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rPet is in danger

The Higg's summer of discontent

Lightweight protection: in where it hurts

Dialogue with Joe Nocito, Darn Tough Socks

THE INTERNATIONAL MAGAZINE FOR PERFORMANCE & SPORTS MATERIALS

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Model Cara Delevingne shows off a Puma yoga collection that she co-created. All items contain at least 20% recycled content.

IMAGE: PUMA

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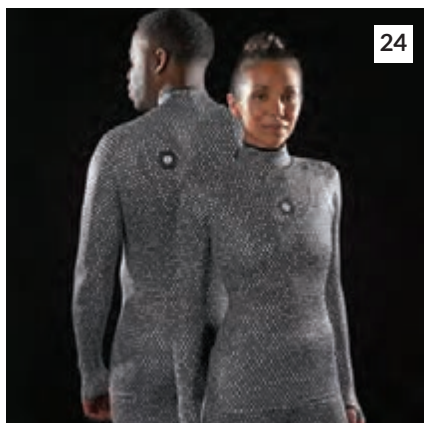
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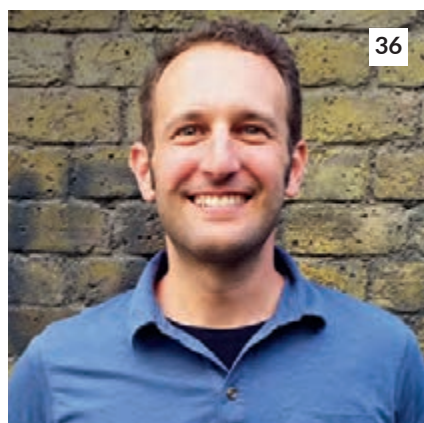
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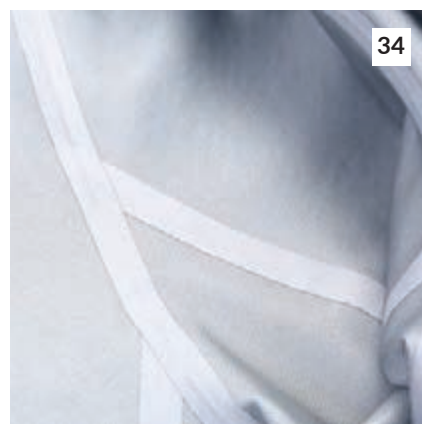
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Global news

Germany Frankfurt's global textile trade fairs, Techtextil and Texprocess, opened their doors for the first time since the covid pandemic on June 21. A 'Summer Special' edition of home textiles event Heimtextil opened its doors at the same time. Organiser Messe Frankfurt said around 2,300 exhibitors from 63 countries had travelled to Germany to show new products and ideas, and to meet customers face to face.

France Among the initiatives it is working on at the moment, French technical textiles cluster Techtera recently highlighted a project called AURAreFIL. The project's aim is to produce materials from used textiles and shoes. It wants these materials to meet market needs in terms of performance and affordability. It will involve producing a 100% recycled polyester yarn in a closed loop in Techtera's home region, Auvergne Rhône-Alpes.

Sweden The parent company of specialist children's outdoor clothing brand Isbjörn, Nordic Kidswear, has a new owner. Fashion e-commerce group Online Brands Nordic has agreed to pay up to \$7.8 million for Nordic Kidswear, including Isbjörn, with payments spread over several years and depending to some extent on performance. Isbjörn launched in 2005, the brainchild of Maria Frykman and Camilla Schmidt.

Finland Three days of talks, workshops, networking and presentations are set to take place in Helsinki between October 25 and 27, as part of the tenth Nordic Wood Biorefinery Conference. Complementary events such as pitching training sessions and a visit to organiser VTT Technical Research Centre of Finland (VTT)'s Bioruukki pilot centre will also run on October 24.

Colombia Threadmaker Coats has revealed it intends to concentrate its operations in South America on the profitable Colombian market after making the decision to close its Brazilian and Argentinian divisions. Coats Brazil and Argentina will now be run by São Paulo-based enterprise Reelpar.

