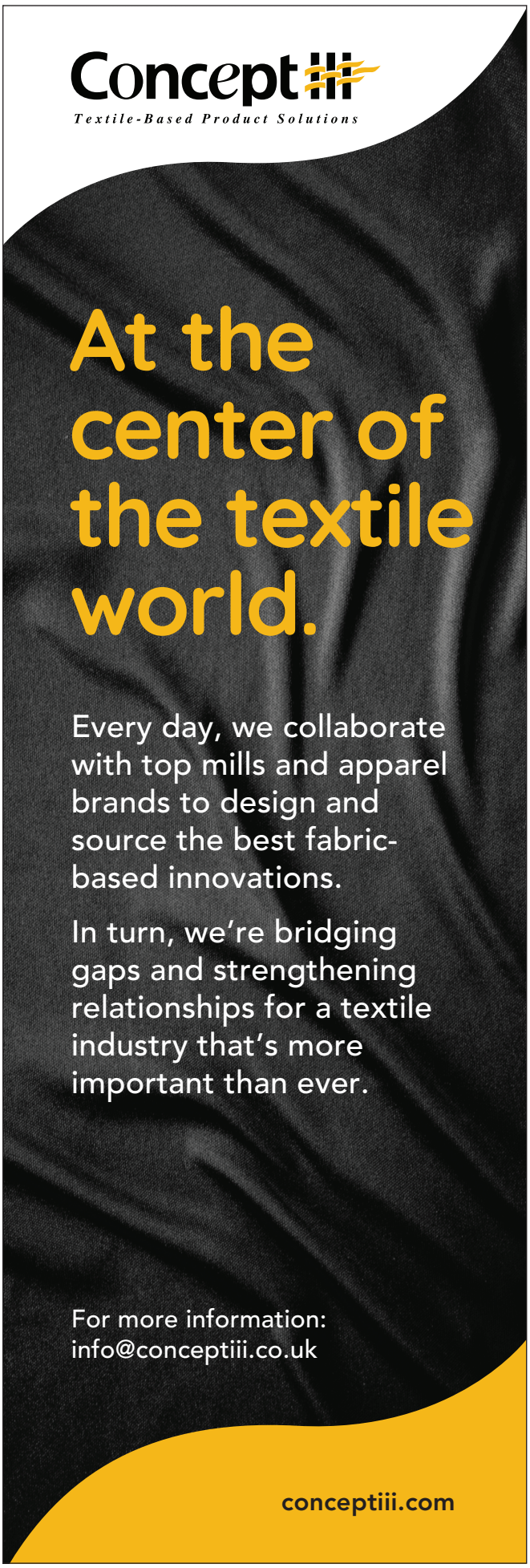
The chief executive of Norwegian outdoor brand Norrøna, **Jørgen Jørgensen**, was delighted when the team at the company's store in Trondheim received a request from a customer to apply a new coat of durable water repellent finish to a jacket a customer had been using for 22 years. The customer told the team she had bought the jacket in Bergen in the winter of 2000 when she was a student, had continued to use it for 22 years and intended to keep doing so. She said she was flattered when the team began making a fuss over her 'vintage' jacket.

Biochemicals move

The former head of textile coatings at polymer manufacturer Covestro, **Nick Smith**, is to leave the group at the start of 2023. Mr Smith had run the textile coatings business since Covestro was spun off from Bayer MaterialScience in 2015 before taking up a new role in 2019. After leaving Covestro at the end of this year, he will join biochemicals company Circa Group as its head of development and commercialisation.

From Reebok to Jack Wolfskin

Outdoor brand Jack Wolfskin has appointed **Massimo Carnelli** as its director of sales for southern Europe and new markets. Mr Carnelli most recently held the position of senior brand director for Reebok in Italy. In his new role, he will also be responsible for establishing a bigger market presence for Jack Wolfskin in Spain and France, and for expanding its business in the Middle East.



Industry & Innovation

Biggest apparel innovation for 30 years, Nike claims


CREDIT: NIKE

Sports group Nike has launched what it is calling its "most significant apparel innovation" for 30 years, one that will "reset the way we think about fleece".

With its new product, Nike Forward, it has moved away from knit and woven processes. The new material turns fibre directly into textile using needle-punch technology and "simplifies the process of material fabrication by reducing steps".

Rather than follow a multistage cycle of spinning yarn, knitting, cutting, sewing and finishing, Nike Forward involves fewer steps, leading to an average of 75% reduction in the carbon footprint of the material it produces compared to traditional knit fleece.

The company said five years' research had gone into this development. It added that the resulting material has a lighter density than traditional knit fleece and that the finished product contains 70% recycled content by weight.

"This is the biggest Nike apparel innovation since Dri-Fit 30 years ago," said the group's vice-president for global apparel product merchandising, Aaron Heiser. "It has huge potential to transform the industry."

Tracksuit moves adidas closer to circular model

A new tracksuit in the adidas by Stella McCartney range marks a first for the sports brand. Following in the steps of its Futurecraft Loop footwear project, which it launched in 2019 to demonstrate that shoes could be "made to be remade", it has now unveiled a sportswear garment that can be remade when consumers have finished wearing it.

This project involves using post-consumer end-of-life textiles to make Infinited Fiber's Infinna viscose fibre. This is then turned into a yarn blended with organic cotton for garment production. At end of life, consumers can send the tracksuit back for inclusion in Infinited Fiber's recycling stream, where it can be broken down for reuse.

Lycra prepares to scale bioderived spandex

Fibre developer The Lycra Company has signed a deal with Qore, the maker of a biobased 1,4-Butanediol (BDO) alternative called Qira, established only last year as a joint venture between chemicals firm Helm and food corporation Cargill's bioindustrial business.

The agreement will enable large-scale commercial production of bioderived Lycra spandex (ie, elastane) using the Qira platform as a main ingredient, effectively taking the proportion of fibre content that stems from annually renewable feedstocks – in Qira's case, corn – to 70%.

An estimated cradle-to-gate assessment conducted by Ramboll consultants at a representative Lycra fibre manufacturing site back in June suggested that replacing non-renewable, fossil energy-derived content with Qira could reduce the fibre's carbon footprint by as much as 44%. Production is expected to begin in 2024.

Lycra owns the patent for a process capable of turning bioderived BDO into renewable spandex, it stated adding that tests had found no change in performance after switching out non-renewable fibre content with Qira.

Seam-tape savings

German outdoor brand Jack Wolfskin has released a three-layer hooded hiking jacket that is waterproof and windproof and at the same time tapeless. Thanks to its Zero Tape technology, the company has found a way to seal against water penetration by welding the seams of its new Texapore fabric in a staggered fashion. This means 20 metres of seam tape is saved per jacket.

Green energy

Fibre developer Lenzing has continued to ramp up reliance on "green" electricity at its global manufacturing sites. The producer's Chinese subsidiary, Lenzing Nanjing Fibers, will run on electricity generated solely from renewable sources from 2023 onwards. This is expected to result in an annual saving of 100,000 tonnes of potential carbon emissions at the facility, the company claims.

Net worth

UK-based shoe components manufacturer Milspeed has revealed it has been working since March 2020 to reprocess discarded local nylon fishing nets into recycled plastic pellets for toe puffs, heel counters, logos and more alongside environmental charity Keep Britain Tidy. To date, over 40 tonnes of trawl nets have been repurposed, roughly 30 tonnes of which was collected by Tor Bay Harbour Authority from Devon's Brixham Harbour.

Operations centre

Sports group Anta has cemented plans to construct an international operations centre in the city of Suzhou, China. At a signing ceremony in late September, the company's chief financial officer, Lai Shixian, described the site as a centre for business restructuring across retail and customer experience through the integration of logistics, sales and digital processes. Total investment in the facility will exceed $140 million, with the 160,000-square-metre complex expected to be operational by 2025.

Pre-consumer

Invista brand Cordura's re/cor RN66 collection, a line of recycled nylon 66 fabrics made from 100% pre-consumer material collected in-house, has been

Enormous jump in fibre-to-fibre recycling is feasible

Fashion for Good, the Amsterdam-based hub that aims to help companies in the fashion supply chain work with innovative technology providers to make clothes more sustainable, has announced the completion of a 16-month project called Sorting For Circularity Europe. It has also published a report detailing the project's findings.

According to the report, almost three-quarters of low-value, post-consumer textile waste in Europe could be suitable for fibre-to-fibre recycling.

During the project, more than 20,000 tonnes of post-consumer garments underwent analysis. The project team found that 21% of the material was suitable for mechanical recycling and that a further 53% was suitable for chemical recycling. "This presents a significant opportunity for circularity as currently only 2% of post-consumer textiles are diverted to fibre-to-fibre recycling," Fashion for Good stated.

Plastics partner

Materials developer Eastman has announced Interzero, a specialist in plastics sorting, as a partner for the molecular recycling facility it is developing in France.

Eastman announced the new facility in January. It will be located in Normandy and will aim to process approximately 160,000 tonnes of hard-to-recycle polyester waste annually. The company has said it hopes to begin operations at the plant in 2025.

Under this new partnership agreement, Intermezo, a Germany-based plastics recycler with the largest sorting capacity in Europe, will provide Eastman with up to 20,000 tonnes of hard-to-recycle polyester household packaging waste that would otherwise go for incineration.

Typically, this material will be coloured and opaque PET waste; this cannot be recycled mechanically but Eastman will use it to create, via its polyester renewal technology, transparent rPET.

Carbon claim

Japanese athletic footwear brand ASICS has said a new sneaker, the Gel-Lyte III CM 1.95, has a lower carbon footprint than any other sports shoe on the market. It has measured the environmental impact of the product at 1.95 kilos of CO_2-equivalent (CO_2e), insisting this is significantly lower than the lowest levels available in the market at the moment. The company has based this assertion on available industry data up to September this year.

The company calculated the figure of 1.95 kilos of CO_2e itself, but has had its assessment independently validated by research and testing group SGS in accordance with ISO14067.

Most supportive yoga fabric yet from Lululemon

Clothing brand Lululemon has introduced a new range of yoga apparel called Instill Tight. Products in the range use a new proprietary fabric that the brand has called SmoothCover. According to it, the material, which took two years to develop, is its most supportive yoga fabric yet.

Chief product officer, Sun Choe, said: "We have made sure every seam, every stitch and every detail contribute to making you feel hugged, held-in and secure."

The waistband is constructed with a high-rise in the front and a super-high rise in the back, with back drop-in pocket to keep cards and keys secure.

Funding for circular sportswear project

An initiative to make 100% bio-based performance sportswear, BioAce, is to receive funding from the European Commission as part of a programme called the S4 Fashion project. BioAce is a joint project between Germany-based sustainable materials consultancy Circuvate and clothing manufacturer The Good Factory. It will receive funding of €10,000.

Specifically, the project aims to explore the use of a 100% bio-based polyamide. The polyamide, PA 10,10, comes from castor beans, a renewable resource that fabric developers have been using for more than a decade.

The project partners have said that using bio-based polyamides could reduce the carbon footprint of sports clothing by 55% compared to products made using petroleum-based fibres. BioAce intends to reduce that further by exploring the development of recycled bio-based yarns, initially from factory cutting waste.

added to materials library and consultancy Material ConneXion's 'Material Insights' platform. Fabrics made from this have been introduced to the footwear market via two new styles, produced in partnership with Taiwan-based supplier Tiong Liong. These, alongside eight versions designed for packs, outerwear and reinforcements with South Korean manufacturer Dong Jin, were all included by Material ConneXion.

