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WSA

PERFORMANCE & SPORTS MATERIALS



Super-charged materials

Life for deadstock

Synthetics and biodegradation

Carbon-negative fibres

THE INTERNATIONAL MAGAZINE FOR PERFORMANCE & SPORTS MATERIALS

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Front cover:

Adidas has been one of the pioneer users of Rheon, described by its developer, Rheon Labs, as a reactive super-polymer that provides dynamic support to key muscle groups.

IMAGE: RHEON LABS/ADIDAS

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Global news

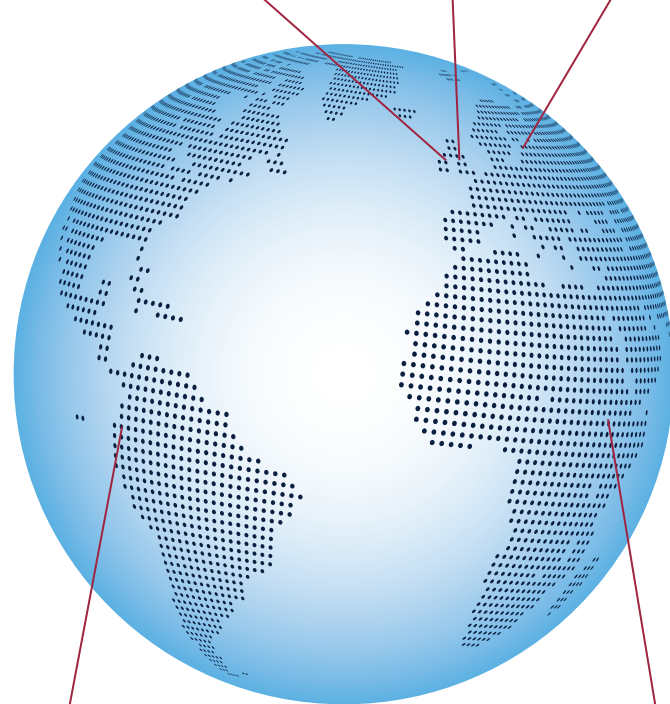
UK UK Fashion and Textile Association (UKFT), the British Fashion Council (BFC) and UK Research and Innovation (UKRI) have launched the Circular Fashion Innovation Network (CFIN) with a two-year ambition to create an industrial-scale change programme for the UK fashion and textile industry. The network, which is co-chaired by BFC CEO, Caroline Rush, and UKFT CEO, Adam Mansell, under the Institute of Positive Fashion (IPF), and will bring together industry, innovators, investors, academia and other stakeholders.

Ireland Footwear brand Keen has launched a special version of its Pyrenees hiking boot to support Leave No Trace Ireland, a group that runs education programmes to encourage people to enjoy the outdoors responsibly. As part of this collaboration, 1% of all sales revenues of the boots in the special capsule collection will go to Leave No Trace Ireland to help fund its activities.

Estonia Sports product manufacturing and retail group Decathlon has opened its first store in Estonia. The new store, located in the country's capital, Tallinn, covers an area of 6,000 square-metres and will make clothing, shoes and equipment across Decathlon's entire range available to sports enthusiasts in the Baltic country. The site also has three sports courts, available for local people to use for basketball, handball, tennis, five-a-side football and other activities.

Finland Specialist activewear brand for children Reima has launched a new range of hoodies containing Infinna fibres. Infinna, developed by Infinited Fiber Company, is a regenerated fibre made from post-consumer cotton-rich textile waste. Reima and Infinited Fiber Company are both from Finland.

Poland Retail group JD Sports has increased its investment in Poland-based MIG, taking full ownership. It acquired a 60% stake in MIG in 2021, reserving the right to acquire the other 40% at a future date. It has now exercised this right and has taken full control of the Polish group. JD Sports chief executive, Régis Schultz, said the move would help accelerate the development of JD in Central and Eastern Europe.



Peru Two textile companies in Peru, yarn producer Filasur and finished garment manufacturer Textil del Valle, have said they plan to expand a programme that involves replacing coca plants with organic cotton. The partners launched the programme, which they have called 'Algodón de Vida' (or 'Life-giving Cotton'), in 2020 across an area covering 2,000 hectares in the northern department of San Martín. Around 200 rural and indigenous communities have become involved in the project, growing cotton instead of coca. Current production is 2,500 tonnes of certified organic cotton per year. Now Textil del Valle and Filasur have said they will expand the programme to produce organic cotton on 10,000 hectares in San Martín.



South Africa Provider of traceability technology Oritain has announced a partnership with wool-growers in South Africa. It will work with Cape Wools to build a database that will enable South African wool to be verified anywhere in the world at any point in the supply chain. Cape Wools is the official representative organisation of the South African wool industry. Commenting on the partnership, the chief executive of Cape Wools, Deon Saayman, said: "Authentication guarantees will reassure our customers worldwide."

Ethiopia Sports group Puma has announced a new athletic clothing and footwear collection with Lemlem, a brand launched by Ethiopian model and designer Liya Kebede. Ms Kebede's brand specialises in swimwear and ready-to-wear, with the products made in Africa. Of the new joint venture with Puma, she said she hoped "to inspire women across the globe". The Puma-Lemlem collection comprises a sports bra, running tights, an anorak and a running shoe, the PWR XX Nitro.

China The autumn edition of trade show Intertextile Shanghai Apparel Fabrics (Intertextile Apparel) saw a 17% rise in international visitors versus March's fair, according to co-organiser Messe Frankfurt (Hong Kong). Whereas spring's event celebrated China's 'back-to-business mentality' post-covid, this latest exhibition welcomed 95,000 buyers from 117 different countries and regions. They were received by just under 4,000 suppliers, an increase of roughly 33% on March.

Mongolia Fashion brand Gobi has used its experience of using locally sourced cashmere to create its first unisex trainer collection. The trainers feature a 100% cashmere outer in grey, navy and sand while the inside is lined with wool. The sole is made using 20% sugarcane with Green EVA, a soft and light rubber-like material, as well as 15% algae sourced from lakes. Gobi partners with herders who live on the Mongolian steppes. They use ancient traditions to gather cashmere fibres from goats.

Japan Athletic footwear brand ASICS has launched a new running shoe, the GT-2000 12. Wider basenets, an increased heel bevel and a flared midsole provide what ASICS has referred to as "a guidance system" in the shoe. It said this will provide runners with extra stability. Global manager of footwear at the brand, Chad Mullavey, commented: "The GT-2000 12 works with the motion of your stride, keeping your feet comfortable whether you are running shorter or longer distances. The shoe is where stability meets comfort."



Thailand Fibre manufacturing group Indorama Ventures has published a new sustainability report, covering the group's activity in 2022. Achievements it lists include a reduction of 3.8% in its overall carbon footprint. The report also gives a figure of 7.2% for the share that recycled water has in its overall water consumption. It also now has 72% of waste being diverted from landfill. In addition, the Thailand-based group increased the volume of bottles it is converting into post-consumer PET by 8% in 2022, reaching more than 340,000 tonnes. It said this was equal to 15.4 billion bottles.

Vietnam Vietrade director-general Vu Ba Phu has said the upcoming VIATT event, due to launch in Ho Chi Minh City in February, will be "a prime destination for all key players in the textile and garment industry in Asia". Mr Phu emphasised how Vietnam had ranked third among the world's top garment exporters last year, with improved living standards and its population of more than 100 million people also leading to fast growth especially in the footwear industry.



Brazil A delegation from state-owned textile trading body Chinatex travelled to Brazil in mid-August. The Chinatex representatives' agenda included formal meetings with Brazil's minister of agriculture, Carlos Fávaro, and cotton industry bodies Abrapa and Anea. Their programme also included visits to cotton farms in the states of Mato Grosso and Bahia. China is the biggest export market for Brazilian cotton.

Chile A circular plastics company in Chile, Atando Cabos, which works with yarn producer Aquafil, has said it now has the capacity to recycle up to 400 tonnes of discarded fishing nets every month. Aquafil uses nylon 6 from nets recovered by Atando Cabos as raw material for its Econyl fibre. In recent comments on the partnership, Aquafil chief executive, Giulio Bonazzi, said the nets Atando Cabos collects could easily remain in the ocean or, once recovered from there, go to waste. "I choose to see this as an opportunity," he said.

South Korea South Korean developer of textiles for sports apparel BATM has been acquired by Italian group Limonta. The purchase took place in the summer, with Limonta acquiring 100% of the Korean company. It said the deal would help it enhance the group's offering and boost its presence in Asia. BATM was founded in Seoul in 2003. From now on, it will be known as Limonta BATM.

Taiwan The twenty-seventh Taipei Innovative Textile Application Show (TITAS) will take place in Taipei from October 17-19. TITAS 2023 will have sustainability, functional applications and intelligent manufacturing as its core themes. This year, 387 exhibitors from 11 countries will showcase their products. The organisers expect tens of thousands of visitors from all parts of the textile and apparel sector.

People



Inventor of the Shortney scores mountain hat-trick

Ultra-marathon runner **Courtney Dauwalter**, whose penchant for competing in loose-fitting clothing has sparked a trend, has completed an unprecedented hat-trick.

Ms Dauwalter won the Ultra-Trail du Mont-Blanc (UTMB) race at the start of September, adding this to wins earlier in the season at Western States 100 and Hardrock 100 events. She is the first athlete to win all-three mountain races in the same calendar year.

She crossed the UTMB finishing line in Chamonix, clocking a winning time of 23 hours, 29 minutes and 14 seconds for her run around the Mont Blanc Massif. She was wearing her trademark, colourful, baggy shorts and an equally baggy bright yellow jersey. Sports apparel brand Salomon now markets this clothing in a collection called Shortney. 🌐

WFSGI departure

The World Federation of Sporting Goods Industry (WFSGI) has announced that **Robbert De Kock** is to step down as its chief executive. He has held the role for 16 years.

The Bern-based representative body for the sports industry said Mr De Kock had been instrumental in helping it grow membership and revenue streams and in aligning the global sporting goods industry with the world's leading organisations in sports and health.

This work included dedicated projects with FIFA, the World Health Organisation and the International Olympic Committee. Mr De Kock said developing a new strategic plan for WFSGI and signing a new supplier agreement with the International Olympic Committee had been career highlights.

WFSGI's vice-president for external affairs, **Emma Zwiebler**, will become the organisation's interim chief executive on November 1. She is a former international badminton player and is a long-serving director of the sport's governing body in Europe. 🌐

Team of two for Lycra at Dornbirn

Fibre group The Lycra Company sent two speakers to the 2023 Dornbirn Global Fibre Congress (GFC) in Austria. The event took place for the sixty-second time this year, running in Dornbirn from September 13-15.

The company's innovation strategy manager, **Dr Nicholas Kurland**, presented industrially compostable Lycra fibre to the audience on September 13. He proposed

Ruud awakening

Fibres and fabrics group Invista has appointed **Ruud Vermeij** as the new European business development manager for its Cordura durable fabrics brand. In this role, he will take responsibility for developing and executing a strategy for growing Cordura's business in all segments of the market in Europe, including outdoor apparel and workwear. He will also seek to establish Cordura in new applications.

New leaf

Ananas Anam, the developer behind waste pineapple-leaf-based textile materials Piñayarn and Piñatex, has named **Manel Echevarría** as its new chief executive. The business' operations span Spain, Ivory Coast, the Philippines and Bangladesh, in addition to a head office in London. Catalonia-based Mr Echevarría will lead Ananas Anam from its European research and production facilities in Canet de Mar.

Board moves

Worldly, the new name for the company that hosts the Higg Index, has appointed two senior executives to its board. It has now appointed the former chief operating officer (and one-time acting chief executive) of Under Armour **Colin Browne** as a member of its board. At the same time, the former chief executive of data analytics company Verisk, **Scott Stephenson**, has also joined the Worldly board.

Ideal people leader

Outdoor group VF Corporation has appointed **Brent Hyder** as chief people officer. He joins after nearly four years as chief people officer at Salesforce. Under his leadership, the company earned top spots on best workplace lists. CEO, **Bracken Darrell**, said: "His proven success in building top-rated employee experiences and high-performance inclusive cultures, combined with his strong global retail management experience, make Brent the ideal people leader for VF."

Changes at Puma

Sports company Puma has appointed **Javier Ortega** as its new general manager for Europe. He took up the role on September 1, succeeding **Richard Teyssier**, who became Puma's global brand and marketing director in July.

the product as a potential benefit for end-of-life management of products made with Lycra fibres.

Director of sustainable business development, **Jean Hegedus**, spoke about the recyclability of garments with stretch fibres, sharing the results of two recent trials, one on recycling polyester and Lycra fibre, and the other on recycling a fabric blend of polyester and Lycra T400 fibre. 

Former ice-skating champion takes Decathlon role

Sports retail group Decathlon has appointed **Jimena Almendares** as its new chief digital officer.

She joins Decathlon after holding the position of head of customer experience at technology group Meta, the parent company of Facebook, Instagram and WhatsApp.

Ms Almendares, who has more than 20 years' management experience, said she was delighted to join Decathlon. She said she admired the group's focus on people and its commitment to what she called "the democratisation of sport".

Before developing her business career, Ms Almendares was also successful in sports. She was three times national ice-skating champion in her home country of Mexico. 

Big name design change

Athletic brand Under Armour has announced fashion industry veteran **John Varvatos** as its new chief design officer.

The designer, who became famous for his work in the 1990s with Calvin Klein and Ralph Lauren, began working with Under Armour as a consultant earlier this year. He will now lead "the creative design direction" of the company, overseeing the work of the design studios Under Armour runs in New York, Baltimore and Portland.

"We are thrilled to welcome John into the Under Armour family," said chief executive, **Stephanie Linnartz**. "His track record and 30-year career speaks for itself. John will work in partnership with our product team to bring apparel, footwear and accessories from concept to commercialisation, blending performance and style."

The designer called Under Armour an iconic brand and said he could not wait "to unveil the next chapter in its incredible story". 

Strategic review and new CEO

Specialist fibre developer Spinnova has reported revenues of €8.8 million for the first six months of the year. This is up by 15.5% on the same period last year, but the Finnish company has announced a strategic review because losses fell to €11 million for the period, compared to losses of €5.8 million for the first half of last year.

Spinnova, which specialises in producing textile fibres from wood or waste from leather, apparel, or agricultural production, has also announced that **Tuomas Ojala** will take over as chief executive at the start of 2024 at the latest. He has held senior strategy, commercial and business development positions at elevator technology company Kone.

The company appointed **Kim Poulsen** as its chief executive in August 2022, but he left the role at short notice in April this year. 

Short stay for CEO

Footwear group Wolverine Worldwide has announced that chief executive, **Brendan Hoffman** has left the company, a little over 18 months after taking the role. Mr Hoffman, joined Wolverine in 2020 and became company president in September that year. The group said from the outset that its aim was for Brendan Hoffman to take over from **Blake Krueger** as chief executive, a transition that took place at the end of 2021. Mr Krueger had worked at Wolverine for 28 years and been its chief executive since 2007.