Peru Textile chemicals group Archroma has won an important business award in Peru. Its team in the South American country has won a gold medal from business improvement organisation AOTS, the Association for Overseas Technical Cooperation and Sustainable Partnerships. AOTS Peru runs a competition every year to recognise top performers in the 5S Kaizen programme, a workplace organisation method that focuses on five themes beginning with the letter 's'.

Benin A total of 600 million Cotton made in Africa (CmiA) textiles were brought to market in 2021, more than double the volume from the previous year. The production of CmiA-verified cotton also grew by 10%, to 690,000 tonnes, meaning 40% of cotton produced in Africa is now CmiA-verified. CmiA works with small-scale farmers in Benin, Burkina Faso, Côte d'Ivoire, Cameroon, Chad and Nigeria as well as in Mozambique, Zambia, Tanzania, Togo and Ghana.

China An online launch meeting for a China-wide textile recycling project now has 62 participants ranging from brand buyers, recycled textile manufacturers and government departments to local research institutions. They will seek to create a textile recycling roadmap that signposts core technologies and supports the construction of a “green” fibre platform. It will also aim to generate labelling guidelines and specifications for clothing and fabrics made with these fibres.

Japan Materials science brand Pangaia’s “lab” concept has unveiled its latest product, Nxt Gen, a hoodie made in partnership with Japanese biomaterials start-up Spiber. Head of business development, sales and sustainability at the latter company, Kenji Higashi, described the sweatshirt as first of a kind, the result of two years of joint development.

Canada Outdoor brand Canada Goose has reported record sales for 2022, and its CEO Dani Reiss said he is confident of the company’s ability to accelerate growth next year. The company is expanding into new markets, with new partnerships and new stores. Revenue grew 7% in the fourth quarter to \$223.1 million, although there was a net loss of \$9.1 million.



Israel Nylon 6.6 producer Nilit has launched Sensil By Nature, a yarn made from 55% biomass. The company said its aim was to cut down on its consumption of fossil fuel-based feedstocks and to find ways to use renewable raw materials instead. It has described the biomass it has used to make the new yarn as reclaimed organic waste. Its claim is that Sensil By Nature provides a carbon-footprint saving of 900 kilos of CO₂-equivalent per tonne compared to standard nylon 6.6.

New Zealand The New Zealand Merino Company has announced a new partnership with Land To Market, a programme set up by non-profit organisation The Savory Institute to help consumers choose products verified to have come from regenerative agriculture projects. This partnership will aim to give extra assurances to buyers who want to choose material that comes from farms committed to improving the soil, water, air and biodiversity.

South Korea Outdoor brand K2, based in Seoul, has launched Eco Project, a new line made from a combination of Global Recycled Standard-certified materials and what it described as more sustainably minded fibres. The collection’s fibre portfolio includes partially plant-based Sorona, now part of Chinese-owned Covation Biomaterials, plus Coolmax EcoMade, a 100% recycled fibre made from either textile waste or recycled polyethylene terephthalate (rPET) bottles.

Australia Industry promotional body Cotton Australia has unveiled new data that shows a 3.6% reduction in water consumption among the country’s cotton farmers in 2021 and a 6% reduction in the greenhouse gas emissions figure for each bale of cotton they produce. These figures, the latest available, come from a new report called ‘The 2021 Australian Cotton Sustainability Update and Data Pack’.

India India’s ministry of finance will extend until October an exemption from customs duties of raw cotton imports. It introduced the policy in April. Cotton industry information resource Cotlook has reported that rumours of this extension circulated in June and had the effect of making the price of domestically produced cotton “retreat to levels not seen since mid-April”.

People

New Zealand prime minister celebrates fibre partnership

The prime minister of New Zealand, **Jacinda Ardern**, has taken part in a formal ceremony in San Francisco to secure a new partnership between The New Zealand Merino Company and Silicon Valley-based technology platform Actual.

The New Zealand Merino Company runs a regenerative fibre platform called ZQRX. This comprises a network of growers working on more than two million hectares of land.