AI to aid sustainability

Swiss textile machinery group Rieter and the charitable organisation set up in the name of its founder, the Johann Jacob Rieter Foundation, are to sponsor a new professorship in industrial artificial intelligence (AI) at the School of Engineering at the Zurich University of Applied Sciences. The professorship will focus on how to connect machine-learning methods, knowledge-based systems, production and service. Rieter said the use of AI will make a significant contribution to automation and process optimisation, and thereby advance sustainability in the textile industry.

Membrane on the market

The first shoes to incorporate Gore's ePE membrane, formed by combining expanded polyethylene (ePE) with polyurethane, have started to become available. Brands such as K2, Eider, Kolon Sport and BlackYak have all unveiled designs that feature the technology as part of their current autumn-winter collections.

Fusion bonding

Footwear materials developer Texon has unveiled a new Strobel innovation, Ecostrobe. Made from recycled polyethylene terephthalate (rPET) using fusion-bonding technology that eliminates the need for added chemicals or water, the insole is the company's first to have been made from 100% recycled content. Any cutting waste is fully recyclable. It is 20% lighter and demands 50% less energy to produce.

Raw material progress

Plastics group Covestro has announced new versions of key raw materials for polyurethane foams: toluene diisocyanate (TDI) and methylene diphenyl diisocyanate (MDI). It said it can offer TDI with renewable content from biowaste, and MDI that is "climate-neutral". This climate-neutrality claim is the result of an internal assessment.

Backtrack

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.

13.10.2022
Lycra publishes first Planet Agenda updates

Korea path for Hohenstein

12.10.2022
A 'love letter to nature' from Mizuno

Moncler customisation launch leans towards Japan

11.10.2022
SAC 'doubling down' on data collection

Consumer authorities raise four issues of concern about the Higg MSI

10.10.2022
Search for the oldest Norrøna products under way

Partnership marks World Mental Health Day for adidas

Major milestone for US Cotton Trust Protocol

07.10.2022
Textile Exchange issues annual reports, despite organic cotton challenges

Kolon eyes fishing's fashion potential in South Korea

06.10.2022
Overshoes maker offloaded by Rocky Brands

Wool garments are like Bauhaus furniture, campaign claims

Decline in orders hurts Vietnam's garment manufacturers

05.10.2022
Jack Wolfskin puts weight behind PrimaLoft's Insulation Rise

CovationBio shines light on its corn growers

04.10.2022
Coats Digital debuts buying and cutting data system

Biobased fibre forum held in China

Growth for Le Coq Sportif

03.10.2022
Feel the Yarn returns to Seoul after 12-year absence

Dragon dives into plastic offsetting

30.09.2022
Growth elsewhere 'partially offsets' China fall for Nike

New merino yarns from Südwolle go into pants project

Andar expands into height-boosting running shoes

On welcomes its first-ever Chinese athlete

29.09.2022
Carbon fibre LCA calculations complete for Teijin

28.09.2022
Lululemon unveils Studio plan, appoints EMEA exec

27.09.2022
China's ITMA Asia + CITME postponed for a year

26.09.2022
New Christie's department for collectible sneakers

Umbro takes first strike with ProWeave

23.09.2022
A robust first-half performance for JD Sports

C4 rallies Californian cotton stakeholders

Jilin nears $2bn in revenue for first eight months

22.09.2022
Renewable and recycled content from Eastman in Patagonia T-shirts

Microban shows support for metal-free

20.09.2022
Ferrari "design cues" show up in new Puma shoe

19.09.2022
Accolades for Anta

16.09.2022
Local partners to work with ABG to relaunch Eddie Bauer in Japan

BCG publishes top 50 innovative companies for 2022

15.09.2022
Layering system update from Haglöfs

Growth continues for fast-fashion superstars

Innovations up for discussion at Dornbirn for Lycra

14.09.2022
Koch sees value in licensing Ioniqa's rPET method

Five rules for sustainable clothing claims

Cycling brand inspired by Earth, space and the body

Unsubstantiated 'green' claims cost two apparel groups almost €1 million

13.09.2022
US Open success brings Babolat tribute for Carlos Alcaraz

Xiamen a centre for September sports shows

Moncler expands into outdoor footwear

12.09.2022
Sports shoe knowledge-transfer for BASF

PU raw material progress from Covestro

Onward into resale for On

Li-Ning to open its first Hong Kong flagship

09.09.2022
Capsule collection adds to adidas Made With Nature programme

China's cotton imports fall as domestic price drops

Textiles group and GTT aim to 'revolutionise' fabric finishing in the US

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Concerned by microplastics and seeking to avoid materials derived from fossil fuels, a few pioneering active and sportswear brands are taking the radical decision to phase out synthetics in the belief that nature knows best.

Plastic-free performance

Going plastic-free is a radical turn from practices that have dominated performance clothing design for the past half century. Synthetic fibres have been favoured for their strength, low weight, hydrophobicity, and all-around durability. They replaced the natural fibres that everyone, athletes included, used to wear. A single non-synthetic fibre, wool, was later accepted back into the activewear fibre ranks because of its exceptional set of properties: advanced thermoregulation, along with unequalled moisture and odour management. If synthetic fibres were not so cheap, silk might also have kept a place in performance baselayers. Cotton, it was said, could not compete with synthetics for intense activities and was quickly cast aside.

A few pioneering brands, and many suppliers of natural fibre performance materials, hold that the bar should be reset. Microplastics pollution and the need to stop mining fossil fuels for consumer goods (among other things) were the basis of their thinking. These companies assert that natural fibres are more comfortable to wear for any occasion, active or not.

Three years ago, Nicolas Rochat, owner of Mover, a Swiss skiwear brand, took the bold decision to reposition it as a plastic-free, outdoor lifestyle label. He created a new structure, changed his business model from B2B to B2C, and pursued a cause he had already initiated in his skiwear products: to create activewear made only from natural materials. Mr Rochat had been instrumental in the launch of SwissWool insulation with German company Baur Vliesstoffe, some 13 years ago. This local wool concept has since spawned a wide array of products that Lavalan, a division of Baur Vliesstoffe, commercialises.

Mr Rochat had also previously used Ventile fabrics. “For our winter 2016 collection, we made a skisuit combining the 100% cotton fabric with wool insulation. It was a revolution, but it was also very expensive, somewhat difficult to explain, and not an easy sell,” he tells *WSA*.

Times have changed and he feels that the plastic-free message is now better understood. Mr Rochat firmly believes that natural fibres are more comfortable to wear than synthetics and can offer the same performances. “The only limit I see is theoretical. It is Gore and the like marketing water columns. I don’t need a garment to resist a 40-metre water column, what I need is a garment that keeps me dry and breathes,” he says. We also need suppliers that can make functional, machine-washable textiles from natural fibres, he says, adding: “A textile derives its properties from surface and density, not only fibre. Ventile is a good example of this. It is made with a long staple cotton fibre that has a special twist and is woven in a specific texture.”



Mover is now a 100% plastic-free outdoor lifestyle and athleisure brand.
CREDIT: MOVER/GIANNI CAMPOROTA

Regenerated fibres

Austrian manmade cellulose fibre (MMCF) producer Lenzing has decided to promote Tencel, its branded lyocell, in activewear. Lyocell is not technically a natural fibre, but a semi-synthetic or regenerated cellulose fibre made from a renewable resource, wood. Demand for plant-based performance materials is such that the company created a full range of fabrics and insulation for all layers and uses for its outdoor-focused ‘Tree Climate’ collection. “There is a huge demand for our fibre in activewear,” says Andreas Gürtler, Lenzing’s senior manager for functional wear, adding that it offers moisture management and breathability. “Tencel possesses genuine thermal properties and moves moisture



> **Hemp is a perfect fibre in humid and in mountain conditions.**
>
> MARIE LUISA ROOS, SALEWA

Outdoor brand Salewa says hemp is ideal for hiking and climbing gear, backed by extensive field testing by its alpine team.
CREDIT: SALEWA



Icebreaker claims that 95% of its products are plastic-free.
CREDIT: ICEBREAKER

away from the body. It has very nice aesthetics, it brings a lot of body to a textile and drapes well," says David Parkes, founder of textile solutions provider Concept III. Along with Performance Days founder Marco Weichaert, he helped Lenzing develop the collection. "The industry is concerned about rPET availability in the years to come and needs a replacement for polyester. Tencel could be that fibre," he says.

Lenzing is going to great lengths to support the use of Tencel fibres in activewear and in the outdoor industry. In addition to base and mid layers, the fabric collection includes outer layer textiles with water-and wind-resistant coatings. Lyocell sewing threads and sewn-in labels are also available. "These are certified biodegradable," says Mr Gürtler.

Icebreaker is the most prominent brand to embrace the plastic-free cause in activewear. It plans to phase out synthetics by next year. "Inspired by our purpose to remove unnecessary plastic from performance apparel, we started our plastic-free journey in 2018 at a time when 84% of our fibres were natural- or plant-based," Jan Van Mossevelde, Icebreaker's global president tells *WSA*. The VF-owned brand has made impressive progress, he says, and can now claim that 95% of its fibres are natural or plant-based. Progress is being made on the remaining 5% synthetic fibres for which "viable natural alternatives" are difficult to come by.

"We have identified an option for a partially bio-based elastane and one for a 100% bio-based nylon. We plan to introduce them into our fall/winter 23 collection," says Jordie Beneyto Ferre, Icebreaker's head of materials and sustainability. The elastane could be made from corn starch and the nylon may be derived from castor bean oil. Icebreaker is also collaborating with Finnish fibre manufacturer Spinnova to develop a "pioneering" yarn made from a blend of merino wool and the cellulosic fibre.

For its main fibre, merino wool, Icebreaker is pushing its suppliers to switch to regenerative practices. Its 2022 transparency report states that 100% of its 'Growers Club' members, those farmers with which the New Zealand brand has established long-term partnerships, intend to apply the regenerative practices of the ZQRX protocol created by the New Zealand Merino Company. It said that 59 of its 70 members have conducted initial assessments and the remaining 11 expect to do so by the end of the year.

Outdoor brand Salewa, part of the Italy-based Oberalp Group, is looking to increase the proportion of natural fibres in its collections and has been focusing on hemp. "We have been studying this fibre for a while and we have been testing products since 2016," says Marie-Luisa Roos, in charge of sustainability and communications within the group's five-person sustainability team. Salewa has even planted a field of hemp at its headquarters in Bolzano, Italy. Its Alpine Hemp collection was first launched in 2021, and the natural fibre was also present in blends with cotton and polyester in its summer 2022 range.

Why hemp? "It is a solution to a problem we all have, climate change. It is a fast growing, sustainable plant that requires less water than cotton and captures CO_2," says Ms Roos. "It is a perfect fibre in humid and in mountain conditions. It is quick drying, releases moisture fast, is antibacterial and anti-odour. It is also a good thermoregulator; the body won't overheat or undercool. It is an awesome plant, and we really want to make it work." Salewa, she adds, is evaluating several natural fibres that would be suitable for mountain sports. The brand's roster of renewable or natural raw materials include viscose,

linen, RDS-certified down, non-mulesed merino wool and Tyrolian wool insulation made from a local breed of 'spectacled' sheep. Its aim is not to go plastic-free, but "it is a topic we think about as part of our goal to become more circular," she says "we want to recycle plastic as often as possible, including fabric-to-fabric recycling".