In 2021, the group announced the surprise acquisition of UK-based clothing brand Sweaty Betty, with Mr Hoffman saying this aligned perfectly with the group's strategic growth plan and would help it build its portfolio "beyond footwear".

On announcing its half-yearly results, Wolverine said company president, **Chris Hufnagel**, was taking over as chief executive. Mr Hufnagel has worked at the group since 2008. Before that, he held senior roles at Under Armour, Gap and Abercrombie & Fitch. 

Mr Ortega has worked at Puma since 2009 and, for the last nine years, has been the company's general manager for southern Europe. In his new role, he will work to strengthen Puma's position with retailers across Europe. A former senior finance executive for Puma in Spain, **Esteve Planas**, will take up the role of general manager in southern Europe.

Price concerns

Outdoor and sports group Goldwin remains committed to its goal of having 10% of the material used in newly developed products based on brewed protein polymers by 2030. However, general manager, **Gen Arai**, has said the group has already received feedback on the idea from consumers who are worried about higher prices for these garments. But Mr Arai said he had been encouraged by the quick uptake of limited-edition products, developed from brewed protein polymers, that Goldwin has already launched.

Force for foam

OrthoLite Cirql, a developer of biodegradable foam technologies for footwear applications, has appointed **Matt Thwaites** as vice-president and general manager, based at the company's headquarters in Ho Chi Minh City. Mr Thwaites has two decades' worth of textile sales and operational experience, including at Coats, American & Efird, Bontex, Texon and Amann.

Columbia return

Columbia Sportswear has announced **Woody Blackford** as the new chief product officer for the Columbia Brand. This marks a return to the Portland-based company for Mr Blackford; he was previously its president of design and innovation. More recently, he worked at Canada Goose. In his new role, he will coordinate all product aspects of apparel, footwear, accessories, and equipment for the Columbia brand.

Names in lights

The Fashion Impact Fund used New York Fashion Week in September to celebrate women founders of fashion start-ups. The women it featured in a billboard campaign were: **Ayesha Barenblat**, of Remake; **Jennifer Holloway**, from Fashion Enter; **Madhu Vaishnav**, from Saheli Women, and co-founders of Artisan Global, **Devon Feldmeth**, **Okello Catherine Promise** and **Lauren Shipley**. 

Industry & Innovation



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Circular knitting machine upheaval

Santoni Shanghai Knitting Machinery has announced the acquisition of Chemnitz-based manufacturer of circular knitting machines, Terrot.

It said this was the latest development on its path towards building “an ecosystem to reshape and consolidate the circular knitting industry”. Santoni Shanghai was founded and is wholly owned by Italian textile machinery developer the Lonati Group.

The group has estimated that the global circular knitting machine market will see significant growth in the coming years. It quoted a July 2023 report from Consegic Business Intelligence, which forecasts 5.7% annual growth between now and 2030.

It said “increasing consumer preference for breathable and comfortable knitted fabrics” and diversification in knitted apparel would drive this growth.

The transaction to acquire Terrot will be finalised pending approval from regulatory authorities in China. 🌐

LCA offer from Salomon

Sports group Salomon has announced plans to develop a methodology for calculating the environmental impact of all winter sports equipment, starting with its own products but potentially becoming available for other brands to use too.

Vice-president for winter sports equipment at Salomon, Xavier Le Guen, has said this initiative could be “the foundation of an environmental performance labelling system” for the sector. In 2019, the company began to carry out lifecycle assessment studies across its own range of ski and snowboard products. It has now said it will make the results of those studies available on an open-source basis to help create “a reference that will push the industry towards more sustainable product design”. 🌐

Silk support

Traceability technology provider Haelixa has received a capital injection from the Zurich Silk Association (ZSIG), an association of active and former companies in the Swiss city's silk industry.

Haelixa's technology provides DNA markers that enable materials to be traced from fibre through finished fabric. Co-founder Gediminas Mikutis said Haelixa was “profoundly grateful” to receive support from ZSIG. He said the silk industry body had a rich history in textiles and a strong track-record in “selecting future-proof solutions” to support.

For its part, ZSIG said it was proud to become an investor in Haelixa and said the company's technology would deliver “a traceable fingerprint for textile industry stakeholders”. 🌐

Insole increase

Footwear-focused open-cell foam technology developer OrthoLite has quadrupled its production capacity in the European Union (EU) by moving to a new facility in Almansa, Spain. OrthoLite was already making materials for the European market in Almansa, a footwear-manufacturing town in the province of Albacete. However, it recently completed a move from a 750 square-metre site to a new facility covering 3,000 square-metres. The company said this would help it provide more, and more specialised, insole products to European partners. It employs 40 people in Almansa.

“Our Spain factory is a crucial European hub for our EU-based partners,” said chief sales officer, CB Tuíte. “As production demand continues to grow in Europe, we can maintain exceptional levels of customer service, advancing technologies, and responsiveness.”

Polyester recycling plant progress

Swiss fibre technology developer Gr3n has announced that it will work with industrial engineering group Intecsca to build a new manufacturing facility. Gr3n has developed a process, based on the application of microwave technology to alkaline hydrolysis, through which it says it will be able to provide an economically viable approach to the recycling of polyester. Madrid-based Intecsca was already a shareholder in the Swiss start-up. They will now form a joint venture and build a first-of-its-kind manufacturing facility to produce recycled fibres that they describe as “virgin-like”. Its projected capacity will be 40,000 tonnes per year. The new factory will use polyester fibres from a number of sources, including textile waste. The partners' aim is for it to be operational in 2027.

'Eco' means little to Rab

Outdoor brand Rab has said it will no longer use the term 'Eco' to describe any of its products once inventory of current collections sells. UK-based Rab said that, instead, it would share details about each product's material make-up with customers to allow them “to make an informed judgement”. The information it will share will include how much of the content is recycled and which parts of the garment have fluorocarbon content.

New biobased fibre

Textile innovators Spinnova and Renewcell have united in a “first-of-its-kind” partnership to scale and commercialise a new textile waste-based fibre that can be spun without any need for chemicals inputs.

Using patented technologies and processes from both companies, they have developed a new, bio-based fibre from Renewcell’s Circulose brand of dissolving cellulose pulp, which is made using 100% textile waste from cotton and viscose. Previously, sheets of Circulose have been used to manufacture manmade cellulosic fibres like viscose. Finland-headquartered Spinnova has already successfully spun pure Circulose pulp into new textile fibres. Its deputy chief executive, Ben Selby, called these initial tests “very promising”. Early prototypes are a blend of cotton and Spinnova fibres produced from 100% Circulose.

Next steps include a potential scale-up alongside fresh collaborators, they said, with the first consumer-ready products expected to become available by end 2024. 

Pulp fact

Fibre manufacturer Lenzing launched Lenzing Ecovero with Refibra technology at Intertextile Shanghai Apparel Fabrics. The product incorporates up to 20% post-consumer textile waste as raw material for Ecovero.

Refibra technology typically pulps cotton textile waste with pre-consumer cotton scrap left over from clothing production. The resultant ingredient is then combined with sustainably sourced wood pulp to make Tencel-branded lyocell.

Vice-president of Lenzing’s global textiles business, Florian Heubrandner, described this latest solution as “well-positioned to meet the surging demand for diverse circular design innovations”. 

Biella tie-up for Kelheim Fibres

Viscose fibre manufacturing group Kelheim Fibres has announced a new collaboration with MagnoLab, a network of textile companies in Biella in Italy, with the aim of driving innovation and sustainability.

Director of marketing and communications at Kelheim, Dr Marina Crnoja-Cosic, said the company’s relationship with MagnoLab companies would give it the opportunity to use a wide range of technologies to make samples and prototypes, based on its specialty fibres. If customers like the prototypes, they will be able to transfer them to their own production facilities. 

Filter offering

Developer of polymer-bead based, water-saving washing techniques Xeros Technology has launched its patented XFilter filtration device as a standalone product.

The company has claimed that XFilter captures more than 99% of microplastics and 80% of cotton and polyester microfibrils during a washing cycle, preventing them from being released into rivers and seas. Xeros said it had decided to bring the filtration device to market as a standalone product, calling it XF3.

It said it was making the product available immediately to licensing and brand partners and that it expects to make it available to consumers in 2024. It pointed out that the device can be attached to any model of washing machine. 

Blue loan

Polyester fibre producer Indorama has completed an expansion project at its recycled polyethylene terephthalate (PET) resin plant in the state of Minas Gerais in Brazil. As a result of this expansion, the factory, located in the town of Juiz de Fora, has increased its capacity from 9,000 tonnes of recycled PET resin per year to 25,000 tonnes.

The project had the support of the World Bank and is part of a wider programme that Indorama has called Vision 2030. Through this, the group will spend \$1.5 billion to take its capacity for recycling PET bottles to 50 billion bottles per year by 2025. PET is the most widely recycled plastic in the world, Indorama said.

World Bank support came in the form of a ‘blue loan’ of \$300 million, through the International Finance Corporation (IFC), a private-sector arm of the World Bank Group. IFC’s country manager for Brazil, Carlos Leiria Pinto, said this was the organisation’s first ‘blue loan’ that focuses specifically and exclusively on combating marine plastic pollution. 

Circularity donation

Retail group Wal-Mart has donated \$1.2 million to support Goodwill Industries International and Accelerating Circularity to develop systems and infrastructure to transform unsellable textile donations into recycling feedstock. Participating Goodwill organisations are using the grant to learn to produce post-consumer textile feedstock that meets recyclers’ specifications and to train staff on sorting and feedstock preparation processes.

A triumph for bio-based

Running shoe brand Saucony has used a midsole with a high level of bio-based content in a new shoe called the Triumph RFG. Called the PWRRUN BIO+, the new midsole’s composition includes 55% Susterra, CovationBio’s fully plant-based 1,3-propanediol (PDO). Saucony said this use of Susterra was in keeping with its recently announced sustainability goals of having 90% of its products contain a proportion of organic, recycled or renewable materials by 25%, rising to 100% of products by 2030.

Winning combination

Two new elastanes from US fibre manufacturer The Lycra Company debuted at the recent Intertextile Shanghai Apparel Fabrics. The products were: Lycra Adaptiv Black and Lycra Adaptiv Xtra Life. The producer launched Adaptiv around two years ago. Its latest technologies are intended to increase flagship fibre Lycra’s durability, offering “a winning combination for consumers and customers”, in the words of chief brand and innovation officer, Steve Stewart.

Innovations in the spotlight

Coats Footwear will exhibit at Lineapelle in Milan from September 19-21. It will use the Milan event to showcase technologies that it says can enhance the design, comfort, performance and eco credentials of footwear. Innovations under the spotlight at the event will include a new collaboration with a big brand name in the use of the patented ProWeave jacquard technology that Texon, now part of Coats Footwear, first brought to market in 2022.

Seoul searching

Flat knitting technology provider Shima Seiki took part in the Preview exhibition in Seoul in August. It used the South Korean event to showcase its SWG061N2 compact Wholegarment knitting machine, which can produce garments without the need for linking or sewing. 

Backtrack

13.09.2023

Vasque addresses 'new trend' with a move away from hiking roots

12.09.2023

Speedo dips its toes into wild swimming
National Geographic continues Chinese store roll-out

11.09.2023

Anta celebrates first Chinese concept boutique

08.09.2023

WSA's Sophie Bramel to chair Performance Days panel
Report highlights improvements for Better Cotton farming in India
Unifi introduces Textile Takeback for polyester recycling

06.09.2023

Cashmere body joins sponsors of Natural Fibre Connect
On outlines progress towards fossil-free goals

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Beijing sports festival leads to big gains at adidas
'Alarm bells' for cotton producers

04.09.2023

Adidas throws away the rule book for latest Adizero

01.09.2023

Shenzhou International posts 15% decline
Growth of 20% shows 'ongoing strength' of Lululemon
Major brand buys US part of Wolverine Leathers

31.08.2023

Strong six months for China's 361 Degrees
Anta up 14% in second half
Autumn Oslo gathering for Scandinavian Outdoor Group

30.08.2023

Renewcell net sales up 185% in Q2
Human rights concerns could bring change tack on apparel from Myanmar

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.

29.08.2023

Autumn edition of Intertextile Apparel sees 33% exhibitor increase

25.08.2023

Hiking footwear brand celebrates its centenary

24.08.2023

Board additions for UK's outdoor association

23.08.2023

Product longevity is 66°North's top priority
Revenues at Footlocker show double-digit drop
Sustainability success for Dystar despite challenges

22.08.2023

US retailer confident despite flat sales and job losses
Business leaders pin hopes of turnaround on Pakistan's new textiles minister

21.08.2023

China growth boosts Descente results
Outdoor Retailer announces raft of changes
OIA's Climate Action Corps reveals 2022 progress

18.08.2023

BTMA seeks VAT reduction on local textile waste
Revenues flat at Ralph Lauren in Q1

17.08.2023

Nike continues girls' empowerment plans in China
Wool's sports-shoe pull brings Salomon on board
FENC makes strides towards net zero

16.08.2023

Regenerative farming and natural fibres are fashion's 'only future'
UK charity calls for partners to expand polyester recycling system

15.08.2023

Kolon Sport on track to do \$600m in China and Korea
In-demand Cotton made in Africa can make globalisation 'fairer' Otto

14.08.2023

Government grant will help fund Spinnova expansion project
Soft demand hurts Yue Yuen
Li-Ning up 13% in the first half
'Turning point' for Vaude in latest sustainability report

11.08.2023

Nature Coatings secures \$2.5 million in seed financing
Nike Air Alpha Force 88s harness algae inks
Record quarter for Mizuno

10.08.2023

Patagonia unveils new Naia Renew line
Fall of 10% for Wolverine in H1
Huafeng and partners demonstrate coatings' potential