Under the new agreement, ZQRX will work with Actual to use a specially designed platform it has created to help organisations embed sustainability into their business models and meet net-zero corporate pledges.

Jacinda Ardern attended the ceremony with the governor of California, **Gavin Newsom**. She said the agreement was part of a wider partnership that New Zealand wanted to establish with the state of California to tackle climate change. "The signing of this agreement between ZQRX and Actual is exactly the type of innovation we hope to see," she said.



CREDIT: OFFICE OF THE GOVERNOR OF CALIFORNIA

Bono is on board

Chief executive and co-founder of textile technology developer HeiQ, **Carlo Centonze**, travelled to Monaco to represent Switzerland at the EY World Entrepreneur Of The Year event, which ran from June 8-10.

The winner of the event was Argentina's **Gastón Taratuta**, who has developed a new digital advertising platform, but Carlo Centonze was still able to make a splash at the event. He was able to network with entrepreneurs from 41 finalist countries and also with special invited guests.

Activist and U2 vocalist, **Bono**, took part in a discussion with EY chief executive, **Carmine Di Sibio**, and said that climate is a pressing global issue, but one that he felt sure innovation could solve.

HeiQ's new cellulosic yarn, AeonIQ, is one of the developments that helped the textile technology company win at the Entrepreneur Of The Year competition in Switzerland at the end of 2021. It says this new yarn has the qualities, affordability and scalability to replace all of the polyester and nylon currently in use in apparel manufacture across the world and describes it as "the world's first climate-positive fibre".

In Monaco, Carlo Centonze said he had the chance to talk to Bono about AeonIQ and that the singer's response was to commit to helping HeiQ convince more clothing companies to switch away from polyester and use the new fibre instead.

Circularity commitments help bring Ulf Jenson to Sympatex

High-tech functional materials developer Sympatex has appointed **Ulf Jenson** as business development manager.

Mr Jenson has spent the last six years in senior roles at specialist online retail groups but before that he worked in footwear and sporting goods for more than 15 years at brands including Merrell, Birkenstock, Nitro Snowboards and Élan.

On joining Sympatex, he described himself as someone who was passionate about sport and the outdoors, but also about the "responsible treatment of nature and its resources".

He said that one of the reasons he had been attracted to the idea of working at Sympatex was the company's commitment to sustainability and circularity.

Sympatex's breathable, water- and wind-resistant membrane technology has

Mammut announces new CEO

Swiss outdoor brand Mammut has announced **Heiko Schäfer** as its new chief executive. He will take up the role on September 1, arriving from fashion brand Hugo Boss, where he is chief operating officer. Earlier in his career, he held a number of senior roles at adidas.

Mr Schäfer described Mammut as "the most iconic outdoor brand in Europe" and said his aim was to unlock its full potential, making it "even more desirable and accessible to mountain sports enthusiasts".

SOG switch

Isbjörn of Sweden founder and CEO **Maria Frykman** has been appointed chairwoman of Scandinavian Outdoor Group (SOG). She will take over from Icebug CEO **David Ekelund** who has held the position since 2013 and is moving to a role within the European Outdoor Group.

Nike executive joins Deckers

Footwear group Deckers Brands has appointed **Anne Spangenberg** as president of its fashion-lifestyle division, which includes Ugg and Koolaburra by Ugg. Ms Spangenberg joins Deckers after 13 years in merchandising roles at Nike. She was most recently global vice president of merchandising for the sports brand. Deckers chief executive, **Dave Powers**, said the Ugg brand was in its strongest position ever and would be further bolstered by the appointment of Anne Spangenberg.

Change of chairman at JD Sports

Sports footwear and retail group JD Sports has named **Andrew Higginson** as its new executive chairman. He replaces **Peter Cowgill**, who left the role at the end of May. Mr Higginson is a seasoned senior retail executive and was until recently chair of the board of one of the UK's largest supermarket groups, William Morrison Supermarkets.