> "There is new demand for wool-based fabrics from performance-oriented brands."
>
> JOSÉ FERNANDEZ, GLOBAL MERINO

Fossil fuels no more

The Woolmark Company, the not-for-profit marketing, research and development arm of Australian Wool Innovation, has launched a global campaign to draw attention to what it believes are the "dangers of synthetic fibres". The 'Wear Wool, not Fossil Fuel' campaign features a 60-second film showing people struggling to escape an oil-filled swimming pool. This striking image is based on the company's insight that every 25 minutes, an Olympic pool's worth of crude oil is used to produce synthetic clothing. The organisation is also concerned that eight out of 10 people do not know that synthetics are derived from fossil fuels and probably do not realise that synthetics are a major source (35% it says) of microplastics in oceans.

Merino wool has a long track record now in baselayers, but The Woolmark Company believes it has the potential to expand beyond this product category. It sought to prove the point this past summer by collaborating with French swimwear brand Vilebrequin on wool-based swimming trunks. "We feel confident our clients will appreciate the remarkable quality and the naturally chic way wool hangs on the body," said Vilebrequin chief executive, Roland Herlory, on the tie-up with The Merino Company.

Merino wool baselayers are making a comeback, confirms José Fernandez, head of Global Merino. "Demand for natural performance is high and we are seeing performance-oriented brands that did not have wool-based clothing looking to introduce it into their ranges," he tells *WSA*. Merino wool has great properties, but some shortcomings, he says, "next-to-skin is where it exhibits its best properties, mid-layers may not be the best use for wool." To enhance the fibre's natural properties, Global Merino is developing knit fabrics with special structures. "By adding loft, as a way of trapping air, we can achieve a higher warmth-to-weight ratio," he says. Examples of optimised structures include ribbed, honeycomb and French terry knits, and a double knit with a channelled, corrugated cardboard-like structure that increases airflow. Performance is also





The Woolmark Company worked with French swimwear brand Vilebrequin and The Merino Company to reintroduce wool in swimming trunks.
CREDIT: THE WOOLMARK COMPANY/VILEBREQUIN

affected by how the user feels, he says. "If a person sweats a lot, an interesting feature of merino is that it won't feel wet. This avoids post-effort chills."

Since the development of SwissWool, the offering of wool-based thermal insulation has grown significantly. UK-based HD Wool works closely with its wool growers in Britain to shift to regenerative practices. There are many reasons why wool is a better choice for performance compared to polyester, says Simon Whitmarsh-Knight, managing director for active insulation at HD Wool. "It is more breathable, it manages moisture better, it is more comfortable, and it does not generate microplastics."

David Parkes, at Concept III, is excited about Halo, a novel sliver-knit wool insulation made by Chinese company Nice Gain. The loosely knit textile has high loft and is made from traceable 32-micron wool from New Zealand, "Due to the natural crimp of wool, it creates dead air space for warmth and won't fall apart, there is no need for tacking or quilting," Mr Parkes says.

Performance cotton

Cotton is, for some in the outdoor industry, not only a very comfortable fibre to wear but also a high-performance raw material (see Dialogue with Thomas Håkansson on page 38). "Sir Edmund Hillary summitted Everest wearing a jacket made from nylon, Ventile, wool and down," points out Nicolas Rochat. For Mover, he chose to make a micro puff jacket with a 100% organic cotton ripstop fabric weighing 100 gsm and having windproof and water-resistant properties.

A fabric that would be similar to those made by Swiss high-tech weaver Stotz, owner of the Ventile brand. These textiles owe their high level of performance to extra-long staple cotton fibres that are spun and woven to deliver wind and water resistance. If stronger rain protection is needed, a wax or DWR (ideally PFC-free) can be applied. Demand is high not only for conventional cotton Ventile fabrics but even more so for its eco-ranges. "Our offering of eco fabrics is now larger than that of conventional fabrics," says Ventile brand director, Daniel Odermatt. "New sports and lifestyle labels want organic or recycled natural materials," he says, citing two French lifestyle brands, Bonne Gueule and Asphalte. The fabric company is introducing references with hemp, linen and lyocell to bring variety to the range.

Cotton Incorporated has been pushing the limits of what cotton can do with a series of finishes specially formulated for cotton-rich fabrics. These, it says, perform as well as or better than synthetics and include a water-repellent finish with Storm Cotton, moisture management solutions with TransDry and Wicking Windows, and superior abrasion resistance with Tough Cotton technology.

Plastic-free performance apparel may have been considered, rightly or not, a pipe dream a few years back. Now the divide between natural and synthetic is closing with regards to performance. And with regards to price, the competition is strong, and some say, unfair. "It is not normal that polyester be so cheap and wool so expensive if you look at the broader picture of their impacts over their entire lifecycle," says Mr Rochat. The move in favour of natural fibres is nonetheless growing. Few brands seek to forego synthetics altogether, but many others, from Finisterre, a fan of HD Wool, to 100% plant-based streetwear brand Unless, are demonstrating in their collections that the bar can be reset.



Timberland's fall 2022 collection includes a canvas puffer jacket whose outer fabric is made from 100% organic cotton
CREDIT: TIMBERLAND

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The agricultural and food industries generate waste products that can yield valuable raw materials to make fibres or dyestuffs... but only if the cellulose or colouring agents from these leftovers can be cost-competitively extracted and scaled.

A new crop of biomaterials

Few of us ever take a moment to think about the processing of leftovers generated by the rice we eat, the orange juice we drink or the thyme we sprinkle over a dish we prepare. While the fashion industry is often criticised for the waste it generates, agriculture and the food industry may have even worse track records. For many, these are not residues but rather resources, and should therefore be considered co- or by-products. Plants are mostly cellulose (eat your fibres!), and it is the most abundant natural biopolymer. On paper (cellulose too!), turning this unused biomass into fibres seems like a good idea.

In its report, 'Spinning future threads', published in June 2021, the Laudes Foundation (formerly the C&A Foundation) took a close look at those agricultural residues that could be suitable raw materials for fibres. It believes that innovation in this field "offers strong potential to decrease extensive crop burning and its associated negative environmental and climate impacts; generate new, additive low-cost revenue streams for low-income agricultural communities in Asia, and activate a scalable and more sustainable source of fibre for the fashion industry."

The report identifies husks and straw from rice and wheat, empty fruit bunches from oil palm, sugarcane bagasse and banana plantain waste as having potential in textiles, as either new agricultural fibres or as a source of cellulose pulp for manmade cellulose fibres (MMCFs). These biomass conversion pathways would not increase land under cultivation or crop volumes, which the Foundation argues against.

Stalking hemp

This potential is already being investigated by a number of material innovation companies, from Circular Systems in the United States to Nanollose in Australia. Earlier this year, Fashion for Good launched a research programme 'Untapped Agricultural Waste Project' to validate and scale technologies that could successfully transform agricultural waste into sustainable textile fibres, with funding from the Laudes Foundation. This field is also the



Primark has introduced garments dyed using Archroma EarthColors, derived from agroindustry waste.
CREDIT: PRIMARK

focus of research and development at many MMCF producers.

Hemp crop residues are on top of the list of possible resources for many of these projects. The cellulose content of dried hemp is around 57%, according to the Nova Institute in Germany, while that of wood is said to be in the 40% to 50% range and cotton fibre is 90%. Circular Systems' Agraloop Biofibre platform draws its raw material from the leftovers of flax crops farmed for their seeds or for cannabidiol (CBD). "In North America alone, one million acres (400,000 hectares) of oil-seed flax is planted. This is amazing biomass that is going to waste," says Circular Systems cofounder and CEO, Isaac Nichelson. The company currently sources its raw materials from oil-seed hemp grown in France and flax in Belgium.

The production of Agraloop BioFibres starts with a pre-processing phase, in which the fibre is decorticated. This operation is conducted as close to the farm as possible and then shipped to a centralised biorefinery. The company's wet processing technique uses a "bio-appropriate chemical that purifies the cellulose of stems and leaves into fibre bundles that can be spun into yarns," says Mr Nichelson. The result is a natural fibre yarn, he says, not an MMCF, and could be labelled linen or hemp on garments. "The yarns drawn from hemp crop waste are coarser than cotton and are suitable for denim," he adds. Pakistan-based Naveena Denim Mills (NDM) has made denim fabrics from Agraloop BioFibre.

Circular Systems plans to investigate the potential of banana and pineapple waste, and is part of a new consortium, The Fibral Material Alliance, with Ananas Anam, Bananatex and Regenerate Fashion. Together they plan to increase market adoption of these novel plant-based materials.

French start-up RBX Créations is also working on making textile fibres from the cellulose of the unused portions of hemp crops under its Iroony label. "This biomass used to be considered waste, but we see it as a resource; it is technically a co-product," Anne Reboux, cofounder with her brother Charles of RBX Créations, tells *WSA*. They maintain close relationships with farmers and have patented a method of extracting the cellulose from the feedstock they select. This pulp can be spun into fibres by different technologies such as HighPerCell developed by the German Institutes of Textile and Fibre Research Denkendorf (DITF), using ionic liquids to turn cellulose pulp into filaments. The solvent is said to be non-toxic, environmentally friendly and can be almost completely recovered. In a partnership with DITF, wet spinning tests have been conducted as part of ELIIT, an EU-funded research project. RBX Créations plans to set up an industrial scale hemp and linen pulp processing facility.

Los Angeles-based sustainable textile start-up Hurd Co is also developing a process to extract cellulose pulp from hemp agricultural waste to make Agrilose lyocell or viscose fibres. "It is a zero-waste technology that requires half the water and 350 times less energy than conventional fibre pulp processing," says cofounder Taylor Heisley-Cook. Still in the early stages of development, the company is seeking further funding to scale up its R&D facility.



Circular Systems' Agraloop BioFibre is currently made from oil seed flax and hemp crop waste that is refined into a textile fibre. Madewell and H&M have introduced the new natural fibre in their collections.
CREDIT: CIRCULAR SYSTEMS

Alternative MMCFs

Manmade cellulosic fibre (MMCF) producers are quick to emphasise that their viscose, lyocell, modal or acetate yarns are made from wood pulp, a natural and renewable resource. But pressure to reduce the risk of deforestation is also pushing them to integrate alternative cellulose-rich biomass resources in their fibres.

After having experimented with orange cellulose pulp with Orange Fiber last year, Lenzing introduced a Tencel lyocell yarn incorporating 20% cellulose pulp from hemp this year. "Our interest in hemp pulp is strong," says Michael Kininmonth, business development manager for the Austrian cellulosic fibre producer. The Orange Fibre Tencel lyocell was a limited edition, with a first production run of four tonnes.

All or most MMCF producers are investigating non-wood sources of pulp to make their fibres. The 'Spinning Future Threads' report says these alternative resources represent currently 7% of global virgin cellulose pulp production. In addition to working with Fashion for Good and the Laudes Foundation, India-based Birla Cellulose, an Aditya Birla Group company, is working with Nanollose to make an MMCF from microbial cellulose extracted from coconut waste.

Nanollose has identified a specific type of agroindustry waste, coconut water from aged coconuts, which "is bitter and usually thrown away," says Dr Wayne Best, executive chairman. The company has developed specially formulated microbes that turn it into a jelly of microbial cellulose to make its "tree-free" Nullarbor pulp. The name is both that of a national park in

Australia and the Latin term for 'no tree'.

"Our research has focused from the very start on making a viscose-type fibre that is not derived from wood pulp," says Dr Best. "The microbial cellulose pulp we have developed is 99% cellulose, it is a very pure type of cellulose." In initial tests with Birla, the two companies found that Nullarbor-20 lyocell, containing 20% Nanollose pulp, was stronger than conventional lyocell. He believes this could be due to its high cellulose content and "the way the molecules stack". In addition, he says, Nullarbor fibres have "a lovely hand feel". The partnership with Birla led to the filing of a joint patent in 2021. The bacterial cellulose is currently made in China by a partner company, but Dr Best would like to have it produced in India. Surya Valluri, chief sustainability officer for Birla Cellulose, tells *WSA* that a pilot is under way, but that scaling it may take another 18 to 24 months.