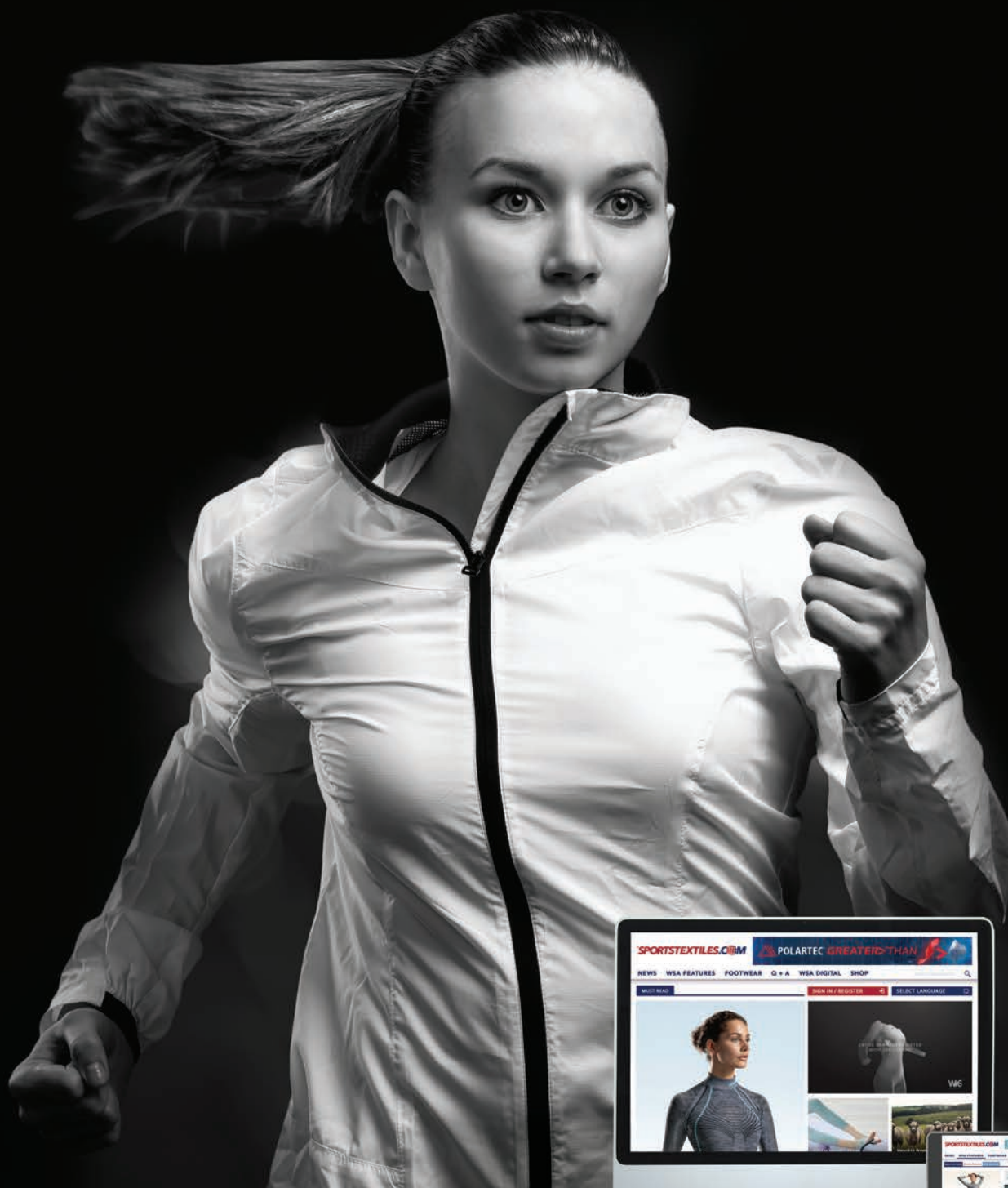
09.08.2023

Pakistan Accord publishes supplier list
New funding will help Superdry restructure
GOTS enters OECD alignment process
Projections put cotton consumption below production in the season ahead

08.08.2023

Q1 fall for Under Armour in spite of footwear growth
Canada Goose on an upwards trajectory

STAY AHEAD



Biodegradation-boosting synthetics

The positive attributes of synthetic fibres include durability, recyclability and various other functional properties. Active and outdoor apparel relies on hard-wearing synthetic yarns to deliver lasting performance. These garments will not break down, whatever uses, conditions or environments they are subjected to. However, synthetics, in essence plastics, are no longer viewed as a miracle material but as a source of pollution of such proportions that some now say we are living in the Plasticene Age. Synthetic yarns enhanced with an additive that accelerates biodegradation could be a solution to mitigate the persistence of these materials in nature.

Synthetic yarns owe their inherent durability to their strong molecular bonds. Engineering them to break down could thus seem counter-intuitive. The substances added to these so-called biodegradable synthetics are said to make them more accessible to microorganisms that can convert polymers back into their basic elements. This is a process that, in a well-managed landfill, will produce biogas and biomass.

To accelerate biodegradation sounds like a good idea, but how fast is 'accelerated'? These manmade fibres are engineered to break down in a reasonable amount of time; it is still slow, but faster than for a standard petrochemical-based yarn. A sportswear item made from one of the many enhanced synthetics on the market will most likely still take decades to disintegrate in a landfill, but not centuries. This is pretty much the main claim that providers of these innovative materials can make. This new class of synthetics comes with a long list of caveats that makes it tricky to spin a positive marketing message. The key catch is that no reference to biodegradation can be made when describing the features of textiles, apparel, or even plastics for that matter. This article will not comply with that condition, but the term will never be found on any hang tag. The world of compostable or biodegradable plastics is highly regulated, and the trend today is not to lighten or lessen any restrictions.

A thriving market

Despite the restrictions imposed on marketing claims, and the complexity of describing how materials break down in a given situation – freshwater, salt water, soil, landfill, open

End-of-life scenarios are important when assessing a product's impacts, but they are not an easy sell. This is one of many challenges the makers of synthetics yarns enhanced with biodegradation-accelerating additives face. As concerns regarding the permanence of plastic grow, so does demand for these materials that are engineered to leave no trace.

environment – the market for synthetic yarns engineered to speed up biodegradation is surprisingly buoyant.

A division of Solvay in Brazil introduced what is possibly the first such synthetic polymer at ITMA in 2014 with Amni Soul Eco, a polyamide 6.6. Well aware of the novelty and specificity of this new yarn, the chemicals company headquartered in Belgium was careful to indicate that Amni Soul Eco would biodegrade, if correctly disposed of in an anaerobic landfill, in about five years. It is now one of several eco-nylons made by Italian nylon producer Fulgar. In 2021, Israel-based Nilit ushered in Sensil BioCare, also a polyamide 6.6, "enhanced with a special technology that helps lessen the persistence of synthetic waste in oceans and landfills." Note the absence of the B-word.

Japanese fibre producer Asahi Kasei's biodegradable elastane, Roica V550, came to



market in 2017, and was touted as the first to receive Cradle-to-Cradle Material Health Gold Level certification. It also carries a Hohenstein Environment Compatibility Certification confirming that it does not release harmful substances in the environment when it breaks down.

CiCLO Technology was officially launched that same year as a textiles ingredient for polyester by Intrinsic Textiles Group (ITG), a start-up based in the Bay Area of San Francisco. Since then, it has formed a joint-venture, Intrinsic Advanced Materials (IAM), with an industrial partner, Parkdale Mills. The specially formulated additive was initially developed for the company's own use in workwear programs, Andrea Ferris, co-founder and CEO, tells WSA.

Insulation specialist Primaloft introduced a biodegradable filler in 2018 presented as a market first as it is made from polyester that is both

recycled and biodegradable. Advansa, based in Germany, one the newest members of this club, has recently launched Remotion with its Indonesian partner Asia Pacific Fibers (see separate article, page 34). Remotion is a polyester yarn made, in one version, from recycled ocean-bound plastic bottles and enhanced with "built-in biodegradability". The partners take care to note that biodegradation rates strongly depend on individual factors like temperature, moisture, surface area and exposure of the final article in the soil, the types of microorganisms present in the soil, and many more.

Antex has also integrated a biodegradation accelerator in its range of Yarnaway synthetics. It has already been introduced in its polyester offering, but may in time be added to the company's PBT, PA 6 and PA 66, as well as polypropylene offerings. The additive the Spanish

Surfwear brand Billabong has chosen CiCLO Technology for its Recycler range of boardshorts.

CREDIT: BILLABONG



High-end golfwear provider Abacus, based in the US, has adopted 37.5 for its high-performance ranges. All 37.5 yarns are now enhanced with an additive that accelerates biodegradation.

CREDIT: ABACUS

filament and fibre producer has chosen to use is EcoOne. Made by US-based Ecologic, this is described as an “organic additive that enhances the biodegradation process through a series of chemical and biological processes when disposed of in a biologically active landfill”. The polyester yarn was in development for a year, the time needed to test different types of yarns, Antex innovation and sustainability director, Marta Molist, tells WSA. “We tested the biodegradation rates of virgin and recycled polymers, as well as solution-dyed yarns, and have, each time, compared samples made with and without the additive,” she says. EcoOne-enhanced textiles were found to biodegrade by almost 90% in 1,000 days. This, she points out, is much faster than conventional polyester.

In 2020, Cocona Inc, based in Boulder, Colorado, the maker of thermoregulating textile technology 37.5, took the bold move to reformulate its entire range of fibres and yarns so as to feature accelerated biodegradation, at no added cost. The additive it uses is supplied by US-based Biosphere, which claims that its solution works faster than other products of this type, as it “allows the microbes in both aerobic and anaerobic environments to consume plastic from deep within and not just on the surface”. The decision to choose Biosphere “is the result of looking at different options to accelerate biodegradability and years of research to make a difference at the end-of-life phase for products made from 37.5,” says Cocona president, Blair Kanis. She adds: “there is a general sentiment,

across the industry, to address issues with synthetics at the beginning and end-of-life stages.” Lacking a global infrastructure for the recycling of apparel, the company postulates that most textile products will, for the time being, continue to end up in landfill or be incinerated.

As this inventory shows, brands can now choose from a wide array of synthetic yarns engineered to leave little or no trace in a well managed landfill. Suppliers, as we have seen, proceed with caution in the claims they make, and it is safe to say that few brands are promoting this feature when marketing their products. Biodegradable properties, like any new technology, will take time to make an impression on the market, says Concept III founder, David Parkes. Despite some scepticism early on, he says “demand is now quite strong”. He is a big fan of IAM’s CiCLO Technology, noting that the innovative company never lost momentum, and that its yarn has “no negatives”. Concept III will be introducing a novel wool insulation made from a sliver knit that uses CiCLO as a backing yarn at Performance Days in October. Making sherpa and fleece products with the yarn is also, he notes, a way to reduce the impact of fibre shedding, and useful in the US market where discarded clothing tends to be landfilled.

But biodegradability, says Mr Parkes, should not be considered a marketing pitch but rather a function. “Performance apparel brands, and the industry as a whole, have a responsibility to develop products that offer both performance and sustainability. We need fabrics that not only perform but also go one step further and this includes biodegradability.”

CiCLO polyester and nylon are now produced by 50 or so fibre and yarn manufacturers, Andrea Ferris tells WSA. IAM works closely with its partners. A sample from every production lot is tested to certify the presence of the additive at the correct dosage. Though the technology is partially owned by Parkdale Mills, CiCLO fibre and yarns are widely available globally and beyond Parkdale’s distribution, she says. “Exclusivity

Sustainable running brand Janji, based in the US, combines merino wool with 37.5 in its ranges.

CREDIT: JANJI



arrangements can be contrary to IAM's mission of making the greatest impact towards reducing the microplastic pollution caused by synthetic textiles."

The company, she adds, takes a conservative approach to consumer claims. "We never make any claim as to precisely how fast a textile with CiCLO technology will biodegrade; we claim 'a reduction of microplastic pollution' with no guaranteed timeframe. Any innovation capable of mitigating fibre shedding is great. But she adds: "A synthetic yarn will shed microfibres throughout its life and there will always be some leakage into nature. Our message is that if you have to use polyester or polyamide and there is no alternative with the same performance and durability properties, choose a solution that will allow it to biodegrade."

A better solution

There are, in many technical markets, no alternatives to synthetics, agrees Marta Molist, at Antex. "A car seat made from cotton will not last as long as a polyester one, and durability is a key factor in sustainability." With regards to the broader issue of microplastic pollution, she says that Yarnaway has been tested in marine water, where it will also biodegrade but at a slower rate than in landfills. "We cannot consider this as the definitive solution for microfibres, but because they biodegrade in marine water, the time that they will be present in the seas will be shorter than normal synthetic microfibres, so the probability that they interfere with sea flora and fauna is much lower," she says.

Andrea Ferris, at CiCLO, shares this point of view: "What we are talking about is the biodegradation of plastic pollution in uncontrolled natural environments. Microfibres are transient and certain conditions need to be met for anything that is inherently biodegradable to biodegrade: it requires moisture and access to microbes for extended periods of time. These conditions are not unique to our technology. Cotton will break down more readily than CiCLO fibres, but it needs those same conditions. We study the rate of biodegradation of CiCLO polyester and nylon using ASTM and ISO tests, simulating environments where these conditions are met and where microfibres are prolific, including wastewater sludge, soil and sea water. CiCLO technology enables polyester and nylon to fully biodegrade, leaving behind only natural elements, and this is proven by multiple third-party lab studies. However, we are not claiming that CiCLO 'eliminates' microfibre pollution because we cannot control where pollution ends up. We are saying that less microplastic pollution is better than more."

About blends and trimming

Designing an item of clothing made from a synthetic fibre engineered to speed up biodegradation immediately raises the question of fibre blends and trimming. Suppliers, when questioned, pose few if any limits. Fabric manufacturers tend to develop these synthetics in blends with cotton or wool, whose biodegradability



Microfibre pollution is one of the reasons brands may decide to choose a synthetic fibre that will disintegrate faster than a conventional petrochemical polymer, says Andrea Ferris, at CiCLO.

CREDIT: MOORE INSTITUTE FOR PLASTIC POLLUTION RESEARCH

“There is a general sentiment across the industry to address issues with synthetics at the beginning and end-of-life stages.”

BLAIR KANIS, PRESIDENT COCONA INC.

is rarely disputed. "A garment will have trimmings, zippers, labels, and so on," notes Blair Kanis at Cocona. This confirms it is "a journey" and that it will not be easy to market a product as being made from 100% biodegradable components.

Other properties often promoted in performance wear, such as antibacterial functions, may slow down the biodegradation process, notes Marta Molist, at Antex. IAM recommends that brands using CiCLO choose Oekotex, bluesign or Cradle-to-Cradle certified chemicals. "While we cannot make a sweeping generalisation that all dyes will biodegrade, we do see dyestuff biodegrade in our studies," says Ms Ferris. Ms Molist agrees but points out that full biodegradability may not be possible due to the presence of additives such as titanium dioxide or flame-retardants. "They constitute a minute portion of the yarn, usually less than 0.5%. Bacteria could well digest the remaining content," she says. Likewise, it is not a good idea to coat a fabric "with a non-biodegradable plastic substance that blocks microbes from accessing the fabric if it is being created with the intent to biodegrade at end of life," says Ms Ferris. She believes that biodegradable laminates will be available in time.

One clearly positive attribute of these modified yarns is that they do not interfere with the recyclability of the textiles, says Ms Molist, who insists that this would be the optimal solution. All suppliers of biodegradable synthetics agree that recycling is the preferred end-of-life scenario. While there is no easy solution to offsetting the permanence of plastic in active and outdoor wear yet, synthetics engineered to leave little-to-no trace offer a best-case solution, pending the development of more circular end-of-life scenarios for performance apparel. 