In the chair at Puma

Puma has elected financial specialist **Héloïse Temple-Boyer** as chair of the supervisory board, taking over from **Jean-François Palus**, who has resigned. A supervisory board is chosen by the stockholders of a company to promote their interests and to hire and supervise the board of directors and CEO.

been in use in clothes, shoes, accessories and technical applications since 1986. It has now said it will not use new materials from the oil industry in the future and will, instead, use “the 100 billion garments and 23 billion pairs of shoes produced annually, once they have reached end of life” as a future source of new raw material for membranes, laminates and functional textiles. 

Spinnova appointment will drive scaling plans

Finnish biomaterials developer Spinnova has appointed **Teemu Lindberg** as executive vice-president to manage the scaling up of its production and new factory projects globally.

Mr Lindberg joins from forest industry group UPM Kymmene, where he was refining director in the UPM Biorefining business, and held several production and technology management and specialist roles in its UPM Biofuels business.

Spinnova is expanding rapidly and in March secured a new site in Jyväskylä, opposite the factory it is already building to produce Woodspin. Woodspin is a joint venture between Spinnova and Brazil-based pulp producer Suzano to make textile fibre from microfibrillated cellulose from wood pulp. 

Under Armour CEO to step down

The chief executive of Under Armour, **Patrik Frisk**, left the role in June. Chief operating officer, **Colin Browne**, took over on an interim basis while the Baltimore-based brand carries out a search for a permanent successor. The search will be

both internal and external, it said.

Mr Frisk joined Under Armour in 2017 from footwear group Aldo and became the sports brand's chief executive at the start of 2020, replacing founder, **Kevin Plank**, in that role. He will remain at Under Armour in an advisory capacity until September.

Kevin Plank, who is now Under Armour's executive chairman and brand chief, thanked Mr Frisk for helping the brand make “significant strides in advancing enterprise-wide operational excellence” during his time in Baltimore. Mr Plank added: “There is a huge opportunity in front of us. We are moving forward and will continue to connect with athletes in exciting ways, offering them exactly what they need when they need it.” 

New head of Decathlon's French business

Sports product manufacturer and retailer Decathlon has named **Bastien Grandgeorge** as the new director general of the business in its home country, France.

He succeeds **Arnaud Gauquelin** and **Fabrice Lisardi**, who had shared the role up until now and will have new roles in the company.

Decathlon said Bastien Grandgeorge, a keen triathlete, had joined the company as an intern in 2002 and had worked in roles in France for ten years before becoming involved in the group's international expansion.

He worked for the company in the Czech Republic and Slovakia from 2012 until 2014 and went from there to roles in Asia, before returning to Europe to take up a post with Decathlon in Ireland from 2017 until now. 



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Industry & Innovation

€100m investment from Inditex in 'textile material of the future'

Fashion group Inditex, the parent company of Zara, has announced that it will spend €100 million over a three-year period on Infinna fibre.

Finnish manufacturer Infinited Fiber Company has developed Infinna, describing it as a fibre of "virgin quality, with the soft and natural look and feel of cotton". It produces the regenerated fibre from "cotton-rich textile waste" and has explained that, because its fibres derive from cellulose, a building block of all plants, Infinna is biodegradable and contains "no microplastics to clog our seas". Clothes made from Infinna can be recycled again in the same process, together with other textile waste.

The Spanish group's €100 million commitment means Infinited Fiber can scale up its recycling technology by bringing its first large-capacity factory into operation in 2024. At that point, Inditex's purchase of Infinna will begin and will continue for three years. Inditex has said it envisages buying and using 30% of total Infinna production volumes over those three years.

Sustainability director of Inditex, Javier Losada, said on making the announcement: "It is our firm belief that innovation is the key for the fashion industry to have a competitive, circular future. It is for this reason that we are actively searching for new solutions, through new partnerships, processes and materials that will allow us to source new fibres from post- and pre-consumer textile waste."

Chief executive and co-founder of the Infinited Fiber Company, Petri Alava, said: "This deal is a significant step towards realising our ambition of making Infinna a mainstream textile material of the future."

Zara has already launched a first capsule collection of clothes made from Infinna. It collected unwanted, used clothes from international aid agency Caritas and sent the garments to Infinited Fiber so that they could be turned into the new fibre.