Agroindustry dyestuffs

Fibres are not the only materials that can be drawn from agricultural waste, as Archroma has proven with EarthColors, launched in 2014. These dyestuffs are made from an array of crop residues including almond shells, orange peels and rosemary leaves. "EarthColors is a journey; we are continually seeking new unused resources as alternative raw materials," says Nuria Estape, head of global marketing. The available colours are limited to those found in nature, and developing a full palette has proven to be a challenge, despite the company's efforts. Achieving bright colours is another challenge, but she says research is ongoing.

"In recent months, we've seen a change in outlook from major fashion brands," she says, noting that Primark has integrated the concept in its collections. "It is not the first company to use EarthColors, but it is the first to use them to such an extent," she says, adding that the retailer has embraced the concept to the point of printing EarthColors branding directly on the clothes.

Colorau, a range of natural dyestuffs developed by Portuguese textile manufacturer Tintex, is made from food and wood industry waste using only water as a solvent. To expand the available palette, the company also continually seeks new unused resources, "but we want to use materials that are as sustainable as possible and preferably available in our region," says Pedro Magalhães, R&D manager. Colorau includes thyme waste from a local herbal tea maker, wood industry by-products such as chestnut and gambier that are sourced in Europe. The company has set up a research programme with a local university to identify other possible local resources.

In Japan, Toyoshima's Food Textile dyes are made from food and beverage industry waste. These include leftovers from ready-to-eat salads, coffee houses, makers of herbs or essential and vegetable oils, or jams and dried fruits. The company says it extracts natural dyes from these using a patented process that does not call on harmful chemicals nor heavy metals. They can be applied to natural-fibre fabrics and are said to have high colour-fastness. "A single ingredient can be used to make several different colours. We can produce some 500 colours from 50 different food ingredients," said company executive Shinsuke Sakurai, speaking at an online event. His colleague Jerry Lin pointed out that the company needed to secure "a reliable source of food waste with the same qualities over time and in sufficient quantities".



Nanollose's microbial cellulose pulp is made from coconut waste and is being tested by Indian MMCF producer Birla Cellulose as a component in lyocell, in proportions of 20%.
CREDIT: NANOLLOSE

The possibilities of transforming unused biomass and food waste into new materials and chemicals are far from having been fully explored, as can be seen in the diversity of the projects under way. Admittedly, the new fibres in development have yet to reach full commercial scale, but demand is high for anything bio- or plant-based. Turning waste into viable industrial resources would further boost the appeal of this new crop of biomaterials.



Tintex has developed dyestuffs made from wood and agroindustry waste, including thyme, chestnut, gambier and morus tinctoria (khaki).
CREDIT: CIRCULAR SYSTEMS

FOOD CROPS AND WASTE

Data on global agricultural and food industry waste is difficult to come by and covers a wide array of practices and processes. The WWF estimates that food loss and waste on farms is in the range of 1.2 billion tonnes globally, more than food gone to waste from retail, food services and households, which the UNEP pegs at 931 million tonnes (both figures are for 2021). Non-food crop residues are believed to represent from 400 million to 1 billion tonnes, but no serious sources are cited. Those that seek to use crop waste often point out that farmers usually burn the stalks, stems and stubble left after a harvest, thus emitting greenhouse gases that contribute to pollution and climate warming. Others disagree. Charles Reboux at RBX Créations notes that slash-and-burn farming also serves to fertilise soils. "These practices are much more complex than is usually framed by the textile industry," he says. "We cannot take everything away from nature and give nothing back."



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From forests to footwear midsoles

Finnish industrial group UPM, best known for its forestry and paper manufacturing activities, now has a range of business areas across which it seeks to "innovate for a future beyond fossils". One of these is UPM Biochemicals.

The group made its move into the biochemicals business at the start of 2020 and announced a plan to build a biorefinery at Leuna, near Leipzig, in an investment it values at €750 million. This is a group project and a number of business units will benefit from it. The factory will produce a range of 100% wood-based biochemicals to help brands and manufacturers of finished products, including shoes and clothes, switch from fossil raw materials to sustainable alternatives.

For more than a decade, biorefineries producing chemicals have been part of the UPM plan. It has long wanted to find new markets for its in-depth knowledge of wood and forests and biorefineries offer opportunities for making use of the wide range of chemicals based on a lignin cellulosic sugar platform that trees can provide. There are a number of reasons for its desire to diversify, but one of the most powerful is that the popularity of printed newspapers has been in stark decline since the 1990s. Washington DC-based think-tank The Pew Research Center reports that, in the US alone, total daily newspaper circulation has fallen from 62.3 million copies per day in 1990 to 24.3 million copies in 2020. A corollary of this is that, although the paper and pulp business remains attractive to UPM, it sees clearly the importance of broadening its portfolio.

The Leuna investment will open up "totally new markets" with large potential for growth, the group believes. "The long-term business opportunities for the project are excellent," says group chief executive, Jussi Pesonen. "There is keen interest in wood-based biochemicals."

RISE TO THE CHALLENGE

It only became a player in the $30 billion global market for MEG (mono-ethylene glycol) recently, but UPM Biochemicals is determined to drive change immediately by using bio-based raw materials to make this key ingredient of polyurethane and polyester. It is building strong relationships with important suppliers in the footwear industry, including Dongsung Chemical.

ALL CREDITS: UPM

Renewable polyurethane

To prove the point, and with the Leuna biorefinery still under construction, UPM Biochemicals recently announced a partnership with Korean group Dongsung Chemical. The companies have said they will work together to accelerate the introduction of renewable, sustainable forest-sourced materials to reduce fossil resource consumption.

Operations at Leuna are on track to begin before the end of 2023 and one of the products the factory will make is bio-based mono-ethylene glycol (MEG), which Dongsung Chemical intends to develop into renewable polyurethane (PU) for

use, initially, in footwear. Its chief executive, ManWoo Lee, says this is part of a wider strategy of "focusing on carbon-reduction projects".

A world beyond fossils

The sales director for glycols at UPM Biochemicals, Marvin Strüfing, says he is certain products such as the bio-based MEG that Dongsung will incorporate into its supply chain will work well. He also believes this to be a good use of the European group's years of knowledge of how to produce and use wood as a renewable resource. UPM launched under its present name in 1995, but its roots go back to the 1870s. "Bioglycols are one of the best ideas to come from our commitment to stick to forests, but move ahead towards a world beyond fossils," he insists. The biorefinery at Leuna will work with beech from well stocked, well maintained forest resources in this part of Germany, all with certification from the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC).

These forests, of course, are an important tool in the battle against climate change because each tree captures carbon throughout its life. But there is a complication. Beech is not available in the Nordic countries where UPM sources large volumes of wood. It is a hardwood, the type required for the biorefinery's processes, that grows well in Germany. It has long been in demand in the furniture sector and, because furniture producers only want the trunks, the branches tend to be burned. For a long time, this has looked to the market like waste but UPM is enthusiastic about using the branches; they also have what Mr Strüfing refers to as good sugar composition and, therefore, are part of the resource that could go into products such as bio-based MEG.

Burning question

"At the moment, around 70% of the molecules from those trees are burned," he explains, "This is a pity because the trees capture carbon while growing, then burning the wood releases a lot of that carbon back. What we have realised is that it is better to keep the carbon in and use it as a chemical building block. We can take that part of the wood that is being burned and create, from the sugars, products for the footwear industry and other sectors."

He points out that the global glycols market is big, with a value of around $30 billion. It's not that producing a bio-based mono-ethylene glycol would have been impossible before now, but his assessment is that many of the older hands in this market were happy with the status quo. "They are making good money," Mr Strüfing points out, "and probably don't want to change to a bio-based set-up. If they have talked about changing, they have mentioned 2050 as a target." Until 2050, it seems they are mainly happy to keep making cash in the time-honoured way, whereas UPM Biochemicals, which is much newer to this segment, wants to drive change now.



The new UPM Biochemicals plant at Leuna in Germany this summer. It will be operational before the end of 2023.

"I come from the fossil industry myself," the Hamburg-based sales director continues, "so I know the mentality. But I am a keen runner and I have always had inside my head what I call a 'green desire', a vision of a green, healthy life."

Shoes in view

Footwear was an obvious market for the group's biochemicals business to look into. Athletic shoes and other types of footwear often use PU, and PU requires glycol. It identified Dongsung as a serious, experienced player in the footwear materials sector, making mostly materials for



Sales director for glycols at UPM Biochemicals, Marvin Strüfing



UPM will make bio-based MEG, a key ingredient in the production of polyurethane and polyester.

midsoles, and decided to make contact with its new South Korean partner. The two companies have built up their relationship from there.

Mr Strüfing describes Dongsung as being strong in research and development, respectful of intellectual property, and as having a chief executive, ManWoo Lee, who is passionate about sustainability. It has good ties to many major footwear brands and a broad manufacturing footprint across South Korea. It also has factories in two other key south-east Asian shoe-producing countries, Indonesia and Vietnam. These facilities will have no difficulty in switching to bio-based MEG, he insists, calling the product that UPM Biochemicals will supply "a drop-in solution that is easy to integrate".

When it comes, though, the change will allow Dongsung to make PU that is only partially bio-based, because MEG is only one of the ingredients that go into making the polymer, working as a chain prolonger. The new UPM product will allow Dongsung to make polyurethane that is around 25% bio-based, Mr Strüfing suggests, but he immediately adds that this percentage could go up in future; work is already going on to support suppliers of other ingredients for PU in their efforts to have greener products, too.

He has wider footwear ambitions for the product. If a brand wants an upper made from polyester fibres, bio-based MEG could make up 33% of the polyester. "We can help polyester become more sustainable," he says, "and this can help make shoe uppers and also clothing, including running apparel, more holistic and more circular."

Plain and easy

On the key question, in these days of pushing back against greenwashing, of how footwear brands should go about explaining to consumers accurately and fairly what is different about materials that use bio-based MEG, he says clarity is the key. He explains: "We need to make the message plain and easy to understand: these materials will come, at least in part, from sustainable forests. Consumers are right to ask questions; interaction with consumers is much better than thinking you can hand all the information to the consumer on a silver platter."

He adds that there is much that UPM Biochemicals and its partners can tell the public to help people form a clearer understanding of the things they are buying and of the materials that have gone into making those products. "In my opinion," he says, "an interesting starting point would be to talk about food conflict. If bio-based materials come from sugar cane, consumers are going to want to know if the same raw material could have helped feed people who are hungry. Part of our explanation can be to make it clear that we are not going in that direction. Our products cause no food conflict, need no fertiliser, no pesticide and no irrigation. For us, it's not just talk."



With partners such as midsoles manufacturer Dongsung Chemical, athletic footwear will be an attractive market for UPM Biochemicals to move into.


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PFAS have an Achilles' heel

NEWCOMERS

Problematic chemicals such as per- and polyfluoroalkyl substances have been present in moisture protection technologies for years, but time appears to be running out for them.

Debates about durable water repellency (DWR) will not die down. It is no surprise that it featured on the Textile Discovery Summit that the American Association of Textile Chemists and Colorists (AATCC) organised in Charlotte, North Carolina, at the start of October.

Dr Kiarash Arangdad, the director of emerging chemistries at Elevate Textiles, spoke at the event to explain the difference between fluorinated and non-fluorinated DWR and talk delegates through the direction that compliance requirements are moving in for bringing "forever chemicals" to market. Naturally, per- and polyfluoroalkyl substances (PFAS) were part of his focus.