Cotopaxi's Repurposed Teca and Del Dia ranges put 1.6 million metres of deadstock fabric to new use in 2022.

CREDIT: COTOPAXI



As good as new

If asked to name the biggest, unnecessary and avoidable contributor to the apparel industry's outsized environmental impact, waste could be a legitimate answer. The overproduction of textiles, supplies and finished garments is basically a black hole across the entire supply chain. For any production run, it is common practice for a factory or brand to order 3% to 10%, some say even 20%, surplus materials and components. Welcome to the world of deadstock. But that's not all. Overproduction is also widespread in apparel manufacturing. Depending on sources, mostly anonymous, 25% to 33% of all the clothes (and shoes) made are never even sold. A guestimate, WSA has been told, is that this may in fact be at the low end of the spectrum. The French administration estimates that 10,000 to 20,000 tonnes of new textile products are destroyed every year in the country. It has taken measures to progressively phase out these practices in its Anti-Waste and Circular Economy law (AGEC), which came into effect in January 2022. It requires

No longer the sole domain of artisanal practices, or of limited runs, upcycling and remanufacturing are progressively being applied on an industrial scale. The transforming of unused or unsold goods into new ones is not only motivated by sustainability concerns but also by ethics, economics, and legislation.

that large companies selling non-food items on its territory find ways to recirculate, donate or recycle unsold goods, or face fines.

From unused supplies to unsold finished goods, the nature of waste in fashion is multifaceted, but real-world solutions to turn them into a new resource are being implemented, and not only by small, super-sustainable brands. Nike and

Decathlon, US outdoor brand Cotopaxi and Australian cycling company MAAP are showing the way to near industrial-scale solutions to make new products from excess inventory.

Deadstock can be fun

The bright and cheery colours that many Cotopaxi products feature have helped the company, founded in 2014, stand out in an outdoor market awash with brands navigating a sea of sameness. Their offbeat colourways and patched designs embody and could even be a poster child for upcycled aesthetics. Which they are. What the brand calls 'repurposed material', otherwise known as deadstock, is used to make three of its key product ranges, Del Dia packs, Teca windbreakers and Trico fleece jackets. In 2022, Cotopaxi says 1.6 million metres of leftover fabric were used in its Del Dia and Teca ranges.

"Our founding design team was looking for ways to reduce waste and has, from the start, taken a cradle-to-cradle approach to design," chief product officer Karyn McKenna tells WSA. Davis Smith launched the brand with industry veterans, CJ Whittaker and Cherie Sanguinetti who conceptualised, started, and paved the way for the Del Dia programme to become what it is now, chimes in Erin Wyer, the brand's press manager. "CJ Whittaker saw the warehouses full of fabric bolts first hand in the factories making packs for outdoor brands and worked out a system to find uses for this stock," says Ms McKenna. The very first 'repurposed' product was a drawstring backpack made in a standard 400 denier fabric. These "beautiful accidents" or "wild misfits", as she describes them, were given away at a festival and were an instant success.

Cotopaxi has since optimised and expanded its Repurposed programme. In its first stages, limited runs of 300 to 600 units, in a single colourway, were made from deadstock fabrics. This required that production managers knew how much material was available, which, she says, made the process challenging. "CJ Whittaker decided to keep the process simple by allowing for total randomness." This made it possible to use bolts of 10 metres of fabric, and gave birth to the Del Dia pack series.

The brand's three Repurposed product ranges use two types of standard leftover fabric, 400 denier textiles for packs and nylon taffetas for apparel. While the Del Dia packs feature truly random harmonies, they do nonetheless follow a few basic colour combination principles. Grey or brown tones are ruled out. "On a large surface, these shades tend to mute the harmonies," says Ms McKenna. The fabrics can have texture, but need to be plain, no prints allowed. "We want to keep a clean look and feel, and to maximise what we can use," she notes. To ensure the greatest variety, the cut pieces are randomly aggregated on the sewing floor and sewers are allowed a certain degree of liberty. The two other ranges, Teca and Trico, are produced in specific colourway runs. A designer chooses the colours that work well



The Decathlon x CRÖM-D upcycling collections are remanufactured from goods unfit for sale using a variety of techniques, including pleating.

CREDIT: CRÖM-D

together from unused bolts of fabric. This implies that minimum quantities of deadstock be available to produce 3,000-unit runs of the given three-colour bands that adorn Trico fleece tops. This is industrial scale.

Melbourne-based cycling brand MAAP applies a similar principle and finds uses for leftover fabrics to make the multicoloured patched designs of its OffCuts collection. It has set up this system with its manufacturing partner LTP Group, a Danish company that operates five factories in Eastern Europe and one in Vietnam. The logistics were outlined in a LinkedIn post last year by a company manager. He describes a truly collaborative project with the brand's designers to allow for varied, if not random, fabric and colour combinations.

Logistics & data

"For a garment manufacturer there are pros and cons to reusing leftover fabric for new collections. While the environmental benefit is clear, the business implications are diverse. The direct business benefit is to free up space in stocks and to reduce the cost of waste handling. It takes much more time, however, to design and construct a garment made of roll-ends," the manager, who no longer works for LTP, wrote at the time. He went on to say that making such a process efficient relies on the digital tracing of stocks including data on colour, composition and consumption history. The challenge, he concluded, is to scale the model. Current LTP management did not wish to comment on this process.

Cotopaxi is likewise looking to monitor deadstock digitally, both to optimise the process and to certify its provenance. It is working with Queen of Raw, an organisation based in New York, that manages excess inventory for brands, to develop such a system. "Making the process more



Nike's Re-Creation collections are remade by local designers and manufacturers. The Paris edition was designed by Sarah Mohssni and produced by LeLab+.

CREDIT: NIKE

automatic will unlock more deadstock use globally," says Ms McKenna. If data on the quantities of unused fabric bolts are readily available, a production run could then be launched at the press of a button, she says. Ralph Lauren and Shein are two companies using Queen of Raw's MateriaMX, an excess inventory management software programme.

Upcycling for good

Mapping deadstock will help shed light on waste generated by cutting and sewing, but solutions also need to be found for unsold garments stocked in factories and warehouses around the world. The logistics of redesigning, deconstructing and remanufacturing these goods present an entirely different challenge. A set of skills that large garment-manufacturing operations may find difficult to deploy. It can, however, be handled by the resourcefulness of smaller facilities that are fully dedicated to reducing waste.

In Mexico City, French fashion industry veteran Pierre Violet has initiated such a system and is working with Decathlon to help the French sports retailer reduce its stocks of unsold or unsellable garments. Through his company, CRÖM-D, he says he "seeks to fix a broken fashion system by upcycling what has already been manufactured". But he also seeks to draw attention to the anonymous and unacknowledged people that make the garments, who are mainly women, and who toil away in unforgiving tasks in apparel factories around the world.

Working with a cut-and-sew workshop in Mexico City, and Decathlon's local teams, he has

set up a collaborative upcycling process to already made new goods from the retailer's unsold or defective stock. "We propose various redesigned options to Decathlon's local buying team, which they validate or not," Mr Violet tells WSA. "It is a true co-creative undertaking as the buyers tell us which product categories are lacking in their inventory. If Decathlon needs cycling shorts, we will design cycling shorts out of the stock we are given." It is, he concedes, a challenge to manufacture the products needed from those that cannot be sold. "In all cases, we must make items that offer the performances that Decathlon requires and its consumers demand." Smart solutions thus need to be found for each production run. In one case, the fabric from a series of UV-blocking tops unfit for sale was used to make the shoulder yoke and collars of running tops. This fabric was not breathable enough for the body of the shirt but useful in protecting the wearer from the sun. In another case, a polyester T-shirt was recut and pleated to make a tennis skirt.

The quality of the retailer's fabrics makes it possible to rework them into high-quality and high-performing clothes, says Mr Violet. "In some cases, we can reuse up to 80% of a deficient product. We can also dip into fabric offcuts that are sent to the atelier. These are usually very small scraps, but they can come in handy." After a first small run to market-test the concept, a series of 500 remade pieces labelled Decathlon x CRÖM-D was put on sale this summer.

"We need to use the materials that are laying around in defective apparel, more so than bolts of deadstock fabric," says Mr Violet. He also points out that whether transforming unused fabrics or remanufacturing unsold garments, "we are making new products from new fabrics".

Located in the suburbs of Paris, LeLab+ specialises in upcycling unsold goods, supporting brands and retailers seeking to produce in France, and includes a manufacturing workshop. Founded by Myriam Mentfakh, who has 24 years'

Cotopaxi's upcycled ranges are made in two factories, a pack maker based in the Philippines and a garment maker based in China. Sewers are given a certain amount of freedom in deciding the colour combinations of the Del Dia packs.

CREDIT: COTOPAXI



experience working in fashion, it was chosen by US sportswear brand Nike for the Parisian run of its Re-Creation platform. This concept, first launched in 2022 in Los Angeles, before coming to London and Paris this year, calls on a local designer and manufacturing facility to remake unsold items.

"To be able to work with Nike, we needed to pass its stringent supplier-onboarding protocols, which included two on-site audits and training for sewers and staff. Now we are a Nike-certified facility," Ms Mentfakh says proudly. The Itzapala atelier working for Decathlon in Mexico went through a similar vetting process. "There were a total of 128 requirements to satisfy, including special security and safety measures for a workshop located in a region prone to earthquakes. Decathlon staff came to check the facility three times," says Mr Violet.

Not only experimental

LeLab+ has had several experiences in upcycling. For a major hypermarket chain in France, it remade a range of sleepwear from unsold bedding. But that, says Ms Mentfakh, was a one-shot operation and she sees more promise in Nike's Re-Creation programme, which she says is ongoing. The AGEC law that bans the destruction of unsold non-food goods will presumably boost her upcycling and remanufacturing activities. "Our challenge is to make this new legal framework economically viable," she says, adding that it requires specific technical expertise.

She sees a parallel between apparel brands' attitudes towards upcycling unsold stock and the selling of second-hand goods. "At first brands did not think it would be a good solution, but now they have for the most part set up take-back programmes and created recommerce platforms offering pre-loved clothes," she says. The second-hand market she adds relies on specific expertise and logistics, as items need to be cleaned and sometimes repaired, before being put back for sale.

Confirming her point, remanufacturing practices are growing among established players. German sportswear brand Vaude has turned a pilot project launched in 2016 with refugees into a permanent upcycling workshop at its headquarters in Baden-Württemberg, where remnants from backpack and bike bag productions are reworked into tote bags. Patagonia stores in the US feature similar items, such as computer cases, made from leftover fabrics. VF-owned outdoor brand The North Face reworks garments unfit for sale in its Remade programme. On a more or less regular basis, it releases short runs of 50 or so items, most recently of Nuptse puff jackets.

Having successfully set up a remanufacturing system with a global player such as Decathlon, Mr Violet at CRÖM-D envisions reproducing this model with other garment-making facilities in Mexico. "These ateliers have the expertise, but they don't have access to the big customers," he

says. "This is the only way to have a positive impact on the lives of the workers and help make fashion have a positive social impact on the world."

CRÖM-D's initiative also plays a part in the French retailer's zero-waste strategy. Addressing systemic overproduction is not only good for a company's ESG reporting, it can also positively impact its financial ratings. Tallied in the filings of public companies, excess inventory affects both their bottom lines and share prices. It is a rare event when a brand turns surplus stock into revenue as adidas has managed to do with Yeezy sneakers that it removed from the market because of their association with rapper Kanye West. Liquidating these ranges, which the company said were worth \$1.3 billion, brought in €400 million in sales in its second quarter of 2023. They are not, admittedly, remade in any way, but they do reveal the scope of overproduction and the possible scale of a market for remanufactured or upcycled goods.🌐



Activewear remade from unsellable goods by CRÖM-D for Decathlon in Mexico.

CREDIT: CRÖM-D

Using greenhouse gases as feedstock for fuels or materials is already a reality, and could become a source of clean, carbon-neutral or even carbon-negative synthetic fibres.

Carbon from thin air

It is the gas that is suffocating the planet. It is not the only one, but it is the one most talked about. Carbon dioxide is abundant, but it is also an inert gas, and breaking it down to produce chemicals or polymers is energy-intensive, as is harvesting it from air. But carbon is also the molecule that forms the backbone of the synthetic fibres used to make our everyday clothes, activewear and plastics. Long chains of carbon molecules, in polyester as well as in cellulose, are what we make fibres from. In this form, it is known as 'embedded' carbon, and this is why it is basically impossible to 'decarbonise' man-made polymers and plastics, but it is possible to 'defossilise' them.

The Renewable Carbon Initiative (RCI) was created in 2020 by nova-Institute, a German research centre and consultancy, to do just that. It has identified and promotes three alternative sources of carbon: it can come from recycling, from biomass or carbon capture and from utilisation (CCU). In a paper published this past March, the initiative proposes a scenario for a future supply of non-fossil carbon by 2050⁽¹⁾. It estimates that recycling (plastics and such) could cover around 55% of future needs, biomass could supply roughly 20%, and the remaining 25% or so

could come from CCU technologies. It believes that all three of these sources are required to address growing carbon demand for chemicals and materials. But it takes care to note that carbon-capturing technologies must be powered by renewable energy, as using fossil fuels would defeat the purpose.

A raw material like any other?

In July, Première Vision hosted a panel talk on these novel materials made from carbon emissions which featured Babette Pettersen, head of LanzaTech's European business and Benoit Illy, co-founder and CEO of Fairbrics. Both companies say their innovative processes deliver chemicals that have the same properties and performances as conventional ones.

In its tennis range for the Australian Open, German sports brand adidas chose to use a polyester yarn made from carbon dioxide fermented into ethanol by LanzaTech. It is said to constitute 30% by weight of a polyester yarn, and a minimum of 15% by weight of the garments.

CREDIT: ADIDAS



Originally based in New Zealand, and now headquartered in Chicago, LanzaTech has developed a biotech-based method to turn carbon monoxide into ethanol. It collects the gas from flues directly on the sites where they are produced, namely steel mills. Chemical building blocks, or fuel, are obtained via fermentation. In May of this year, the company installed its first carbon-capturing system in Europe, at an Arcelor Mittal mill located in Ghent, Belgium. The new 'Steelanol' facility has an annual capacity to produce 80 million litres of advanced ethanol (derived from waste streams), which will be jointly marketed by ArcelorMittal and LanzaTech under the brand name Carbalyst. The pollution-capturing system is expected to help reduce the plant's carbon emissions by 125,000 tonnes annually.

It is not the first such facility LanzaTech has established, three others are in operation at steel mills in China, with several other demo-sized plants located in India, Canada and Japan. Funding for the €200 million plant in Ghent was provided by the Flemish government, the Belgian federal government and the European Union's Horizon 2020 research and innovation program, supplemented by a loan from the European Investment Bank.