Separately, an agreement between Australian biomaterials firm Nanollose and Inditex will see the latter secure non-exclusive samples of Nanollose's Nullarbor lyocell, either in tree-free monomaterial form or blended with other fibres. The fibre is made using microbes that convert food and beverage waste products, such as from coconuts, into microbial cellulose.

Initial samples will be supplied at no cost to Inditex, for the purpose of testing and early-access prototyping. In turn, Nanollose will receive feedback on Nullarbor's commercial scalability. A manufacturing pilot is already under way with Mumbai-based cellulosic fibre producer Birla Cellulose.

Double-strength odour control

Outdoor brand Patagonia and textile technology developer HeiQ have launched a new mint-oil derived odour control technology, Fresh MNT.

HeiQ and Patagonia have had a research partnership since 2015, and this new solution for the problem of odour in textiles is the latest fruit of it.

Using mint oil means the HeiQ Fresh MNT offers what the partners have called "next-generation, sustainable odour control from a renewable and sustainable source". They have said the technology provides fabrics with a long-lasting odour control capability that will "keep garments smelling fresh and wearers feeling clean and comfortable all day long".

They have carried out "relentless testing", based on test method ISO17299-3A



Polymer positioning

Chemicals group Lanxess and private equity firm Advent International have bought DSM Engineering Materials business (DEM) for €3.7 billion from Dutch group Royal DSM. DEM supplies high-performance specialty materials for the electronics, electrical and consumer goods sectors. For the sportswear sector, its materials are used in athletic shoes' midsoles, waterproof and breathable finishes for textiles, golf shoe soles, ice skate parts, tennis racquet strings and snowboard bindings.

Recognition for innovation

Performance fibre developer TMC, the owner of Nuyarn spinning technology, has said its launch earlier this year of a new product, Herculan, has helped win inclusion in specialist business publication Fast Company's list of 'Most Innovative Companies' for 2022. New Zealand-based TMC made alterations to Nuyarn spinning machines to make it possible for them to accommodate strong wool, the coarsest and most durable grade of wool fibres, measuring more than 38 microns.

Extra investment

Woodspin partners Spinnova and Suzano have announced that they are increasing their capital investment budget for the joint-venture, which will make textile fibre from cellulose derived from wood pulp. Construction of a first commercial-scale Woodspin factory is under way at Jyväskylä in central Finland and is on track for completion by the end of this year, but the two partners have decided to increase their investment in the project to €31 million, about €9 million more than the original budget.

Industrial scale

Infinited Fiber Company, the Finnish producer behind Infinna-branded regenerated fibre, made from post-consumer cotton-rich textile waste, has found a site for its first commercial-scale factory in the country's northernmost Lapland region. Formerly a Stora Enso paper mill called Veitsiluoto, the Kemi-based facility is set to benefit from Infinited Fiber's estimated recent investment of around €400 million and will be fully operational by 2025.

using isovaleric acid, which have shown that treated synthetic fibres more than double their odour-control efficiency compared to current industry standards.

HeiQ co-founder and chief executive, Carlo Centonze, said the partnership with Patagonia has always been productive, saying of the clothing brand: "They constantly stretch our innovative capabilities." Patagonia, as the development partner, is the first to commit to the technology and has said it will start to "upgrade" its products to the new, mint-based odour control technology in the near future. 

Chinese group acquires DuPont Biomaterials

Huafon Group, a polymers producer based in Zhejiang province in China has completed the acquisition of the DuPont Biomaterials group and launched a newly named bio-based solutions group, Covation Biomaterials.

On announcing the launch at the start of June, Covation said it would run as an independent business, based in Delaware, combining science and engineering expertise with new investment and extensive manufacturing capabilities for products, including Sorona and Susterra.

It said its aim was to create sustainable building blocks for customers to make innovative and high-performance, bio-based products accessible globally.

Covation named Dr Michael Saltzberg as its chief executive. Dr Saltzberg had been the global business director of the DuPont Biomaterials group for more than six years and had worked at DuPont for almost 35 years. 

Coats acquires footwear materials developer Texon

Industrial thread manufacturing group Coats has acquired specialist footwear materials developer Texon.