PFAS also featured prominently in comments that Professor William Dichtel of Northwestern University in Evanston, Illinois, made to the world's media earlier this year. The professor was announcing the results of a study he and his team had carried out.

"PFAS has become a major societal problem," says Professor Dichtel. "Even a tiny amount causes negative health effects, and will not break down. We can't just wait out this problem." He and his team confirmed that fire cannot incinerate PFAS, including the perfluorooctanoic acid (PFOA) that has been present in many of the DWR treatments used in outdoor clothing for years, and water cannot dilute them.

He adds: "We wanted to use chemistry to address this problem and create a solution that the world can use; it's exciting because of how simple our solution is." More of his team's exciting and simple solution to the problem later.

Outdoor enthusiasts still say that staying dry at the top of a mountain is one of their main priorities. DWR still has an important role to play.
CREDIT: HUNTSMAN TEXTILE EFFECTS

Demand for protection

If the professor's assessment of PFAS is fair, it is perhaps no surprise that most announcements about DWR technology in recent years have made considerable play of new solutions being free of perfluorinated chemicals (PFCs). Nevertheless, DWR innovations keep coming because demand for high-performance weather protection and stain resistance remains strong.

Singapore-based chemicals developer Huntsman Textile Effects is a case in point. It introduced new DWR technology, Phobotex R-Ace, in the middle of this year, making it clear from the outset that it was PFC-free. Global marketing manager for finishing chemicals, Kerim Oner, says there are indications of ongoing demand for DWR technology in most surveys in which outdoor enthusiasts are invited to say what qualities matter most to them when it comes to choosing apparel. "Not getting wet at the summit of a mountain comes near the top of most of the lists," he explains. "Fit is always important, too, of course, but not getting wet is a priority." He says companies including Huntsman have no concerns about continuing to meet that need as they progress along the road to non-fluorinated (C-zero) chemistries and adds that "this is the story behind Phobotex R-Ace".

He observes that earlier attempts to achieve "sustainable repellency" with non-fluorinated chemistries led to some fabric developers using larger volumes of chemicals to achieve an acceptable level of protection. In contrast, he describes R-Ace as something of a hybrid, saying: "You can achieve very good repellency with lower amounts, and have much less chemical add-on on the fabric."

Balancing act

Achieving this balance is the key, in Mr Oner's opinion. This must take into account what he describes as "the ecological profile" that the user companies want to portray, but it also must be in keeping with the performance criteria that a brand or a mill wants to set and choosing technology that is suitable for the end use the brand has in mind for the fabric. "The chemistry you are choosing must be suitable for that end use, and you have to be sure it won't impair the fabric quality," he explains. "It must also be compatible with the other finishes you are going to use, perhaps in a coating or in some kind of lamination. Not all chemicals will be suitable for that."

There is also the important issue of compliance with manufacturing restricted substance lists (MRSL), which used to change from year to year and now seem to change from month to month, he warns. Huntsman has been sharing updates with mills and brands to help keep them up-to-date with these developments. And, naturally in a competitive market like textile chemicals, all of this needs to take place while keeping a close eye on price as well.



Global marketing manager for finishing chemicals at Huntsman Textile Effects, Kerim Oner.
CREDIT: HUNTSMAN TEXTILE EFFECTS

> **"You can achieve very good repellency with lower amounts, and have much less chemical add-on on the fabric."**
> KERIM ONER, HUNTSMAN TEXTILE EFFECTS

Cellulosic fibre challenge

We know of Huntsman innovation in high performance non-fluorinated DWR treatments from many years ago. What links other recent technologies such as Zelan R3 or Phobotex RSY to the latest innovation is that each has been part of an ongoing effort to address all of these needs. Of Phobotex R-Ace, the company has said it will work on all types of fibres and blends, while also offering compatibility with resin finishing to ensure "unmatchable performance on cellulosic fibres". There are particular challenges in incorporating effective DWR technology into cellulosic fibres, Kerim Oner explains, because these fibres, including cotton of course, contain fats, come from the soil and need washing and pre-treatment before dyeing. A lot depends on how well you do that and on what dyestuffs you use and how well you wash the dye off. "They do not come in a completely uniform state," he says. Also in the case of cotton, its hydrophilic properties can make it absorb rather than repel moisture. All of this makes the treatment of cellulosic challenging.

Returning to the subject of PFAS, Mr Oner says Huntsman sees "an accelerated shift" away from them in the next couple of years. It is not only mills and chemical suppliers that are driving this change, he explains. National governments, the



A team at Northwestern University in Illinois claims to have found the Achilles' heel of PFAS.
CREDIT: NORTHWESTERN UNIVERSITY

state of California, the US Environmental Protection Agency, the European Chemicals Agency, Bluesign, GOTS and others are taking steps to encourage the phasing out of PFAS from non-essential use, and most apparel, in his view, would come into the non-essential use category. "There will still be a need for some use of PFAS in technical textiles applications," he continues, "situations in which it might be risky to change what is in place too quickly. Examples include workwear for environments such as oil rigs. Companies will want workwear that does not absorb solvents, for example, because of the risk of fire and other health hazards. These customers may be reluctant to switch to a different system."

He says Phobotex R-Ace has made a positive early impression on mills, with trials under way in almost all regions, and that commercialisation will follow soon. Something else that has pleased him is a series of approaches from research institutes as well. They want to try the technology out on different fibres and fabrics to see if they, too, can "come up with something exciting".

PFOA falls apart

If the writing is on the wall for PFAS, there is the possibility that the solution Professor Dichtel and the team at Northwestern University have found, no matter how brilliant, has come several years too late to save the practice of using those chemicals in DWR for textiles. But perhaps not.

Here is what the team has come up with. Using low temperatures and what they have described as inexpensive, common reagents, they have succeeded in developing a process that causes at least two major classes of PFAS compounds, including PFOA, "to fall apart, leaving behind only benign products".

The secret to PFAS's seeming indestructibility, the Northwestern team has said, lies in its chemical bonds. PFAS contains many carbon-fluorine bonds, the strongest in organic chemistry. As the most electronegative element in the periodic table, fluorine wants electrons. Carbon, on the other hand, is more willing to give up its electrons. "When you have that kind of difference between two atoms that are roughly the same size, which carbon and fluorine are, that's the recipe for a really strong bond," Professor Dichtel explains.

The safest form of fluorine

But the professor's team found a weakness. PFAS contains a long tail of these unyielding carbon-fluorine bonds. At one end of the molecule, there is a group that often contains charged oxygen atoms. The team identified this as the Achilles' heel of PFAS and targeted this head group by heating the PFAS in dimethyl sulfoxide with sodium hydroxide, a common reagent. The process decapitated the head group, and triggered this reaction in what remained of the compound. "It started spitting out fluorine atoms to form fluoride," the professor says, "which is the safest form of fluorine."

He points out that this will not apply to all types of PFAS, and there are thousands of them, but the fact that it does apply to PFOA is significant in the context of discussions about DWR and outdoor apparel. Plus, the professor is convinced that other PFAS will have their own Achilles' heel. If, for argument's sake, clothing manufacturers continue to use PFOA in the durable water repellency finishes they apply to workwear, the Dichtel method of destroying it to leave behind only benign substances could make the ongoing use of these substances much more viable. And if this works in workwear, PFAS could yet have a sustainable future in protecting outdoor enthusiasts from wet conditions.



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A new day is dawning

FOOTWEAR TECHNOLOGY

Brands are giving themselves plenty of time to bring circular footwear programmes to market, but, for innovative companies in the shoe supply chain, work to develop the materials those programmes will need is already under way.

Recent messages from prominent brands about establishing circular footwear programmes are encouraging, even if the forward steps they have been able to take so far seem tentative. It probably makes sense for them to allow plenty of time to bring circular practices into their complex footwear production programmes and value chains.

In late September, Under Armour published a new sustainability and impact report, reflecting on its recent performance in sustainability and outlining targets for future progress. It said it would build sustainability and circular design principles into at least half of its products by 2027 but is giving itself until 2030 to develop chemistry and processes that can enable a circular footwear programme. By 2030, though, its intention is to bring circular footwear to market, at scale.

A few days earlier, adidas hosted a discussion at a design event in London to talk about its "progress in circularity". A starting point for the brand was its Futurecraft footwear ideas, which it introduced in 2016 to demonstrate that shoes could be "made to be remade". There have been further announcements, although these have focused more on apparel than on shoes.

Nevertheless, at the recent London event, its senior director for sustainability concepts in footwear and apparel, Paul Smith, said the brand remained committed to innovating and developing "product creation with circularity in mind, for apparel and footwear". When he talked about taking innovation from idea to reality, he said the company wants to develop its own capabilities, but that it completely accepts that it needs to do this alongside partner organisations.



Shoes remain important to Under Armour, accounting for 25% of revenues. But it will be 2030 before the brand brings a circular footwear programme to market at scale.
CREDIT: UNDER ARMOUR

Material developers and other suppliers are working hard already to help footwear brands in all parts of the world bring to life the visions they have for shoes that will last a long time and, at the end of their useful life, can be re-engineered into new products and, finally, return to the earth to nourish rather than pollute the soil. If programmes are to come to market at scale by the end of the decade, work needs to take place now to ensure there are materials and components that will allow the brands to deliver what they have promised. These things take time.

On the road

Open cell foam technology developer OrthoLite has said that an initiative it has called Cirql is already helping to put the athletic footwear industry on the road to a circular, sustainable future. The company introduced Cirql in March, describing the technology as a new approach to sustainability in footwear, in materials and process. Powered by plants, Cirql can replace conventional foams with what the company calls "a true soil-to-soil solution". It says Cirql is the first-ever EVA plastics-free, compostable foam solution that can either be made into nutrient-rich soil or depolymerised back into virgin chemistry. This provides an additional layer of flexibility for brands, helping them choose a path that fits their material objectives.

It has set up a whole new Cirql division of the business in the footwear manufacturing hub of Ho Chi Minh City in Vietnam, under the leadership of company vice-president Matt Smith. Here, OrthoLite will make the product using a zero-waste process. At the time of the launch, OrthoLite founder and chief executive, Glenn Barrett, said: "Worldwide footwear production has increased by over 20% since 2010 with no sign of slowing down. As an industry, the onus is on us to help mitigate our environmental impact. It's going to take commitment and a concerted team effort. Cirql is a major step in that positive direction."

For his part, Matt Smith says the Cirql set-up in Vietnam represents an opportunity for footwear brands and their manufacturing partners "to move away from more hazardous materials and processes and into a new day in footwear manufacturing".

In recent comments, OrthoLite has said that at the moment "even the most sincere sustainable efforts are often only treating the symptoms", most typically through initiatives such as offsetting. In contrast, a truly circular approach addresses the root of the problem. It has repeated its conviction that Cirql can help the footwear industry "move in the right direction".

Ingredients that never go away

To illustrate how much work goes into an initiative like Cirql, OrthoLite's chief brand officer, Kristin Burrows, explains that the idea had been in development in-house since 2017. The company, which supplies materials to more than 400 global footwear brands and leading factories, was on a quest to help drive the global footwear industry to a more sustainable future through circular material innovation.

With over 25 years' experience developing comfort and performance foam insoles that can be found in more than 500 million pairs of shoes a year, the OrthoLite and Cirql teams acknowledge the industry must work together to build a more sustainable direction in footwear. "The task has been to solve for a healthier process and then solve for a healthier product," Ms Burrows says. It has what it calls a local-for-local sourcing strategy, producing its materials close to where footwear manufacturers have their factories. This has led it to establish production facilities in China, Indonesia and Brazil as well as Vietnam, while also working closely with innovators in the US.