CarbonSmart, LanzaTech's own brand, has already been used to make products for major brands and retailers that are eager to adopt the new pollution-derived materials. Swedish fast fashion retailer H&M has chosen a CarbonSmart polyester fibre for its Move activewear range. It is present in the midsole of one of Swiss footwear brand On's ranges, combined with a textile upper made from a polyester produced by Fairbrics. Yogawear brand Lululemon and Inditex-owned Zara have also introduced ranges composed of CarbonSmart polyester. Adidas' tennis kits for the Australian Open at the start of this year were made from a polyester fibre whose mono-ethylene glycol (MEG) component, 30% of its composition, was supplied by LanzaTech. "Companies like H&M, Zara and On are looking for solutions for their carbon emissions," says Ms Pettersen.



LanzaTech, she went on to say, "takes carbon from a source of emissions, which can be a factory or compost gases from agricultural waste, and uses fermentation and biology to make fuels or chemicals. These can include fibres for fashion, surfactants, and so on." But she takes care to note that the company "focuses primarily on heavy emitters, such as steel mills, and not smaller facilities."

Scaling up, she goes on to say, "is a huge challenge". LanzaTech was founded in 2005, and its first large-scale facility was installed in China in 2018. "We need to build more plants, and this requires funding and government support," she says. LanzaTech went public earlier this year, and this, she notes, "means that we now need to generate revenue." Licensing the technology could be one avenue, such as expanding applications with manufacturers and brands in fragrances, detergents or packaging.

Based in Villebon-sur-Yvette, south of Paris, French cleantech start-up Fairbrics is currently producing MEG, one of the two components of polyester, from waste-stream carbon dioxide. "As our solution is a drop-in technology, it is fairly easy to find supply chain partners, but more difficult to find funders," says Benoit Illy. "LanzaTech's ground-breaking solution has been a huge help."

LanzaTech's CarbonSmart polyester was featured by H&M in its activewear range, Move. The Swedish fast fashion retailer has also invested in Rubi Labs.

CREDIT: LANZATECH X H&M

At the beginning of 2023, the company was the recipient of a €17 million grant from the European Union's Horizon 2020 programme, and raised an additional €5 million from current partners. These funds will be used to build a pilot line, with a 100kg/day capacity, by 2024, and a 1 tonne/day demo plant by 2026.

Threading-CO₂, the EU research programme into carbon-capturing and utilisation, in which Fairbrics is the central brick (pun intended) brings together a consortium of 13 partners from seven EU countries. Academic institutions, industry partners, and municipalities are involved, including French fabric manufacturer Les Tissages de Charlieu. It aims to scale-up and demonstrate what it says is a first-of-a-kind technology to produce commercially viable and sustainable polyester textiles from CO₂ waste streams and running on renewable energy.

"What sets our technology apart is that it goes directly from CO₂ to chemicals," says Mr Illy. "We mix a catalyst with carbon dioxide and a solvent, heat it for a few hours, and obtain the chemicals we want." As opposed to LanzaTech, Fairbrics does not capture carbon emissions, but buys the gas from companies that do. The start-up's process is powered by renewable energy and operates at a low temperature, he says, insisting that "it potentially has a very low carbon footprint, and could be carbon negative". The next step for the four-year old start-up is to expand its technology to obtain terephthalic acid (PTA), the other ingredient in polyester.

"The fashion industry is desperate to find a solution to reduce its carbon emissions," says Mr Illy. Though promoted as drop-in solutions, these non-fossil polyesters are currently twice as expensive as conventional petrochemical-derived ones. "The price corresponds to the value we bring to the market," said Ms Pettersen at the Première Vision conference. As economies of scale are achieved over the next five-to-ten years, its cost will align with those of the market, she believes.

Not only polyester

Mango Materials, based in San Francisco and founded in 2010, siphons methane from wastewater treatment plants and uses it to produce a biopolymer, poly-hydroxyalkanoate (PHA), which it markets as an alternative polyester for textiles. "Historically our methane was from Silicon Valley Clean Water in Redwood City, California. We are in the process of scaling up at the Easterly Wastewater Treatment Plant in Vacaville, California," Molly Morse, the start-up's CEO and one of its three founders tells WSA. The methane is transformed into PHA using a biotech bacteria-based process. Footwear brand Allbirds chose the methane-made bioplastic for one of the components of its M0.Onshot sneaker.

Founded in 2020, and also based in San Francisco, Rubi Labs is developing what it says is a carbon-negative manmade cellulosic yarn (lyocell or viscose) made from carbon waste streams. It has recently received backing from Walmart and announced a pilot project to explore how carbon



emissions from manufacturers and facilities in the retailer's supply chain could be captured and converted to make apparel. The patent-pending technology developed by twin sisters and founders Neeka and Leila Mashouf is based on a special enzyme and a biocatalytic process to convert carbon dioxide into cellulose. The start-up says that this method allows it to achieve a yield of 100% of CO₂ inputted with no waste. In its latest funding round, it raised \$8.7 million from new investors including Patagonia's Tin Shed Ventures, H&M Group and the Stella McCartney-backed Collaborative Fund. Nicolaj Reffstrup, co-founder of fashion label Ganni, was an angel investor. Another sign that the apparel industry is keen to support these new technologies.

Newlight, based in Huntington Beach, California, was founded in 2003 and has developed a biotech process to convert greenhouse gas emissions into a biopolymer it is marketing as AirCarbon. The material is a polyhydroxybutyrate (PHB), also a member of the polyester family, and is said to be made from approximately 40% oxygen derived from air and 60% carbon derived from greenhouse gas. The company is focusing on plastics and a leather alternative, but plans to conduct research into textiles for biomedical and personal care applications. Nike, Target and H&M are listed as customers and an unnamed global luxury goods

Swiss sports brand On introduced CleanCloud in late 2021 which uses carbon emissions as a primary raw material for the EVA used in a shoe bottom unit, developed with ethylene supplied by LanzaTech and polymerised by Borealis, based in Vienna, Austria.

CREDIT: ON



Newlight's AirCarbon is said to be biocompatible. The polyhydroxybutyrate (PHB), part of the polyester family, is made by microorganisms that convert carbon emissions into chemicals.

CREDIT: NEWLIGHT

manufacturer contributed to its latest equity round which brought in \$125 million. AirCarbon is currently produced at scale in California and a second facility is being built in Hannibal, Ohio. It is expected to draw methane from anaerobic digestion of food and agricultural waste, as well as carbon dioxide from energy facilities and direct air capture.

Other similar initiatives are under way. In the Netherlands, TNO, an independent Dutch research agency, has commissioned a demonstration plant to convert CO₂ waste streams into chemical building blocks for plastics by 2030. Japanese chemicals company Asahi Kasei has announced plans to produce ethylene from carbon dioxide. Both have said their technology is based on an electrochemical process and is powered by renewable energy.

Three different pathways

As seen, three main methods are being harnessed to convert captured carbon monoxide or carbon dioxide into building blocks for chemicals and polymers. In the biotech processes that LanzaTech and Mango Materials have chosen, microorganisms feed on the gases and produce the chemicals or polymers, as Pauline Ruiz, sustainability and technology expert at the nova-Institute tells WSA. A second pathway, called chemical conversion, combines energy with a synthetic catalyst to speed up the chemical reaction. "Chemical processes converting CO₂ can produce many different types of products, from polymers to specific chemicals,

including methanol," she says. Electrochemistry, the third method, uses direct electrical energy to convert CO₂ into different types of chemicals. "This technology will grow in the next decade," she adds.

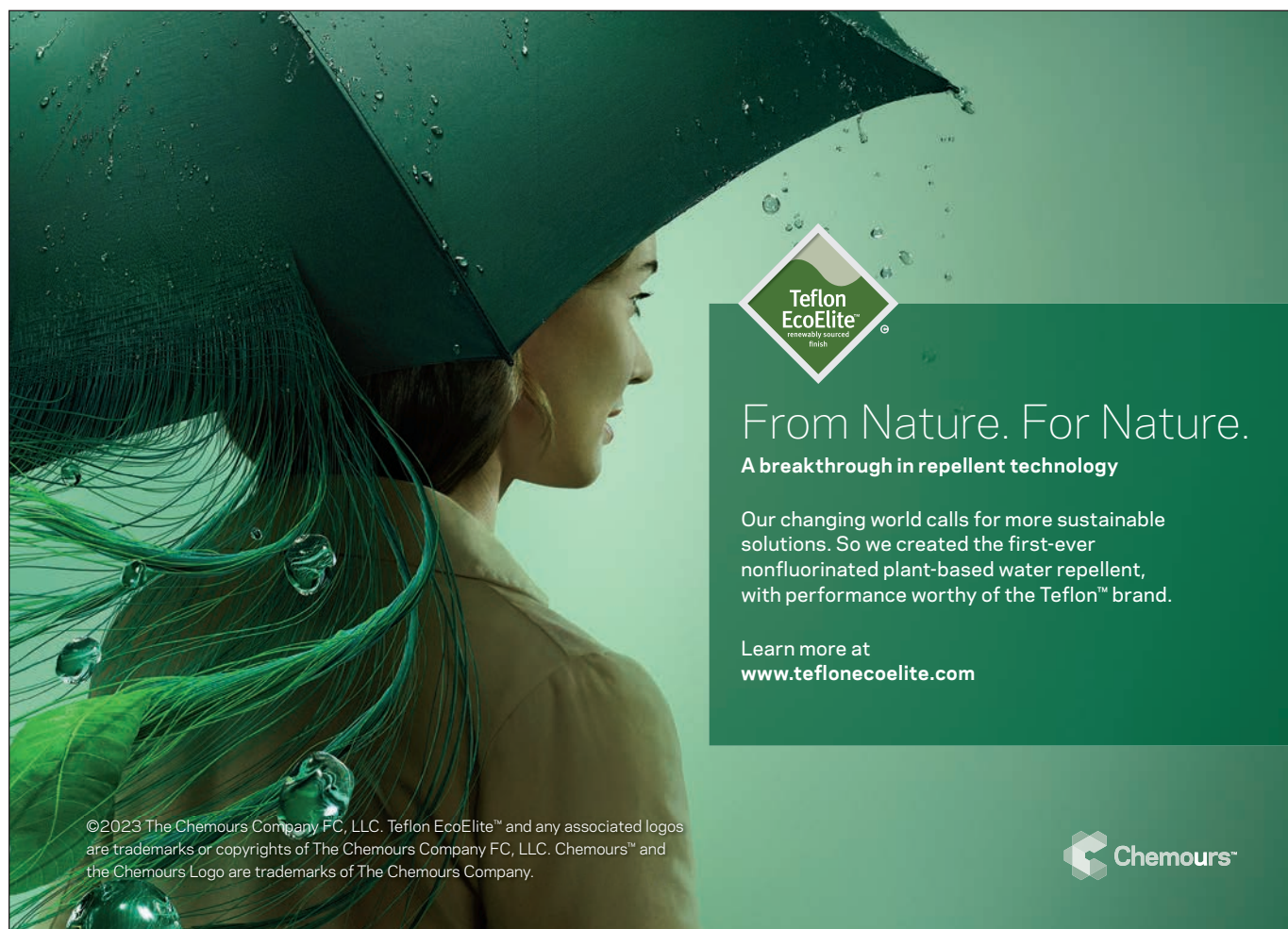
To optimise and scale up any of these technologies, the captured gases, be it CO, CO₂ or methane (CH₄), can ideally be collected from concentrated sources such as factory flue, steel mills, biogas plants or chemical plants. "Collecting concentrated CO₂ currently lowers the cost of capturing it," says Ms Ruiz. However, capturing CO₂ directly from the air via Direct Air Capture (DAC) is also possible, and the technology is being scaled up and DAC projects are multiplying.

Some technologies make use of reactive flue gases from steel manufacturing (rich in CO) or biogas plant (rich in methane) to convert these directly. Otherwise, most of the technologies focus on CO₂ conversion. CO₂ is a stable gas and energy is required to activate it and convert it. All in all, the energy used to capture and transform any of these gases should come from renewable sources.

For the Renewable Carbon Initiative, all of these carbon-capturing technologies are needed to accelerate the transition away from fossil fuels, along with the just as necessary sources of renewable energy. In essence, more research and more infrastructure, are the colossal challenges this nascent sector faces if it wants to make a dent in the decarbonisation of energy and the defossilisation of materials. 

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RISE TO THE CHALLENGE

Textile technologists behind renewable cellulose-based yarn HeiQ AeoniQ have received something of a leg-up after securing a \$100 million offtake agreement with Sri Lankan sportswear, swimwear and intimates manufacturer MAS Holdings. Importantly, the deal will help finance a future AeoniQ fibre plant, to help move the development of “new circular and sustainable” materials forward, as co-founder and chief executive, Carlo Centonze, tells WSA.

Stepping-up supply

With over 100,000 employees and 40-plus production facilities spanning 16 countries, MAS counts itself among South Asia's largest performance textile and apparel makers. Its internal Plan for Change targets hinge upon generating at least half of company-wide annual revenues from “sustainable products” by 2025. This refers to clothing and fabrics that are more durable, recyclable and are made from less resource-intensive inputs, such as natural, organic or recycled raw materials such as post-consumer waste. Beyond manufacturing, the Colombo-headquartered group's aims also extend to 100% factory-floor female empowerment, one-for-one gender parity at management level, value enhancement of all non-hazardous waste, reaching “zero” toxicity across 100% of its products and processes, and biodiversity restoration. Commenting on their relationship this past summer, Mr Centonze called MAS “probably the best premium garment maker in the world” and portrayed its leadership as committed to fostering a sustainable textile industry.

Responsible consumption

The partners announced their five-year offtake agreement in early July. Describing it as stage one of HeiQ AeoniQ's scale-up, Mr Centonze painted the collaboration as “a natural result of the confidence built over [the] decade that HeiQ and MAS have been doing business together.” Securing the Sri Lankan entity as an early-stage fixed buyer is but a testament to the technology's transformative power and game-changing potential for fashion, he said. If all goes as planned, the performance wear manufacturer will purchase 3,000 tons of AeoniQ cellulose filament yarn at a fixed price in 2025, followed by another 5,000 tons every year between 2026 and 2029, meaning the deal is valued at around \$100 million overall.

Key criteria for its fulfilment include achieving MAS' first order of 3,000 tons, as well as finalising a mutual commercialisation blueprint. Their commitment will then be considered concrete after further discussions, to be held just

Mr Centonze co-founded AeoniQ's parent company HeiQ alongside Murray Height as a spin-off from the Swiss Federal Institute of Technology Zurich almost twenty years ago now.

ALL CREDITS: HEIQ





Collaborators from HeiQ and MAS Holdings visit the Austrian pilot factory together. Mr Centonze is pictured second from right.

after this time. In order to realise preliminary volumes, Mr Centonze says the business is already ramping up production at its pilot facility in Herzogenburg, Austria, while at the same time working to set up its industrial plant in Portugal, “which will satisfy the initial demand”. This gigafactory, to be funded in part by a Portuguese government grant, will eventually have capacity to make 30,000 tons of AeonIQ filament yarns per year. Its exact location is yet to be confirmed, although the site selection process is underway, with total investment estimated to be in the region of \$250 million. HeiQ has itself already invested \$100 million, the senior leader shares.