It said Texon, which supplies the global footwear market with high-performance heel counters, toe puffs, insoles and other materials, would be a complementary addition to its existing footwear business.

Chief executive of Coats, Rajiv Sharma, said: "We recognise and share Texon's focus on sustainability and innovation and believe that this acquisition strengthens our ability to fulfil these ambitions." 

Membrane-fabric combo results from Jack Wolfskin-Schoeller partnership

Outdoor brand Jack Wolfskin and textile technology developer Schoeller have worked together on a series of "co-developed fabrications" for spring 2023.

For spring-summer 2023, Jack Wolfskin will pair its Texapore Ecosphere 100 % recycled or reused polyester waterproof breathable membrane with Schoeller's performance fabrics to deliver fabrications that the two companies say will offer comfort, durability and extended longevity for a range of outdoor apparel designs.

"We're going to find the best solutions by working together," said Jack Wolfskin's Daniele Grasso. 

brrr°



brrr° Introduces Cationic Dyed Polyester Heathered Yarn

Cooling yarn innovator brrr°® has developed a new cationic dyed (CD) polyester yarn that can be single dyed or double dyed to achieve a true heathered and/or solid look for increased flexibility in designing fabrics made with brrr° yarns. brrr°'s new CD polyester yarn can be piece dyed or yarn dyed in any color to get a genuine cationic dyed heathered appearance or a solid color look in the finished product.

As with all brrr° products, the new brrr° CD polyester yarn has been independently lab tested by globally recognized third parties to prove that it outperforms other cooling brands in the market.

brrr° offers brrr° polyester and brrr° nylon yarns, as well as a library of fabrics with an array of natural rich blends and synthetic rich compositions such as cotton, wool, nylon and other materials used to achieve specific attributes in textiles.

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Backtrack

20.07.2022

IP protection technology provider pens deal with Lenzing

Lululemon to triple Chinese stores in five years

Primark takes Recover's RColorBlend global

19.07.2022

Rieter has an order backlog of more than €2 billion

Leadership changes at Barrel after acquisition

18.07.2022

Agreement will help cotton organisations address shared goals

Milestone Mitre partnership for women's football in Scotland

Kevlar and Stone Island stretch the rules

Hot on the heels of P448 collab, Inversa targets invasive 'dragonfin'

15.07.2022

Fitness collection results from Peloton-adidas partnership

Terrex x Spinnova hoodie now live

Hoka launches new shoe

14.07.2022

Radici aims to be 'circular economy enabler'

Textile Exchange welcomes Elevate Textiles

Mystery Ranch teases 100% recycled packs

13.07.2022

Winter sports industry has bounced back, FESI says

Textile-blend recycler raises \$30 million

Jordan Brand celebrates 25 years in China

12.07.2022

Major rPET project launches across the EU

11.07.2022

Mizuno takes Enerzy Core to the streets

Puma pops up in five Chinese cities

08.07.2022

Carbios signs up On, Puma, Salomon and Patagonia

Functional Fabric Fair expands to offer footwear

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.