This, in turn, has given it a network of experienced chemists, engineers and people with in-depth knowledge of the processes involved in turning 200-plus components into a comfortable, high-performance shoe. As more than four years of development of the idea before launch suggest,



Chief brand officer, Kristin Burrows
CREDITS: ORTHOLITE

this does not mean that launching Cirql was easy. "Nothing worthwhile ever is," Kristin Burrows says (attributing the maxim to her mother).

At the time of the launch, OrthoLite presented Cirql as a midsole foam, but it says the material has the adaptability to go into other shoe materials, too, including the insole components the company is perhaps best known for, as well as upper materials. In the first six months since the launch of Cirql, the company has focused on building awareness of the new foam technology, on introducing it to the trade and the industry, on giving brands time "to figure out how this will fit into their long-term material strategies," the chief brand officer continues, "and into their marketing stories and brand positioning." What will flow from this will be further close cooperation with these brands and with their tier-one factory partners "to ramp it up together" when the time is right.

Ms Burrows continues: "Brands are looking for solutions like this and it's always our goal to answer the needs of our brand partners and work with them on delivering footwear solutions that help them reach their climate goals. We can't bring Cirql to market fast enough." This is in spite of having seen no market data that indicates willingness on consumers' part to pay more to have recyclable, biodegradable and compostable material in their shoes. Consumers want a sustainability story, she says, but do not want to compromise on price any more than they want to compromise on look or on performance. "Price is always an issue that we have to solve for," she adds, "but the focus with our brand partners has been on building the circular product and processes that are better for the environment, and that part has been embraced."

> **"The amount of forward thinking, innovation and problem solving in this area is really exciting."**
>
> KRISTIN BURROWS, ORTHOLITE

A good end of life

To tell Cirql's circular story in the round, OrthoLite is convinced that it's also important to consider the recycling of shoes and footwear components. Part of this is designing into products a capacity for a good end-of-life solution. The good news is that the infrastructure already exists and is developing to manage consumer take-backs in the recycling and compostable space. Brands are participating in this new eco-system and anticipate forward momentum.

OrthoLite Cirql is an interesting contribution to the drive for circularity in the footwear industry. "We're proactively exploring additional solutions for our brand partners that actively support the consumer take-back, disassembly and recycling process," Ms Burrows says. "Our goal is to provide a 360-degree solution, from cradle to grave."





(Top:) The new Cirql division that OrthoLite has set up in Ho Chi Minh City in Vietnam. (Bottom:) A machine for making Cirql foam materials for midsoles and other footwear components.
CREDITS: ORTHOLITE



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Lawmakers take on fashion

SUSTAINABILITY

Can two proposed bills — one state and one federal — harness US law to mitigate fashion's social and environmental impacts globally?

This year, the men and women of the US's legislative bodies have had a lot to say about fashion. It started in January, when New York's Senator Alessandra Biaggi and Assemblywoman Anna R. Kelles announced they had introduced the Fashion Sustainability and Social Accountability Act (the Fashion Act), to the New York state legislature. Then, in May, US Senator Kirsten Gillibrand introduced the Fashioning Accountability and Building Real Institutional Change Act (the FABRIC Act) to the US Senate.

Put simply, the Fashion Act addresses fashion's environmental and social impacts across all aspects of its global supply chain by targeting any brands that do significant business in New York, whereas the FABRIC Act focuses on wage protection for garment workers within the US and encourages the reshoring of manufacturing jobs. The Fashion Act is a proposed state law enforceable only in New York and the FABRIC Act is a proposed federal law, which is enforceable throughout the entire country, although, in a global economy, both have reverberations across the globe.

As details of the new bills underwent greater scrutiny and those affected began taking their stances for and against, a *Forbes* article in June asked: "Have the proposed FABRIC and Fashion acts poked the US retail bear?" To what extent the bear has been poked will not be fully known until at least next year. New York's legislative session will not be back in session until January, and the federal FABRIC Act is in committee, a place from which many bills never emerge.

But Misbah Farooqi, communications director for Senator Biaggi, has told *WSA* that amendments to the Fashion Act legislation will be released soon, and proponents of the FABRIC Act are aiming to pass and implement the act as law in 2023. So, things seem to be moving. Despite the inevitable debate and delays each is certain to undergo, proponents of both pieces of proposed legislation feel that now is the time for increased oversight and regulation of the fashion industry and its people, processes, and products.

Ferrara Manufacturing, where Ms Gillibrand introduced the FABRIC Act.
CREDIT: LEV RADIN/SHUTTERSTOCK

The Fashion Act

The legislative backgrounder for the Fashion Act points out that if New York were its own country, it would be the world's tenth largest

economy, surpassing Canada, Russia and Korea. This, the authors wrote, "gives New Yorkers a powerful role to play and a responsibility to keep fashion companies that sell to their market accountable to people and the planet."

If signed into law, the act will affect any apparel and footwear retailer with a global revenue of at least $100 million if they sell any of their products in New York state. Anyone who has ever spent a day in perusing the inexhaustible array of retailers in Manhattan knows this covers just about everyone.

"For too long, the fashion industry has been allowed to operate in a black box, with little-to-no accountability or oversight," Ms Farooqi explained. "This legislation aims to transform the industry and to require companies to finally address their harmful impact on people and our planet."

As mentioned, amendments to the bill, which Ms Farooqi describes as "the product of months of hard work and deliberation", are forthcoming. For now, though, the following outlines some of the bill's key requirements.

A requirement for supply chain mapping and disclosure will call on companies to map at least half of their supply chains across all tiers of production, while prioritising (and disclosing the names of) those parts of the supply chain deemed to be highest risk. Companies will also be expected to provide data about their brands' environmental and social impacts, including their material use by material type and the wages of workers, and set science-based targets to reduce those impacts as laid out by the Paris Climate Agreement. This will include providing information on a company's due diligence policies, processes for identifying and mitigating potential adverse impacts and the outcome of those efforts.

With time, companies will also be required to disclose their environmental and social impacts, with details such as greenhouse gas emissions, volume of materials produced, workers' wages, and how the company is incentivising its suppliers to honour workers' rights. The punishment for non-compliance will be monetary, including fines that go toward supporting the state's environmental justice communities.

"The scope is ambitious and brings together countless stakeholders," Ms Farooqi says. "Since we introduced it, we have worked with unions, labour and environmental groups, and progressive companies to strengthen it and ensure we drive the most change possible."

The FABRIC Act

The purpose of the FABRIC Act is to "establish fair wage protections for US garment workers, level the playing field for responsible apparel manufacturing, and incentivise and grow domestic garment production," according to the bill's proponents.

Drawing largely on California's Garment Worker Protection Act, which passed and became California state law in September 2021, the act comprises five components: enforcing minimum wage standards and eliminating wage theft in US garment factories; increasing accountability on brands and retailers to combat workplace violations; increasing transparency; incentivising reshoring with tax credits; and creating a $40 million domestic garment manufacturing grant programme aimed at revitalising the industry.



State Senator Alessandra Biaggi and Dr Anna R. Kelles co-sponsored the Fashion Act.
CREDIT: NYASSEMBLY.GOV

Although the bill already has bipartisan support and close to 200 endorsements from a range of stakeholders, getting the bill passed will be no simple task. Currently, it is 'in committee' (where it is studied, debated, commented upon, and sometimes amended) in both the Senate and the House. This is because in July, an identical bill was introduced to the US House of Representatives, which allows it to be considered by both bodies at the same time.

"To get the bill out of committee and to a vote, the first step is picking up as many co-sponsors as possible, from both sides of the aisle," Katrina Caspelich has told *WSA*. Ms Caspelich is director of marketing for Remake, a global advocacy organisation focused on fair pay and climate justice in the clothing industry. Ms Caspelich has acknowledged the legislative process is "time intensive" and many proposed bills never make it out of committee, but says "gaining bipartisan support can move the process along faster".

What do legislators need to understand about the bill? According to organisers, some US garment makers earn as little as $2.68 an hour, far below the federal minimum wage of $7.25 per hour, and in some factories workers earn pennies per garment sewn rather than the minimum wage. Abuses like this, they say, are systemic and result in supply chains that have no oversight.

Furthermore, according to the bill's fact sheet, there are question-marks against the protection that many overseas manufacturers offer their workers; at the same time, it points out that offshoring and outsourcing have resulted in the US importing annually $28.8 billion worth of apparel from China alone, ten times what it was 30 years ago. In addition to ensuring manufacturers pay fair

wages, brands will be held accountable for "the labour practices of their manufacturing partners to increase accountability in the garment industry and compel major retailers to become allies in combating workplace violations".

All of this has widespread implications. "Protecting the garment workforce is a sustainability issue and has direct impacts on environmental sustainability, community development, gender equality and economic prosperity," Ms Gillibrand said when introducing the bill.

If successful, the bill will encourage domestic manufacturing, due in part to the $40 million grant. This money will be available to help those incorporated in and based in the US, with funding for training and workforce development, new tools and equipment, health and safety improvements, and other efforts that are in line with the bill's aims.

The industry reacts

One of the most recognisable names affiliated with the Fashion Act is designer and activist Stella McCartney, who described her endorsement as "my duty as a fashion designer, Earth lover and human being". Ms McCartney believes the bill will "push major apparel and footwear brands to set and achieve Science Based Targets, report on their resource usage and management, and do their part in avoiding labour abuses in their supply chains."

There are some, though, who feel the bill does too little to address a fundamental problem: out-of-control consumption and clothes that too quickly end up in the landfill. For example, Rachel Donald, a climate journalist, has told *WSA* she feels the Fashion Act "promotes the continued growth of an industry that has notoriously failed to account for its emissions, pollution and even the human rights abuses linked with production." An effective bill, she says, would promote "the absolute reduction of consumption, and demand the longevity of the clothes we wear. We need to move past the concept of substitutable fashion towards sustainable clothing".

WSA has raised this concern with Ms Farooqi. While the Fashion Act addresses many urgent issues from 'cradle to consumer', does it adequately take on the 'consumer to grave' problem?

"The fashion industry is large and complex, and fully grappling with its impact will require several legislative efforts," Ms Farooqi responds. "The Fashion Act is focused on requiring companies to reduce their greenhouse gas emissions, which are related to volume and production, as well as improving their labour practices and chemical management. By requiring companies to reduce their emissions in line with the Paris Agreement, the Act will help reduce waste. But we also hope to see complementary legislative efforts that expand on the specific issues you have raised, including fashion waste."

There has been some suggestion by industry watchers that the Fashion Act relies in part on the Higg Index, the same Higg Index famously called into question early this summer by the Norwegian Consumer Authority (see *WSA* Issue 3 2022), but this is not the case. "The Fashion Act requires companies, at a minimum, to reduce their emissions in line with the Science Based Targets initiative," Ms Farooqi says. "Neither our bill, nor the Science Based Targets initiative, endorse Higg."

Another concern was articulated by Rick Helfenbein in the aforementioned *Forbes* article about poking the retail bear: "The very idea that politicians feel compelled to exercise control over private industry by attempting to legislate penalties to achieve goals that they created is a weak premise," he wrote. "There seems to be a total disregard for the fact that industry executives at most brands, retailers, and apparel manufacturers actually try to do the right thing."

But perhaps trying to do the right thing is not enough. It is not surprising that Stella McCartney put her name on the Fashion Act; in 2018, she spoke about the need for political intervention at a climate exchange event in London. "We need to educate so people are more mindful of the impact of their clothes, but I do believe it's the business leaders and politicians that really need to take control," Ms McCartney said at the time. "The supply chain is really where it falls down for the fashion industry. Brands don't ask questions, they don't challenge. There's zero incentive to."