The company’s Austrian site, however, which became operational during the second half of 2022, had reached the threshold of 100 tons annually by the third quarter of that same year. This is due to increase to 300 tons a year by end December this year. Regarding their most significant takeaways from the Herzogenburg project thus far, the team has learned a lot, the chief executive states, but now “feels ready to venture out” into bigger, more demanding territory.

A new pace

Both parties agree on the need to scale rapidly, to facilitate faster adoption. In the words of group chief executive at MAS Holdings, Suren Fernando, the objective is to present HeiQ AeonIQ as “a key catalyst” and building block for cultivating an eco-friendlier apparel ecosystem. “We believe that this investment is an important step in our efforts to reshape our industry by driving innovation, collaboration and scale.”

First introduced to the market in autumn 2021, AeonIQ is made from 100% renewable resources through the application of its proprietary technologies to non-valorised feedstocks, including algae and wood pulp. It is set apart by its ability to replace petroleum-based fibres including polyester and nylon, reproducing “comparable performance features” via lower-impact means, all

with the promise of an “endlessly circular” future, according to its developer. Work to integrate Renewcell’s cellulose dissolving pulp Circulose, made from 100% cotton-rich textile waste, has been progressing since June 2022 along these lines. The company intends to make the ingredient one of three core raw material sources for AeonIQ.

Mr Centonze underscores how involvement from the South Asian supply titan has been fundamental to proving the new plant’s financial viability. The business’ strategy is a three-pronged one, he says: equity, debt and government grants. He expects to finalise terms with AAA partners between now and the end of the year. With this summer’s onboarding of MAS, though, the HeiQ AeonIQ value chain is finally complete. Joining early strategic investors, fibre manufacturer The Lycra Company and fashion brand Hugo Boss, MAS’ addition makes it abundantly clear that the start-up’s horizons are ever-expanding. 

A sample of HeiQ AeonIQ fabric. Mr Centonze says that he hopes to make ingredient brand Circulose, produced by Swedish pulpmaker Renewcell, one of the three main raw material inputs for cellulosic AeonIQ yarns.



Powered by a super-polymer

Sports brand adidas has begun using material from Rheon Labs in shorts and tops in its Adizero Control apparel collection for runners. This is a follow-up to its use of the material, Rheon, in exercise leggings, tights and tops earlier this year. London-based Rheon Labs has patented Rheon, which it describes as “a reactive superpolymer” that can help athletes improve their performance by reducing energy-waste.

It works by helping muscles stay in “the most efficient position so that more energy is directed into performance”, according to the company’s commercial director, Simon Huntsman. Material made from Rheon is breathable and soft, but becomes tougher in periods of high-intensity movement; pieces of it, placed in the right position on a garment, can provide extra support and reduce energy-waste to boost athletes’ performance.

Glue-free

The Rheon polymer is a composite thermoplastic elastomer (TPE) that undergoes change when strain-rates increase.

Designs for garments such as the products that adidas has made so far can incorporate the right amount of Rheon from the outset, placing it in exactly the right place on the surface of the textile that the rest of the garment is made from. The London-based start-up can then produce the composite TPE in the form of film and cut out the shapes required using laser-cutting technology. Brands and their partners can then use heat to apply the pieces of Rheon to the garment, with the application of heat causing a permanent bond to form between the film and the fabric; no glue is required.

A new era of performance

The company has used computer modelling to identify exactly where on garments Rheon should be placed. Other options for providing special support to the most important muscle groups already exist in apparel, but in-house testing suggests it has the potential to control four times more energy than conventional elastane-based textiles. Mr Huntsman explains: “Our technology has combined years of biomechanical research with complex chemistry in a way that will unlock a new world of athlete potential and shape a new era of performance.”



NEWCOMERS

Already in use in adidas exercise apparel, a composite thermoplastic elastomer (TPE) called Rheon has now gone into the brand’s clothing for runners, providing, in an unusual way, dynamic support to key muscle groups.

All of this has taken time, naturally. Rheon Labs was founded by Dr Dan Plant in 2017 as a spin-off company from Imperial College, London, where he did his PhD. During that time, he also worked on a research project at NASA. His work on what he has called “polymers that are sensitive to strain-rates” led to Rheon.

The company’s vision for what this can mean for brands and athletes is clear. On the wall of its offices in London, in large letters, a mantra appears: ‘Rethink Possible’. This works at two levels, making it clear to potential customers that it is perfectly permissible for them to rethink what they do and what they make. It also means that things brands may have believed were beyond them can, after a rethink, suddenly seem achievable. Simon Huntsman has spent decades in the performance apparel business, working for many years at cycling apparel brand Rapha. On coming into contact with Rheon Labs, he loved the idea of garments that can react to wearers’ movement and enhance their performance.

“When I began to talk to the company, I realised right away that this was genuine innovation,” he explains. “How much genuine innovation have we seen in recent years? Not much; my view is that covid-19 really stifled innovation because it made everyone go back into their own shell. Well, it’s a post-covid world now and we are creating a whole new era of dynamic support.”

Compression versus comfort

Sports bras were an early area application for the company. It worked on a new bra concept in-house to successfully demonstrate the concept of ‘dynamic support’ in soft body tissue. Sports bras are an important growth area, Mr Huntsman says. “With these products, there has always been a relationship between support and compression, but high compression doesn’t always mean

Following its use of Rheon in exercise clothing earlier this year, adidas has now used the polymer in its latest Adizero Control apparel collection for runners.

ALL CREDITS: RHEON LABS/ADIDAS



“What we are doing in performance apparel is super-charging materials through design”

SIMON HUNTSMAN, RHEON LABS

comfort. Our technology enables a higher level of support with lower compression. We are convinced that this is important because it will help more women participate in the sports they love.”

It is when a garment comes under strain at a fast speed, which it frequently will during exercise, that the material reacts and becomes stiff enough to offer targeted support in just the right places on the body. This is possible thanks to the complex chemistry referred to above.

“In chemical terms, this is about taking ingredients and combining them in a colloidal suspension,” Mr Huntsman explains. “When they combine in the right proportions, they develop new properties. It’s a change at molecular level, taking place in milliseconds, through the breaking and reforming of hydrogen bonds.” An analogy the company is fond of using invites people to think about the point on a beach where the sand and the sea combine in the right proportion, the right colloidal suspension, to make it easy and pleasant to walk or run on. If you go a little bit further inland, the sand is too dry and your feet sink in too deeply. If you go further away from the beach, you quickly encounter too much resistance from the water to move effectively.

Wobble woes

Because most of the members of the leadership team at the company have an engineering background, numbers matter to them. They have been convinced from the outset that their technology can improve athletes’ performance by reducing what they refer to as the “muscle wobble” that causes energy loss. “The body can be very inefficient,” Mr Huntsman says. “An athlete can lose a huge amount of energy because of unwanted and unnecessary lateral or circumferential movement of important muscle groups. We want to reduce that wasted movement and have more muscle movement take place in ways that will help improve performance.”

Some initial internal studies led the team to draw a hypothesis that their super-polymer could achieve this movement control, but they have insisted on gathering more data; they want to make the impact of their technology measurable and improvable. They decided, therefore, to commission more in-depth research at the University of Wisconsin’s neuromuscular biomechanics laboratory under the guidance of the laboratory’s co-director, Dr Bryan Heiderscheit.

The main focus of this research was to use sensors, accelerometers and other data-capture technology to measure the extent to which a garment can stabilise muscle wobble, especially in important muscle groups such as the quadriceps, the hamstrings and the calf muscles. The Wisconsin tests supported their conviction that the technology works. “You can cancel unwanted movement,” Mr Huntsman explains, “just as you can cancel out noise. Supporting the muscles in a way that makes their contribution more effective is a way of doing this and a way of letting the body design its own solutions.”



Athletes’ feedback

As all ingredient brands seek to do, the company will broaden its customer base in the near future and supply its super-polymer for other companies to use in their products as well, but it regards adidas as “a fantastic launch partner”, praising the Germany-based group for planning patiently and working respectfully with the technology provider, always giving credit where credit was due. It took four years of work for the first products to be ready.

Feedback that the sports group has shared with Rheon Labs so far indicates that the technology has gone down well with users of the exercise apparel it released earlier this year. The construction is black-on-black (other colours are possible and are coming soon, Mr Huntsman promises), but the shiny black of the Rheon on the matt black of the garments has produced an aesthetic effect that many passionate gym-users have embraced enthusiastically.

Early comments from adidas-sponsored athletes about the more recent project for Adizero Control running apparel pay testament to the technology’s performance qualities. One competitor said it made him feel like a super-hero, while another said it made him feel race-ready. These remarks were music to the ears of the team at Rheon Labs. Athletes will wear clothing endowed with Rheon at the Paris 2024 Olympic Games, with distance-running events the most likely to yield medals, Simon Huntsman thinks.

He explains that even a 1% gain can easily be the difference between standing on the podium and being nowhere. In a marathon, for example, a 1% gain makes a difference of more than a minute. “We are in the world of small gains,” he concludes. “The desire among the world’s top athletes to win is extraordinary; their whole mindset is about winning and the comments we have received suggest clothing with Rheon makes them feel like they can win. We are a performance solutions business and what we are doing in performance apparel is super-charging materials through design.”

Material made from Rheon is soft and flexible, but it becomes instantly stiffer during periods of high-intensity movement.

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Not a small feat

In August, outsole manufacturer Vibram officially announced it had become the first footwear brand and sole supplier to join Swiss testing body Bluesign's 800-strong network of system partners. Bluesign, founded in 2000, specialised in textile chemicals prior to expanding into newer categories, including denim, more recently. It first began collaborating with Vibram, one of the world's biggest producers of high-performance rubber outsoles, back in 2019.

This initial pair-up was motivated by the need to assemble "a new, rigorous method of analysis and certification [for verifying] the sustainability level of footwear", the shoe company's global sustainability director, Marco Guazzoni, tells WSA. It is hoped that their work together could one day lead to the formulation of industry-applicable guidelines, methodologies and standard, the partners shared.

Performance review

Since joining hands, Vibram-controlled input streams from raw materials to components, chemistry and production processes have all been assessed against Bluesign criteria, Mr Guazzoni continues. Of course, "improvements can never be enough", he emphasises, citing the manufacturer's own materials-first approach to sourcing "more



FOOTWEAR TECHNOLOGY

Outdoor performance soling supplier Vibram has secured new status as the first-ever shoe brand and the first outsole manufacturer to become a Bluesign system partner.

natural, more recyclable" options. Working with the certification body therefore represents its commitment to stepping things up even further. "Bluesign's methodology is among the most demanding in sustainability for textiles."

However, talking to its director of brand services and partnerships for Europe and the US, Kutay Saritosun, it would appear that Bluesign expects the minimum threshold for footwear approval to be much higher than that required of finished garments, at least at this early stage, now roughly two years into its initial footwear market explorations.

Articles of outdoor and winter apparel, like ski jackets, for example, must typically incorporate at least 90% Bluesign-approved fabrics to secure Bluesign-approved status. The minimum percentage requirements for footwear

Vibram continues to take the road less travelled in its pursuit of both performance and sustainability.

ALL CREDITS: VIBRAM

components such as midsoles, outsoles, and near-skin materials in products such as standard white training shoes will be “similarly stringent”, Mr Saritosun says.

What sets Bluesign apart is its in-depth examination of system partners’ chemical inventory lists. Each requires on-site assessment, followed up by action plans, secondary visits and detailed recommendations. There are currently more than 21,000 Bluesign-approved open-access dyeing, finishing, printing and coating chemicals for clothing, for instance. Out of the close to 800 existing system partners, all of whom hail from the textiles world, the list covers more than 200 chemicals suppliers, over 450 textile producers and in excess of 100 brands.

Footwear, though, remains relatively uncharted territory for the organisation. The sector is a completely different beast to textiles, as the Switzerland-based director puts it. Besides its work alongside Vibram, Bluesign also has several different pilot projects already under way with other shoe businesses, but these remain confidential for now. The intention is to integrate ever more key industry players into its system, to ultimately widen the available pool of Bluesign-aligned chemicals, components and raw material supply partners, without which there could never be a finished footwear product that meets its standards. Essential questions for Bluesign right now, Mr Saritosun says, include: “What goes into a sneaker? Where should our starting point be? Which components should we focus on, in regard to chemistry? Where can we have the biggest impact in footwear?”

“What goes into a sneaker? Where should our starting point be?”

KUTAY SARITOSUN, BLUESIGN

Stepping up to the mark

Ideally, the short-to-medium-term horizons for Bluesign’s new shoe division will involve finished-product certification for at least one prominent brand partner, most likely an athletic or outdoor footwear brand, within the next two years, according to Mr Saritosun. The footwear supply chain is a fairly new domain for Bluesign, whose expertise has always been in the textile and apparel supply chain. Footwear component manufacturers first need to become system partners, implement the Bluesign system and use approved chemistry to manufacture their components before certifying finished products becomes possible. However, Bluesign is optimistic about convincing the majority of component manufacturers to join and begin manufacturing approved components within the next two years.

Meanwhile, work to analyse and certify Vibram’s sustainability-minded component kit has been painted as something of a flagship project, but research and development progress is still at an early stage. Bluesign’s initial footwear foray as a whole is due to conclude by 2026. 

Bluesign systems partner status is granted only to chemicals, materials and components suppliers who can show compliance at every tier when it comes to chemistry.





SUSTAINABILITY

With several partnerships driving the collection, separation and recycling of textiles and footwear around Europe, there are fears new EU regulation banning the destruction of unsold goods could threaten one of the waste streams.

A question of waste

The European Commission is forging ahead with its circular and green ambitions, underpinned by the European Green Deal and the Circular Economy Action Plan, and the fashion industry-focused Strategy for Sustainable and Circular Textiles, all of which aim to restructure approaches to and create practical solutions for recycling. The Extended Producer Responsibility (EPR) scheme, which will make producers responsible for the full lifecycle of textile products, and Digital Product Passports are also set to shake up the sector. Earlier this year, the EU executive published its Proposal for Ecodesign for Sustainable Products Regulation, in which it states products should last longer and be easier to repair, upgrade and recycle; and products should be more environmentally friendly, circular and energy efficient throughout their lifecycle.

As part of this, the destruction of unsold textiles, footwear and electronic appliances will be banned. MEPs want the Commission to make garments and footwear a priority and among the first sectors to be covered by the ban. Fashion brands came under fire a few years ago when it came to light that potentially billions of pounds worth of stock was being destroyed annually, rather than being sold at a discount. Burberry's 2018 annual report revealed it had destroyed £28.6 million worth of goods that year; the resulting furore led to it committing to stop the practice.