07.07.2022

New owner for Foot Locker's team sales division

Adidas to leave Strasbourg after 60 years

Fashion Declares tackles water and waste

06.07.2022

Eider to refocus on European footprint

Lululemon sets sights on Spain

05.07.2022

Off-the-pitch shoe for women footballers

A new London look for 66°North

Interloop reveals best-ever monthly exports

04.07.2022

Fossil raw material breakthrough claim from research team

TNF enables on-site customisation in Harajuku

01.07.2022

No-change shorts from Ternua

Lululemon opens biggest Asian store outside China

Wolverine and HanesBrands reach agreement over Champion trademarks

30.06.2022

Wool industry body welcomes Higg suspension

BlackYak promotes in-store PET recycling

BlackYak promotes in-store PET recycling

29.06.2022

H&M holds Higg in high esteem

AlgiKnit rides multi-million investment wave

28.06.2022

SAC "pauses" consumer-facing transparency programme

Bosideng continues its ascent

Scotland announces Circular Textiles Fund

27.06.2022

China: Nike, Tread lead activewear over 618

Wolford names social-savvy sustainability advisor

24.06.2022

Messe Frankfurt: textile industry needs face-to-face interaction

ZDHC publishes new tool, ranks top performers

23.06.2022

Plasma technology produces high-tech poncho

Fewer seams and progressive art in Puma's new ball for Serie A

US Cotton Trust Protocol admitted to ISEAL

New international marketing VP for Gymshark

22.06.2022

Italian-led coalition spurs Sea Shepherd on

Recycled textile twist for 'circular' yarn

21.06.2022

New textile chemicals index on the way

European Fashion Alliance formed

20.06.2022

Norrøna determined to stay on the road towards transparency

Norwegian authorities rule Higg-based marketing claims 'misleading'

Good Earth Cotton onboards 1,977 Indian farms

17.06.2022

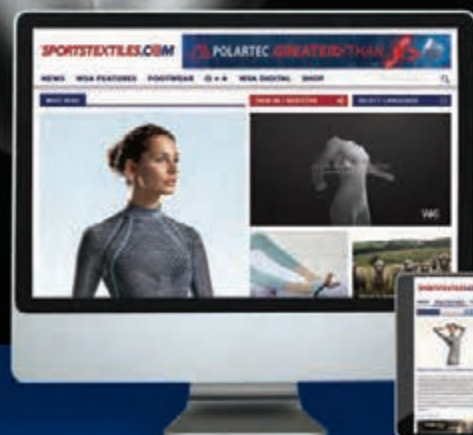
Isbjörn logs major growth

Recycled materials now in 90% of ASICS running shoes

Four ranges each for women and men in Reebok underwear collection

Retailer to make 1m pieces from 'new' recycled textile and wood pulp fibre

take ADVANTAGE



With support from India-based Delight Group, the principles of Good Earth Cotton, born in Australia and promoted as a climate-positive, traceable cotton, will be applied by 1,977 Indian cotton farms, spanning 3,689 hectares of land. This programme represents a first of its kind, says Good Earth Cotton, which intends to capture primary and site-specific scientific data at scale and verified across participating growers.

CREDIT: DAVID HUTTON

The quest for common metrics

In looking to assure their stakeholders, employees, customers and shareholders that they are applying the best possible practices, companies have many options to choose from, but no universal, institutional, fully independent or globally recognised standard. The business of certification is the field of private, diversely funded organisations.

In the course of what is commonly called a “sustainability journey”, brands may begin by taking steps to guarantee animal welfare, or certify organically grown goods. Then again, social or community issues and decent working conditions may be their top priority. Whatever it is, they will no doubt find a certification system that suits their need and supports their cause.

Continuing down this path, what happens when a brand makes a tracksuit from a blend of organic cotton and recycled polyester? No single label adequately certifies the environmental impacts of farming and of plastic recycling practices. It is possible, of course, to put two authentication marks on a product’s tag or label. But what about the brand that also promises to ensure fair pay for factory workers? Or the company that believes biodiversity is of critical concern? How many labels and seals can consumers, if they are the intended audience, absorb before reaching a point when the message gets lost, and certifications fail to do their job of providing confidence?

The need to back sustainable practices with bona fide third-party certification has led to the development of countless labels and standards serving the varied environmental, social and governance (ESG) policies of brands and retailers. Two decades on, the business of certification has reached a state of maturity, verging on saturation, that signals it is time for an overhaul.

This, in a nutshell, is the quandary that certification organisations and their customers face. Calls to cover an ever-wider range of social, ecological and economic codes also fuel the modern plight of audit fatigue, and its escalating costs. Two organisations are tackling the problem, each from its own specific standpoint. Textile Exchange is in the process of reviewing its many siloed standards and the Delta Project was created to clear some of the unnecessary clutter within sustainable cotton standards.

The life cycle of a standard

The Textile Exchange, based in the US, has addressed the evolving needs of brands by

developing new standards, now offering an array spanning its Organic Content Standard and Global Recycled Standard to a series of Responsible Down, Wool, Mohair and Alpaca Standards. To its current portfolio of eight labels, it has added a new, overarching Climate+ platform that aspires to monitor a new series of impact areas now deemed essential, which include greenhouse gas emissions, soil health or biodiversity, to name but a few.