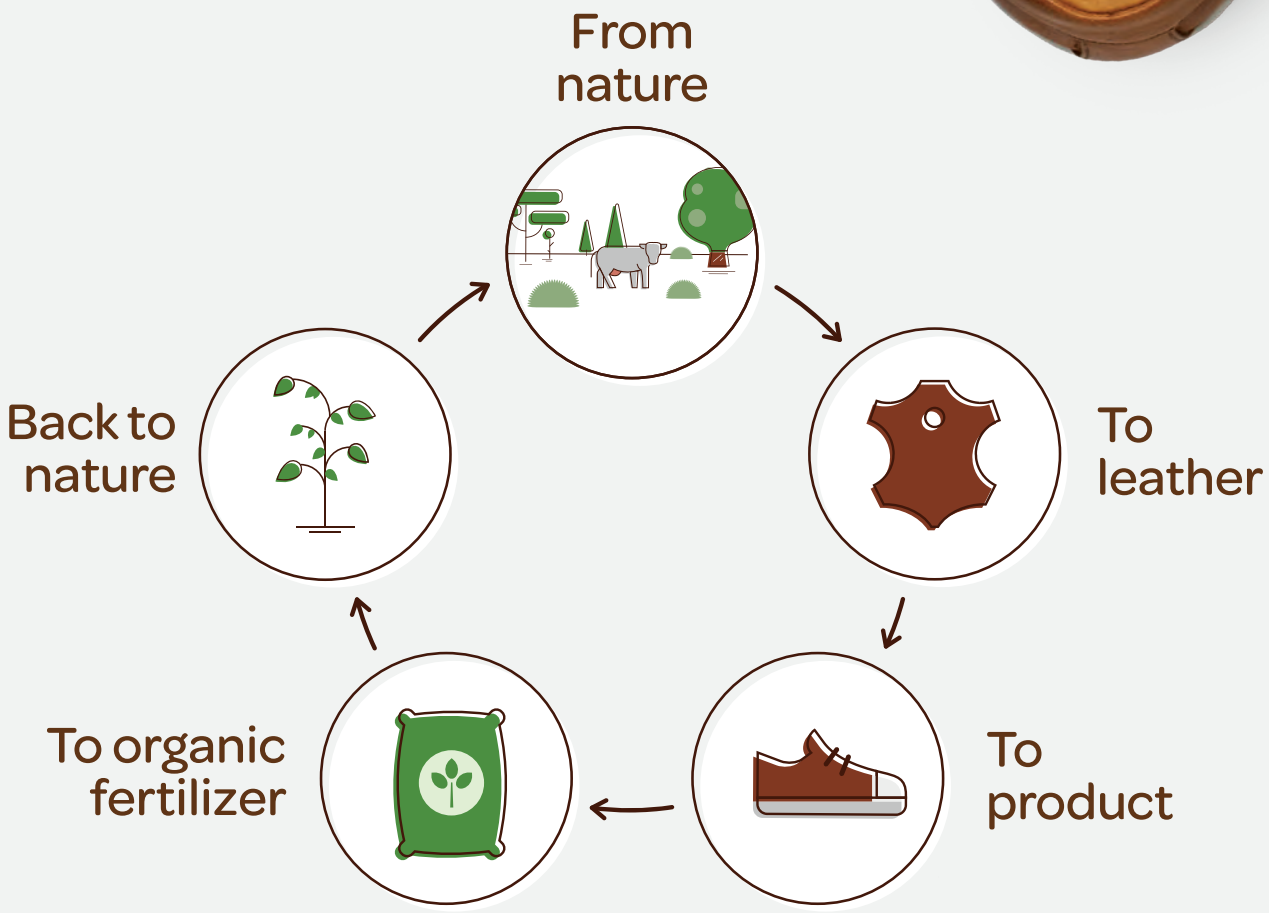
Kirsten Gillibrand introducing the FABRIC Act.
CREDIT: LEV RADIN/SHUTTERSTOCK

> **"For too long, the fashion industry has been allowed to operate in a black box, with little-to-no accountability or oversight,"** KIRSTEN GILLIBRAND

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New leadership at Foot Locker

With Richard Johnson retiring, new Foot Locker CEO, Mary Dillon, might be exactly what the sportswear and apparel retailer needs.

In her time as chief executive officer (CEO) of Ulta Beauty, Mary Dillon transformed the US chain of beauty stores into a hugely successful omnichannel retailer. Now she is now CEO of Foot Locker. She has taken over the role from Richard Johnson, who is retiring after nearly three decades with the company. Mr Johnson will stay on as executive chairman and as senior advisor to Ms Dillon until April next year.

The August day on which news of this leadership change was announced was a good one for Foot Locker: shares went up by as much as 25%, the biggest intraday jump the company has experienced in five years. This was in part because of news that its second quarter figures were not as bad as anticipated, but what seemed to take the numbers to that peak was enthusiasm over the appointment of Ms Dillon.

For a company that has suffered from a range of challenges over the last few years (the pandemic, an ongoing decrease in mall traffic, and most recently some rattling of Foot Locker's relationship with Nike) analysts and investors are placing high hopes on the fresh perspective and new energy Ms Dillon will bring.

Johnson's legacy

Though Ms Dillon has more than a few "opportunities" awaiting her, Mr Johnson enters retirement at the end of what has been roundly considered an effective and highly regarded career with Foot Locker. His first job with the company was as vice-president of merchandising for Eastbay, which was bought by Foot Locker in 1997. From there, he moved through a number of leadership roles before becoming chief operating officer in 2012 and CEO in 2014. According to the company, Mr Johnson oversaw sales growth from approximately $7 billion in 2014 to $9 billion in 2021.

He also built up the company's focus on diversity, equity and inclusion (DE&I) and environmental, social, and governance (ESG) initiatives. Under his watch, for example, in June 2020 the company launched the Leading Education & Economic Development (LEED) Initiative with a $200 million commitment to the Black community. As of the end of fiscal year 2021, Foot Locker had funded nearly $54 million in related investments and partnerships, with Mr Johnson saying the company's commitment "goes beyond words and is part of how we do business".

Niggles with Nike

But this year has also found the company in the news for less optimistic reasons. In February, Foot Locker predicted Nike would comprise just 60% of total purchases for 2022, compared with 70% the previous year, because the brand was upping its focus on direct-to-consumer business.

This made such a stir (Foot Locker shares dropped as much as 35% when the forecast was first announced) that Nike CEO, John Donahoe, soon had to issue a statement reaffirming its faith in the retailer. He said: "To be crystal clear, Foot Locker always has been and always will be a large and important partner of Nike's. They'll have a very distinct role in our marketplace strategy as a wholesaler, with a particular focus on the culture of basketball, on the sneaker culture and on kids, which is a really big and important opportunity for us."

Nevertheless in August, when Ms Dillon's appointment was announced, concerns about Nike were still a big part of the conversation, with one analyst saying, "The big question for Foot Locker is: how they go on without Nike?"

If Mr Johnson were to answer that, he would probably point to several other key deals, acquisitions and investments that Foot Locker has put in place to compensate for any void left by Nike's reduced inventory. Last year, the retail group spent $1.1 billion on buying athletic footwear and apparel retailer WSS and Japanese streetwear brand Atmos. Then, in May this year, adidas and Foot Locker announced a deal in which, among other plans, the retailer becomes a lead partner in the brand's basketball category; adidas said in 2022 it expects to generate incremental revenues of up to €100 million as a result of the new partnership.

Most recently, Foot Locker and Fanatics, a global digital sports platform, announced they were partnering to connect their ecommerce inventories, which allows Foot Locker to fulfil online orders through the Fanatics digital sports platform and give shoppers access to a larger selection of licensed merchandise.

It is fair to say that although second quarter results showed sales were down 9.2% year over year and same stores sales were down about 10%, Richard Johnson has left Mary Dillon plenty to work with.

Dillon's next steps

As for what the next era of Foot Locker will look like, Mary Dillon has shared little publicly about her plans. Some analysts have said Ms Dillon's marketing background (her impressive resumé also includes serving as global chief marketing officer for McDonald's) is exactly what is needed for a company that has suffered from the double blow of covid lockdowns and the diminishing popularity in the US of shopping malls. Stores that once stood out for their employees wearing those iconic black-and-white striped referee tops, are now, as Garrett Sheridan of Axiom described recently in Bloomberg, "kind of racks and stacks of shoes".

A look at Ms Dillon's time at Ulta might provide the most relevant hints of what is to come. She famously transformed the in-store experience for Ulta's consumers, so that what had been a busy place that bargain-hunting consumers braved in search of good prices on a big selection of drugstore beauty products became a chic, desirable destination for consumers seeking everything from affordable to high-range cosmetics, fragrances, beauty tools and more. Aesthetic changes to the stores helped, but key was the new inclusion of salon services such as haircuts and facials, playful decisions such as allowing customers to use hair dryers for practice, and more liberally offering samples throughout the store for products at all price points.

Tailored approach

Ms Dillon also took steps to continuously improve upon all aspects of the organisation itself, as described in a 2017 *Fast Company* article about her early steps with Ulta. Among these efforts was having members of her team go on 'shop-alongs' with customers, discussing impressions and experiences. She made the decision to switch to offering discounts and benefits tailored to individual consumers based on data pulled from Ulta's loyalty program, rather than mass-mailing out generic coupons. She also prioritised company culture, seeking to ensure that associates felt engaged and supported by issuing regular quantitative surveys to all staff. Perhaps most importantly, she (as of 2017) took nearly two dozen trips per year to stores around the country to talk with associates and gain insights into details that are easy for a chief exec to miss.

The results of Ms Dillon's efforts at Ulta? In addition to becoming a much beloved place for consumers and employees alike, the beauty retailer experienced compound annual growth rate of 16% and its market capitalisation tripled.

All of this was accomplished by a woman who was raised, along with her five siblings, by a steelworker and a homemaker in a house with one bathroom, according to a profile by the *Wall Street Journal*. Now, she is one of only 32 women holding CEO positions at S&P 500 companies.

Transferrable ideas

It's easy to imagine how her Ulta initiatives could also benefit Foot Locker at all levels, from the in-store shopping experience to its C-suite efficacy. The company gave a nod to Ms Dillon's nuanced and interpersonal approach when they announced her appointment, saying: "Mary's experience of leading consumer-driven businesses and building robust brand portfolios, along with her commitment to culture, is deeply aligned with Foot Locker's priorities and strategy."

At the time of her new appointment, Evercore ISI analyst Warren Cheng was quoted as saying: "If you're a retailer looking for a new CEO, she's almost the best announcement that you could make."



Mary Dillon, new CEO of Foot Locker
CREDIT: FOOT LOCKER

> If we want to repair, reuse and resell, we need quality garments that can travel that distance.

Old school meets new school

The vibrant and entrepreneurial community of climbers in California in the 1960s and 70s spawned many of the brands that have shaped today's outdoor industry. Royal Robbins founded his eponymous apparel brand with his wife Liz in 1968, a few years before Yvon Chouinard would establish Patagonia. In 2018, Swedish group Fenix Outdoor International acquired the Royal Robbins brand that had by then come to specialise in travelwear. Thomas Håkansson, a long-time freelance designer for Fenix-owned outdoor brand Fjällräven, revives the spirit of the era in RR68 Adventure Originals, a capsule collection for spring/summer 2023.