The Ecodesign proposal says, "The destruction of unsold consumer products, such as textiles and footwear, by economic operators is becoming a widespread environmental problem across the Union, in particular due to the rapid growth of online sales. It is therefore necessary that this regulation establishes a framework to prevent the destruction of unsold products primarily intended for consumers, including products that have been returned by a consumer. This will reduce the environmental impact of those products by reducing the generation of waste and by disincentivising overproduction of products."

Deep concerns

While many welcome the new rules, not all are convinced by the wording. The Brussels-based Federation of European Sporting Goods Industry (FESI), which represents more than 1,800 sports brands, manufacturers and retailers, has expressed "deep concerns". Overall, it commends the proposal, particularly the need to make goods more sustainable, but it points out that if we want to scale up the amount of recycled and recyclable materials in the EU, then recycling should not be considered as destruction.

"We welcome the Parliament's work on providing clarification linked to the ban on unsold goods, in particular regarding the

FastFeetGrinded's shoe recycling machine has a unique circular process. Each company gets a certificate with "achieved" CO₂ reduction that can be used for their sustainability report. CREDIT: FASTFEETGRINDED



reporting obligations and the list of exemptions, with the inclusion of counterfeit products,” says FESI secretary general Jérôme Pero. “However, we regret that products not allowed to be placed on the market due to contractual obligations were not included.”

Around Europe, there are multiple schemes being established and money pouring into partnerships that are setting up waste collection systems, as well as the shredding and repurposing systems that are a vital part of the chain. A new partnership coordinated by sustainability hub Fashion for Good is touted as a significant milestone for footwear. Adidas, Inditex, Target and Zalando will work with Dutch company FastFeetGrinded to supply waste footwear and test separated materials.

Sort and grind

FastFeetGrinded was set up in 2016 by Danny Pormes and Erna Pormes-Redecker, owners of retailer Runnersworld Hoorn. As a supplier to the Dutch Ministry of Defence, they were expected to incorporate recycling into their business, but they found no simple solution for shoes. The pair worked with engineering group Heilig to create complementary machines: one that grinds and another that separates the materials, and which can process 2,400 shoes per hour. The leftovers are ground down to produce granules of rubber, foam, fluff, textiles and leather. “The resources are so pure, we have been able to make all the components for



The Fibersort technology has been developed by Belgium-based Valvan, a supplier of sorting and baling systems, and Dutch company Weiland. In the UK, it enables the Salvation Army to quickly differentiate which clothing can be recycled, offering a breakdown of fibre content after scanning.

CREDIT: SATCOL

a complete circular shoe,” said the company. They can also be reused in products such as outsoles, midsoles, flip-flops and playground flooring.

“It is crucial for industry leaders like adidas, Inditex, Target and Zalando to have come on board because it demonstrates their commitment to driving environmental impact within the industry and setting an example for others to follow,” Dolly

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Vellanki, innovation associate at Fashion for Good, tells WSA. “They also have strong market influence on consumer trends and preferences, so leading initiatives and efforts in circularity through recycling can support in creating more market demand for recycled footwear products.”

However, Ms Vellanki concedes there is a problem with the EU regulation. “There should be flexibility to choose alternatives to energy recovery and landfilling, and recycling as an option is in line with the EU waste hierarchy,” she says. “Recycling is not destruction. If remanufacturing or preparation for reuse is not possible, recycling should not be excluded as an option to treat unsold goods as recycling is also a recovery operation, unlike incineration and landfilling, which are both disposal operations.”

Sifting through

In 2020, Brussels-based clothing association Euratex launched ReHubs to support the development of fibre-to-fibre recycling. Of the 7-7.5 million tonnes of clothing discarded each year in Europe, only 30% to 35% is collected, it said, and an incoming European Waste Law will make the separate collection of textile waste mandatory. Euratex has calculated that an investment of up to €7 billion will be needed to reach a fibre-to-fibre recycling rate of 18% to 26% by 2030. ReHubs is now moving on to the operational stages of its plan to recycle 2.5 million

tonnes of textile waste by 2030, boosted by Swiss used textile collector Texaid, which will open a 50,000-tonne facility by the end of next year.

In a similar vein, Netherlands-based sorting company Wieland Textiles is involved in multiple partnerships, including Dutch Denim Deal and The Salvation Army ReShare. Wieland’s Fibersort machine – which WSA visited at its launch in 2018 – uses near-infrared technology to categorise textiles into 90 parts in a split second, based on the fibre composition, structure and colour.

Partly funded by Textiles 2030, a UK-based initiative organised by Waste and Resources Action Programme (WRAP) to guide the fashion industry towards a more circular future, a Fibersort machine is now also in operation in Kettering, England. Its main source of textiles is from the Salvation Army charity, which is the biggest collector of used clothing in the UK. In June, the charity’s funding arm, SATCol, added a second machine in Kettering – one that can convert the polyester textiles into pellets to resell to manufacturers as recycled PET (see sidebar). This additional technology is the next step towards its ambition to create the UK’s first “fibre farm”, with the aim of massively scaling up textile-to-textile recycling of all types of materials. This new plant will recycle around 2,500 tonnes in its first year, rising to 5,000 tonnes in year two.

SATCol views the EU legislation differently; a key part its work is to collect unsold wearable clothing

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and shoes and resell them through its charity shops, enabling the reuse of around 250 million items per year, including clothes, shoes, books and furniture. "We think it is important to explore all avenues for resale before an item is recycled," Majonne Frost, head of sustainability at SATCoL, tells us. "Of course, there needs to be nuance to any rules and regulations, for example some unsold items could be counterfeit or unsafe in which case they cannot be resold. However, ultimately, we need to radically rethink the way we do things and make things, and there are still companies out there that are destroying perfectly useable unsold textiles and shoes and that needs to be stopped."

Overproduction deterrent

Textiles 2030's 115 signatories, representing 60% of the UK home textiles and clothing market, have committed to change the way they operate to include more sustainable raw materials and minimise waste. Unfortunately, data in its first annual report, published this summer, showed the companies had jointly increased their carbon footprint by 4.4% between 2019 and 2021, and the water footprint increased by 1%. Catherine David, director of collaboration and change at WRAP, said: "It has been encouraging to see the number of actions businesses are taking to improve their carbon and water footprints has increased. However, progress will not be realised if the industry does not begin to tackle the overproduction and overconsumption of textiles which is currently sending both carbon and water footprints in the wrong direction."

It is this overproduction that the EC wants to tackle at source with its new Ecodesign directive. Companies that do destroy unsold goods will have to report the annual number and percentage of products as well as their reasons why. It seems there is a balance to be struck, or a more nuanced approach to the wording, when it comes to discouraging overproduction, as there will inevitably be some leftover stock, incorrect orders, samples, returns or defects.

Ms Vellanki points out there could be other unintended consequences that could arise from including recycling operations in the ban, including incentives to categorise textiles as 'fit for reuse' even when there is no viable reuse market outside the EU. "This approach can lead to increased landfilling or destruction risks in export countries and restrict availability of crucial inputs for the secondary raw material market," she says. "There is also a need to further scale the recycling infrastructure and technology in Europe, so including the recycling operations under the ban could potentially risk and disincentivise the needed investments into technology and infrastructure."

The regulation is still at proposal stage, and has time to be changed. In the meantime, the results of projects such as FastFeetGrinded, ReHub and a newly launched Circular Fashion Innovation Network in the UK could provide key learnings and spur the industry towards a more circular way of working, attracting more investment in the process. 

NEW TECHNOLOGIES COULD CHANGE THE GAME

A Fibersort machine helps differentiate the 65,000 tons of clothing per year that arrives in the Salvation Army's sorting centre in Kettering, UK. It has recently added a commercial-scale polyester recycling system, through Project Re:claim. Majonne Frost, head of sustainability at trading arm SATCoL, tells us more.



How easy or difficult has it been to separate out the 100% polyester clothing?

The Fibersort technology is very good at separating out pure fibres such as 100% cotton and 100% polyester, which are the most suitable for fibre-to-fibre recycling. The majority of what is received are garments made from fibre blends. These are more difficult to identify and recycle, especially if they are made from complex multiple blends of fibres.

What impact do you envisage this new machine having on the textiles collecting/repurposing chain in the UK? How does it fit into the wider global picture in terms of where waste is sent?

This technology is a game changer in terms of how we manage non-rewearable clothing and textiles. Rather than items being disposed of to incineration or landfill or downcycled (into industrial wipers, etc), these technologies (Fibersort and Project Re:claim) will allow us to 'close the loop' and feed recycled polyester back into the clothing production process. This will save carbon emissions from disposal and will also save carbon emissions in the production process, as well as less virgin plastic being required, which is made from fossil fuels.

In terms of the global picture, the UK and the EU are reviewing and tightening rules for used clothing export to ensure that, as much as possible, non-rewearable clothing and waste is dealt with before items are sent abroad. Together with textile Extended Producer Responsibility (EPR) rules coming in, this will ensure that the whole clothing supply chain will be pushed towards ensuring clothing is designed to be durable, contain a high level of recycled content as well as being recyclable at the end of their life.

The Salvation Army is also involved in The Autosort for Circular Textiles Demonstrator (ACT UK) project, spearheaded by the UK Fashion and Textiles Association. Will this use the same machine?

The ACT UK project will develop a blueprint for sorting and preparing textiles for recycling. The project is not committed to any particular technology yet. The team will be evaluating existing technologies such as Fibersort, Tomra and Picvisa and considering new fibre identification technologies. The project will also be exploring potential new technologies for preparing garments for recycling, such as removing buttons, zips and labels.

What are the biggest challenges we face in terms of achieving a more circular fashion industry?

We need a better understanding of the negative impacts of fast fashion on our planet, in terms of the resources we consume and also the carbon emissions it generates. Also, a better understanding of the opportunities of creating a more circular fashion industry in terms of green jobs/skills and innovation as well as the positive impact on our planet. In terms of recycling clothes, there is a big challenge in designing clothes to be recyclable and further developing reprocessing technologies to make it easy to recycle at scale.

Many of these types of projects have had collaborative, and sometimes governmental, funding – where will the money come from to run these systems in the future?

Textiles EPR will be key in funding these changes, both to drive consumer awareness and eco-design standards for textiles, as well as to provide financial support for the recycling sector.

Ten years on from major changes at the company, polyester yarn developer Advansa is making a return to the apparel market.

A return to apparel for Advansa

Specialty polyester fibre developer Advansa has had a busy ten years since it paused its involvement in athletic apparel applications. The yarns it produced, including ThermoCool and Coolmax, were of great interest to athletic and outdoor apparel brands because they offered high levels of breathability, moisture management and temperature regulation thanks to special cross-sections in the fibres. Much of Advansa's focus since it sold this part of the business in 2013 has been on home textiles, a market in which it has had success for many years with filling fibres for pillows, duvets and other bedding products. It has not renewed its involvement in the apparel market, until now.

The apparel market can be complex, crowded and competitive and Advansa has been happy to concentrate on home textiles as its core market. But three-and-a-half years ago it, too, underwent a change of ownership and, indirectly, it was this that brought it back to the apparel market.

Investment holding company Sverige Netherlands acquired Advansa at the start of 2020. It planned to see what connections might develop (investment companies are fond of calling this 'exploring synergies') between its newly acquired polyester fibre producer and another polyester producer under its ownership, Indonesia-based Asia Pacific Fibers (APF). Now, together, Advansa and APF are jointly launching Remotion, a new brand of recycled polyester for the apparel market. The two sister companies have developed Remotion together, with APF carrying out production at its site in Indonesia. Expansion has taken place there recently following extensive investment in facilities for on-site chemical recycling to broaden the product portfolio to include recycled PET. For its part, Advansa is taking responsibility for marketing and supplying the fibres to customers around the world.

Global head of business development for Advansa, Jean-Christophe Rouyer, explains that this first fruit of the partnership with APF would

Ocean-bound plastic is the raw material for Remotion Blue. From an environmental point of view, running out of supply would be a good problem for Advansa and APF to have, but there is little sign of that happening.

CREDIT: ADVANSA



have materialised more quickly had it not been for the covid-19 pandemic. Any synergies that early exploration had identified suffered serious delay. “We were unable to exchange much during the pandemic,” he says. “We were two separate companies, with different set-ups, cultures, production lines and mentalities. There was no real overlap.” The two companies have now begun to build connections with each other and Remotion is one of the first branded, specialty fibre they have produced together.

Green and blue

Two options are available for clothing brands to choose from, Remotion Green and Remotion Blue. The first has discarded plastic destined for landfill as its raw material, while the second comes from recovered ocean-bound plastic. The fibres can be endowed with anti-bacterial and moisture-management performance attributes and can be dyed any colour. In addition, the two sister companies describe Remotion as a breakthrough because it can also be made biodegradable (if customers opt not to have anti-bacterial functionality built in). The fibres have been modified to break down over time at a rate comparable with natural fibres, according to Advansa and APF; tests suggest a biodegradability rate of 40% in landfill or in marine environment within one year, and a rate of more than 90% within four years, depending on the conditions (see separate article on biodegradability in synthetics, page 10).

In its ten-year absence from the apparel market, Advansa says there has been clear growth in the popularity of recycled polyester. Not that this came as a surprise: its home textiles division has developed a wide range of filling fibres for pillows, duvets and mattresses that use recycled polyester. The company acknowledges, however, that apparel is one of the biggest markets for recycled fibres now and the recycled message is even ringing out at regulatory level in regions such as the European Union.

In 2022, the European Commission published its ‘Strategy for Sustainable and Circular Textiles’, which includes this ambitious statement: “By 2030 textile products placed on the EU market will be long-lasting and recyclable, to a great extent made from recycled fibres. Consumers will benefit for longer from high-quality, affordable textiles. Fast fashion will be out of fashion, and economically profitable re use and repair services will be widely available. In a competitive, resilient and innovative textiles sector, producers will take responsibility for their products along the value chain, including when they become waste. The circular textiles ecosystem will thrive, driven by sufficient capacities for innovative fibre-to-fibre recycling, while the incineration and landfilling of textiles will be reduced to the minimum.”

Raw material availability

With just over six years to go until 2030, there is plenty of work still to do, but the drive towards

“Collecting plastic from beaches keeps growing and growing; I don’t see how this could dry up.”

JEAN-CHRISTOPHE ROUYER, ADVANSA

a circular fashion and textiles economy seems unrelenting. Jean-Christophe Rouyer wonders if the consequences of this will include blends of fibres in garments becoming less common, simply because monofibre fabrics are easier to recycle. “The politicians are really thinking deeply about the circular economy,” he says. “One of the effects of this has been an increase in demand for bottle-to-bottle recycling, because bottle manufacturers are having to put much more recycled content into their products too. Then you have the increases in energy prices that we have seen since the start of the war in Ukraine in 2022. Energy costs have jumped enormously; at the real peak you had to multiply the previous energy cost by six or seven. All of this has had a big impact and has put the cost of standard recycled polyester from bottles up a lot.”

He explains that the intense competition for standard recycled polyester that this has generated is one reason why Advansa and APF have opted to work on a more specialist recycled polyester. The partners are sourcing plastic for Remotion Blue fibres from a programme called Prevented Ocean Plastic, which works by encouraging collectors to pick up plastic bottles from beaches around the world and take them to local collection centres. These centres pay the pickers for the material they have brought in and then sort it and press it for easier transportation to factories for processing. The material is transformed into flakes or pellets from which textile manufacturers can extrude recycled polyester yarn. The volume of ocean or ocean-bound plastic is, sadly, so great that APF and Advansa are unlikely to run out of raw material any time soon. Mr Rouyer says it would be a good problem to have, from the point of view of the health of the planet, if the supply were to dry up. “Collecting plastic from beaches keeps growing and growing,” he continues. “I don’t see how this could dry up.”

The quality of the Green and Blue Remotion versions is equally high, he insists, and both can go into technical apparel. This project is still new and Advansa is in the process of showing the concept to potential customers. There is much to do before garments come to market containing Remotion fibres, but Advansa is confident this will happen in the next year or two, allowing for the long lead-times that clothing brands (and all the partners that are involved from one end of the supply chain to the other) need to plan, design and produce their new collections. Remotion is in motion; Advansa’s return to the apparel market is a reality. 



Eye in the sky

Being able to spot the difference between organic and non-organic fields of cotton would be a challenge for most people outside the agricultural sector – particularly from a distance of 700km. But this is exactly where the European Space Agency (ESA) and German software company Marple started when they embarked on a project to test if they could use satellite data to identify different field usage from space. They harnessed machine learning and artificial intelligence to highlight cotton fields versus wheat or maize or other uses, with satisfyingly accurate results. “They discovered the software was able to differentiate cotton versus other crops to a degree of 98% accuracy, as well as whether or not it was likely to be organic or non-organic,” Jeffrey Thimm, project manager at Global Organic Textile Standard (GOTS), tells WSA.

GOTS – a standard for the post-harvest processing of textiles made with certified organic fibres – realised the project had considerable potential to support the organic cotton sector and chose to invest. From the initial pilot mapping fields in Uzbekistan, it has now been widened to look at India, the world’s most important organic cotton producer, training artificial intelligence to use satellite data and “ground truth” data to classify fields automatically. “The satellite images are not just photographs, they use infrared and far-infrared sensors that are able to pick up on differentials that you and I can’t see,” explains Mr Thimm.

The European Space Agency is working with GOTS to map and monitor organic cotton cultivation using satellites, as a new program is developed that is sophisticated enough to classify field usage to a startling degree.

The software operates using various metrics, including the Normalised Difference Vegetation Index (NDVI), which measures vegetation health, and the Normalised Difference Water Index (NDWI), which evaluates the water content in vegetation and soil. The team discovered nuances in organic cotton fields, such as how long the plants took to grow, what they looked like and the water content.

The data will be used for three main aims: to help estimate volumes, to combat fraud and to identify farms that could easily be converted to organic practices. It is important to have a reliable estimation of volumes, partly so buyers know how much they can expect to purchase in the coming seasons, but also for fraud prevention. “If we don’t really know how much organic cotton is actually available then it really opens up the doors for fraudulent behaviour, which of course then hurts everybody,” says Mr Thimm.

By imaging Earth’s land in remarkable detail, satellites benefit society through various disciplines including cartography, monitoring land use, urban development and water management.

CREDIT: EUROPEAN SPACE AGENCY

Gaps in volume

GOTS supplies information to the US-based Textile Exchange to help it with its publications, including the widely used Organic Cotton Market Report. Last November, TE published Strengthening Integrity in Organic Cotton, in which it noted the gap in the volume of organic cotton reported to be used by brands and retailers and the estimates of the volume of organic cotton actually produced. “Most organic cotton farmers don’t have access to good-quality non-GMO cotton seeds, don’t have secure buyer relations, and often don’t receive a price differential that offsets their efforts,” it stated. “Without fair remuneration, there’s greater pressure on farmers to increase their yields and reduce their costs, which increases the risk of fraud. This may come through the use of GMO seeds, or the use of pesticides to prevent disease or losses from insect pressure as well.” It concluded that organisations must proactively map suppliers and invest in new tools to boost the integrity of supply.

Organic cotton supply is still very low – around 1.4% of the global cotton volume. In the most recent Organic Cotton Market Review, published last October, TE conceded its data confidence from India was low. The body was only able to obtain data from India’s Agricultural and Processed Food Products Export Development Authority, but this combines organic and in-conversion production into a single figure. In the past, TE was able to use data provided by producers and certification bodies to determine the breakdown between organic and in-conversion but this year had to apply modelling and assumptions to arrive at an estimation.

Tight supplies push prices up – and also increase the temptation for fraud. In 2020, GOTS found evidence of fake Raw Cotton Transaction Certificates (TC) in India, which had been created by fraudsters using government templates with fake QR codes, leading to a cloned website to pretend the TCs were authentic. The announcement hit the sector, with questions over authenticity, transparency and governance, pushing prices even higher.

While GOTS had measures in place to combat fraud, it has since doubled down on efforts to police the supply chain. From December 2022, it has put in place “a double safety net” of traceability of all TC data back to the original farm source, as well as cotton gins certified to the Organic Cotton Standard. “We have been looking at many different tools to reduce the possibility of fraud, so in India we’ve introduced a farm-to-gin registry so that we have better clarity on exactly where gins are getting their cotton from, and we’ve made it harder for traders just to move cotton around on paper. When we learned about this AI opportunity with satellites, we thought this is one of a basket of tools that could really help.”

Watchful presence

The project is funded by both the ESA and GOTS. Through its Business Applications Space Solutions, ESA aims to show how satellite



applications and space technology can be beneficial to business. It has previously worked with Schoeller Textil and the Hohenstein Institute to evaluate performance textiles in space, and with Sympatex on a project to design functional fabrics for astronauts.

As a non-profit, GOTS believes investing in the project could “reduce the running costs of sustainability”, and could also help to identify more farms whose land is suitable for conversion to organic, boosting the network. “This is a way for us to help find those farmers that are already on board in terms of methodology or almost growing the cotton with organic principles and just need a little bit of extra support to get certified, whether it’s organisational or financial, being part of the group, connecting to the supply chain,” adds Mr Thimm. More brands are now accepting ‘in-conversion’ cotton, as it typically takes three years to become certified organic, which is also helping to address the demand gap while helping growers financially during the transition.

Potential deterrent

Farmers and supply chain partners have mainly reacted with “intrigue” to the project. “There have been some concerns about data privacy – how the field data is going to be used – but we’re in compliance with the EU’s GDPR regulations,” says Mr Thimm. “The only negative response has been from the fraudsters. People behave differently when they know there’s a camera looking and an eye in the sky should reduce the amount of attempted fraud. We already catch a lot of fraud going on and prevent that cotton from getting into the market, but we prefer less of that to happen to begin with, and so we are hoping that as technology is deployed the risks will be too high for that type of behaviour to continue.”

The team expects results from India by the end of this year. Following that, the scope could be global. “Once we conclude in India, we could look at another region, perhaps East Africa. We might also look at other fibre crops,” adds Mr Thimm. “This is just the initial stages of this technology and it is quite an exciting time for us.”

Part of the GOTS certification involves adhering to working and social conditions. These must be met by all processors, manufacturers and traders.

CREDIT: GOTS



DIALOGUE

Frederic Verague, chief executive of Coats Footwear.

A market full of opportunities

Following its acquisition of two footwear components manufacturers in 2022, Coats has now formally launched its own dedicated footwear division. Here, the chief executive of Coats Footwear lays out the group's strategy for this segment.

How would you sum up Coats Group in 2023? How does the creation of Coats Footwear change the make-up of the group?

Coats has always been a resilient, transformative, and forward-thinking organisation. The 2022 acquisitions of Texon and Rhenoflex have built on that foundation, significantly strengthening our position in the footwear market. The subsequent creation of Coats Footwear reinforces our presence and readies us for sustainable and profitable growth, in partnership with our customers. We are now the world's number one in apparel thread and footwear components. As one group, we are stronger, fitter and more agile, offering footwear and accessories producers worldwide an increased range of components and material solutions, alongside unrivalled expertise and technical know-how.

It is almost a year since Coats acquired footwear components producers Texon and Rhenoflex. What has been happening behind the scenes since then?

Behind the scenes the priorities have been providing focus for the team, delivering for our customers, and, in parallel, working on integration to maximise the opportunities available to us. In their own right, Coats, Texon and Rhenoflex were strong market leaders. However, there was a very clear shared DNA, with a solid focus on innovation, sustainability, premium sports and athleisure applications. There were complementary elements across the three businesses, spanning product portfolios, customers and geographical presence. We now have one customer-facing organisation. With a clearly integrated, well defined proposition, our customers now have access to a much broader range of services and new solutions from one company. These changes also give our people new career development opportunities.

*Chief executive of Coats Footwear,
Frederic Verague.*

ALL CREDITS: COATS GROUP





Insole technology called Ecostrobe is made with 100% recycled content and uses a special fusion-bonding technique that involves no water or chemicals.

What was the thinking behind acquiring these two footwear materials developers?

The purchases of Texon and Rhenoflex were the next natural step for Coats, which has a strong track-record of mergers and acquisitions. Both deals were strategic moves, designed to strengthen our position in the global footwear market. Both companies had unique strengths that, when combined, have created an incredibly compelling value proposition for our customers.

In what ways do the elements that Rhenoflex and Texon bring complement one another?

For Texon, the focus was always on manufacturing high-quality, sustainable structural components such as heel counters, toe puffs and insoles for the highly attractive premium athleisure footwear market. The business had a strong presence in Europe and an innovation product pipeline, including novel technologies such as Proweave for woven uppers. Rhenoflex was a supplier of high-performance footwear reinforcement components. It also produced interlinings and eyelets, alongside reinforcement material solutions for the luxury goods industry. Rhenoprint 2.0 is a prime example of Rhenoflex's innovation achievements. Rhenoprint is a unique production process that enables the production of lightweight reinforcement components and can accommodate individual customer needs with zero waste. The combination of Rhenoflex and Texon, together with Coats' global leadership in threads for footwear, is unique within the footwear industry. Our footwear division has the talent, capabilities and know-how to offer the very best, fit-for-purpose solutions for leading brands and manufacturers. Our geographical reach is now greater. We have operations in more than 50 countries worldwide. Ultimately this means we can move faster, helping our customers de-risk their operations and support their geographical expansion, whichever direction it is heading in.

“The future will likely be a blend of local and global supply chains, leveraging the strengths of both models”

FREDERIC VERAGUE

In the time you have had to prepare to take on this role, what impression have you formed of the footwear market overall? What are the main opportunities for growth that you have identified?

The footwear market is a dynamic and fast-paced industry. It is highly competitive but full of opportunities for sustainable innovation and growth. Consumer expectations are changing rapidly. Consumers are increasingly demanding more from their footwear, not just style, comfort and performance, but also in terms of sustainability. This is one of the biggest growth drivers. Consumers are more conscious of their environmental impact when making purchasing decisions. Technology and innovation are also crucial for the footwear industry; they are reshaping how and where footwear is designed and produced. As already mentioned, Rhenoprint 2.0 is a great example of sustainable innovation. This production process enables us to accommodate individual customer needs and implement waste-free production close to the market. In addition, sustainable products, such as our EcoVerde series thread, Reform 2.0, and Ecostrobe, present exciting avenues for growth. In terms of our own sustainability, Coats has made significant progress over the last few years in terms of reducing waste, energy, and water consumption in our production processes. We are committed to accelerating this further as part of our sustainability roadmap.



Innovations from Coats Footwear also include Knox Plus Green, a two-layer, perforation-resistant textile insole containing up to 55% recycled fibre.

What are the objectives you aim to fulfil on that roadmap?

By 2030, our objectives are to derive 70% of our energy from sustainable sources, achieve a 100% material transition to sustainable raw materials, send zero waste to landfill, have 90% of our workforce employed in 'Best Place to Work' certified units, and ensure a minimum of 40% representation of women in leadership roles. More broadly, as technology continues to evolve, having materials that are aligned with the latest manufacturing techniques will be the key to success in the footwear sector. In this regard, Coats has always been a pioneer. We will continue to use our world-class research and development expertise to accelerate innovation.

We hear frequent talk of major changes to the globalised supply chain model that has dominated footwear for this century so far. There are suggestions that increased demand for automation, 3D printing, incorporating bio-based and recycled materials could all favour an increase in local-for-local shoe production. What is your assessment of this?

Geographic reach and the footprint of manufacturing is another key area, with global-for-local and local-for-local emerging as important factors for all suppliers to the footwear industry. The globalised supply chain model has indeed been transforming, with trends pointing towards more localised production processes. This shift is primarily driven by the desire for faster turnaround times and a lower carbon footprint. Automation and 3D printing are potential game-changers in this respect. Any technology that speeds up development and production, decreases labour dependence, makes it feasible to produce closer to market and shortens cycle times will be welcomed by the industry. Brands and suppliers will be able to respond quickly to market trends such as customisation. Local sourcing,

including of bio-based and recycled materials, will be key enablers to speed up the implementation of the new supply chain.

You have long experience of working in key Asian markets, including China and South Korea. What effect do you think these changes will have there?

For Asian markets, these trends are very much recognised and embraced. Countries like China and South Korea have always been quick to adopt new technologies and adapt to changing market dynamics. They are investing heavily in advanced manufacturing technologies and sustainable materials. There will be continuous progress. However, it is important to note that while local-for-local production offers many benefits, there is still the need for a global supply chain. Some components or materials may still need to be sourced globally owing to availability, quality or cost factors. As I see it, the future will likely be a blend of local and global supply chains, leveraging the strengths of both models. 🌐



Vogue, a washable cellulose solution that can be printed, laminated, coated or screen-printed, is also part of the Coats Footwear range.

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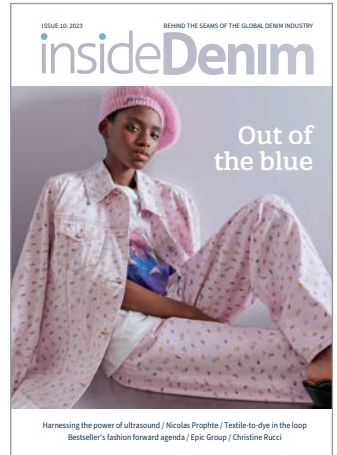
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The background of the advertisement is a full-page photograph of a woman hiking on a rocky trail. She is wearing a light-colored, hooded jacket and dark pants. The scene is set during sunset or sunrise, with a warm orange glow in the sky and mountains in the distance. The woman is walking towards the right side of the frame, looking off to the side.

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