Who was Royal Robbins and what makes his heritage, vision and life relevant to today's outdoor enthusiasts?

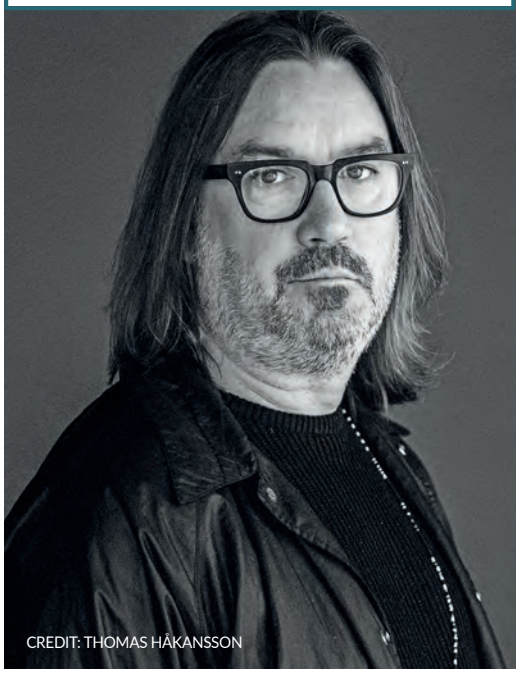
There are two elements that drew me to Royal Robbins. The first is the spirit of the climbing community in California in the 1960s. It was a special, very tight-knit community of strong-minded people who were also very respectful of nature, they were the ones to pioneer 'clean climbing'. In addition, they were also very stylish, especially Royal Robbins; stylish was a word he often used in fact. The clothes he wore were relaxed, they were sportswear, but more formal than today's sportswear. The photos portraying him with his wife Liz really inspired me to bring this aesthetic back to life. I believe the spirit of Camp 4 [in Yosemite], where the rock climbing crowd would hang out, share equipment, where everyone would chip in, brings something very new to the table. It is not a competitive spirit, it is not all about performance, and I think this is what drives today's outdoor communities. People are not out to one-up each other. They just want to spend time outdoors with friends and close ones. That is what excited me the most about Royal Robbins and this period. It is not only a great story but also a time that was very modern, foreshadowing what is now called sustainability.

What type of clothes would they wear, and how have they inspired your own designs for RR68?

These avid climbers did not wear technical clothes, they wore jeans, army pants, checked shirts. Their down jackets were made from cotton

DIALOGUE

Thomas Håkansson, senior designer, Fenix Group



CREDIT: THOMAS HÅKANSSON

fabrics. They wore a lot of cotton, which is why I am reintroducing cotton mix fabrics in the range [see article Plastic free performance on page 10]. The clothes they wore were also versatile. Versatility is a key concept of the RR68 collection. We are not targetting 'performance outdoors', but rather 'active outdoors'. My design thinking here was to create a system of products that work together and that make sense for the consumer. As Royal Robbins' roots are in California, not in Europe, we have focused on classic styles, easy, wearable colours, and Americana aesthetics. Since Royal and Liz were a couple, we also developed some unisex, or genderless, styles, as that is how they themselves dressed.

Why choose to focus on natural fibre fabrics?

The first reason is that the clothes Royal Robbins wore were mostly made in natural fibres. Cotton is an important part of the collection not

only because it is a fibre that everyone loves to wear for the comfort it provides but also because it is linked to US heritage. We have chosen an extra-long staple US pima cotton fibre that is GOTS certified. I would say that it is the Rolls-Royce of cotton. It has a great hand feel, it looks great, and it ages beautifully. It is important to think long-term how these products will age over time and natural fibre fabrics tend to age well. We have created what I think is a market-first, a soft-shell made in 97% cotton with 3% elastane. It is a double-weave that feels like a knit fabric, it is extremely comfortable. For winter, we have had it brushed. Pants and shorts are made from a 100% cotton fabric that has mechanical stretch.

Optimising a fabric's performance through weave texture can only go so far. In truly rugged conditions, you need the performance of synthetic fibres. The range's key fabric is what we call 'The Royal Poplin' – it is a blend of nylon with the pima cotton in a very tight weave construction. If water resistance is needed, we have it coated with a PFC-free water repellent, if it is used for a down jacket, we have it calendered to make it downproof. The most protective products in the range will be no more than wind- or water-resistant. That was the extent of the technical properties of performance fabrics back in the day. It also makes the clothes more comfortable to wear. We have a tendency to think of sustainability or performance as a being either all black or all white. In sports apparel, everyone seems to accept the view that cotton is not functional. That is not true. Cotton has some great properties: it is comfortable, it manages moisture, it is long lasting, it is fresh in hot weather. If you need more protection, I say just add wax. Look at Fjällräven and Barbour.

How did you approach product design and features?

We wanted to make a product that was truly versatile, and what works the best is what I call non-design, or generic design. The pieces are made to offer a complete layering system that adapts to changing conditions, seasons and uses. They are transversal, robust and repairable, they are made with elements that can be replaced. We have also deliberately limited the number of fabrics to generate less waste. A flannel fabric chosen to make an overshirt is also used as a lining fabric for some jackets. Leftover or excess material will be used to make the pouches that Royal Robbins wore across the shoulders. We've put a lot of effort into making the pieces as monomaterial as possible. We plan to carry over fabrics from season to season. We have chosen to buy from fewer suppliers, which means we can work more closely with them. We want to build a relationship over time, not chase short-term profit.



Liz and Royal Robbins. Liz is once again working for the company as a senior advisor. Royal died in 2017, aged 82.
CREDIT: ROYAL ROBBINS



Left to right: Tom Frost, Royal Robbins, Chuck Pratt and Yvon Chouinard on the summit of El Capitan on October 30, 1964, following a ten-day ascent of the North America Wall, Yosemite National Park, California.
CREDIT: ROYAL ROBBINS

What challenges did you face in the product development process?

The sports apparel industry likes to promote the high-performances properties of its products. A hiking jacket will be made to protect the user from a water column of so many centimetres. These properties are easy to explain and easy to understand. But we have forgotten to ask why: why do we need so many centimetres of water column? Polyester is no doubt a good fibre for some applications, but not all. We need to challenge the consensus, and we need to be more open-minded. Monomaterial design thinking is a challenge in itself. Blends are everywhere, they are difficult to avoid. It can be done by making styles that are simple, inspired by workwear, that have patch pockets for instance. In this collection, we are using a single type of taping and all garment labels are 100% cotton. This range is for people who want to enjoy being outdoors, it is not high-tech equipment for elite climbers. The industry is very much focused on performance, water repellency, waterproofness, and so on. Historically, function comes first. But it is possible to provide these functions through fabric construction. A Ventile fabric can block wind and water without any special finish or membrane. Its water-repellency can be improved by applying a wax. It won't have the performance of a Gore-Tex jacket, but it will be very breathable and possibly more versatile.

Do you think this approach to design and product development can be applied on a broader level in outdoor clothing?

For one, what I find in my own approach to design is that there is no single solution or single track to more sustainable product. There are hundreds of ways to be sustainable. We have chosen to make RR68 products premium in quality and craftsmanship, and they are manufactured in Europe. Quality is an important aspect of sustainability. If we want to promote repair, reuse and resell, we need quality garments that can travel that distance. One thing that I really appreciated in developing this range has been made possible by the philosophy of the Fenix Group itself. The company is on the stock exchange but it is still managed by the family and it has a long-term perspective and strategy. This range embodies a different approach to success in business: it seeks not profit from volume, but profit from value. This circles back to the spirit and vision of Royal Robbins and his era. These values were important at the origin of the brand, and we, meaning the sports apparel sector, may have lost sight of those values with globalisation.



Royal Robbins with Tom Frost on El Capitan in 1964. Down jackets in those days were made from cotton fabrics.
CREDIT: ROYAL ROBBINS

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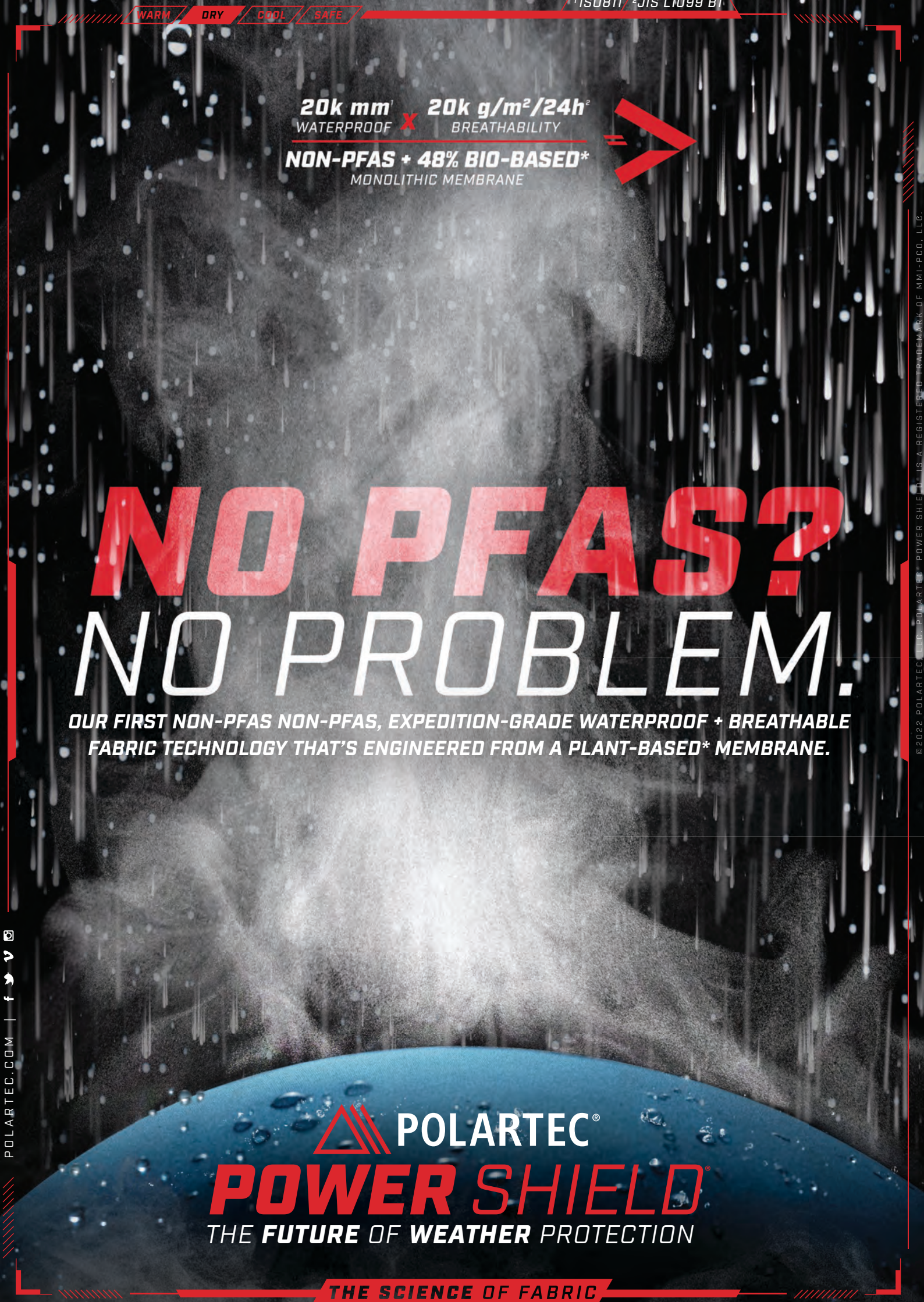
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