To make these two levels of certification work together, Textile Exchange has embarked on a complete overhaul of its labels with a view to create a 'Unified Standards System', the working title for this plan that ultimately constitutes a new phase in the lifecycle of standards.

"We recognise that our eight different standards each have different interests and challenges. It would be beneficial for us and for our stakeholders to bring them under a single unified umbrella and to tie them in with the Climate+ impact areas," says Laura Kohler, Textile Exchange's standards manager, speaking at a webinar on the development of the Unified Standards System (USS).

The first stage of the harmonisation project was launched in 2021. It focused on identifying the USS's scope and indicators with the help of an international working group. An overview of the new standards' criteria will be released this September, and it will then be open to stakeholder consultations, she says. It is expected that a first draft of the USS will be published in early 2023, possibly followed by a second draft in the summer of 2023 and that it should be finalised by the end of that year. "Members will then have a one-year implementation period before it becomes requisite, which should be at the end 2024. That will leave us five years to go before our Climate+ 2030 goal," Ms Kohler says.

To accompany the revised and harmonised

“The Unified Standards System is an opportunity to start afresh.”

STEFANIE POKORSKI, TEXTILE EXCHANGE

labels, Textile Exchange plans to roll out a brand-new unified logo system. "The labels we have today lack harmony, we are working on developing a single visual presence and material type, which we hope will be simpler and easier to use. The Unified Standards System is an opportunity to start afresh," says Stefanie Pokorski, in charge of standards, claims and labelling, speaking at the same Textile Exchange webinar. The organisation is aware of its current labels' restrictions: that they are difficult to apply when a product is certified to multiple standards and that they lack wide market recognition. The new labelling system will be launching a testing phase in September, its official launch will no doubt coincide with the implementation of the new USS.

In addition to these ambitious plans, Textile Exchange is also considering adding new product categories to its roster such as manmade cellulosic fibres, biosynthetics and 'in conversion' cotton. But Ms Kohler points out that the organisation does not intend "to duplicate existing standards or add another level of audit".

Units and datasets

A similar type of overhaul is at work among cotton certification systems with the Delta Framework, a project funded by the Swiss State Secretariat for Economic Affairs through the ISEAL Innovation Fund, and led by Better Cotton, partnering with seven other sustainable cotton standards, programmes and codes. Together, they



Unifi, US-based maker of Repreve-branded recycled polyester, introduced a new generation of its in-house certification system known as U Trust.

CREDIT: UNIFI



The new unified labelling protocol currently under revision by Textile Exchange may expand to include manmade cellulosic fibres, such as those made by Lenzing (pictured), and biosynthetics.

CREDIT: LENZING

have taken the name Cotton 2040 Group. “The goal is not to create a new standard, but to align the way we measure and report our sustainability progress on our common impact areas,” says Eliane Augareils, senior monitoring and evaluating manager for Better Cotton.

While the organisations committing to use the Delta Framework do not have the same scope or type of interventions, they all share some common impact goals and they all need to monitor progress toward these goals. For instance, reducing the water footprint is a key priority of the cotton sector, but monitoring irrigation water use is done very differently by each organisation.

“Some programmes report volumes, others use reduction percentages over time, still others compare water use between their certified farmers and a comparison group,” says Ms Augareils. “These diverse approaches are usually not comparable and the results cannot be aggregated into common reporting to promote the progress made by sustainable cotton initiatives overall.”

Going one step further, the Delta Framework includes a digitisation guidance to allow the creation of a compatible data management system across several platforms. This titanic task involves deciding on which unit of land surface is retained, whether time frames are based on calendar or seasonal years, and even the number of decimal points for a given data point. “This will make it technically possible to consolidate and analyse data across all standards involved,” says Ms Augareils.

“The Delta Project is finished, but the framework will need to be revised regularly in order to remain relevant, adapting the indicators to future sustainability priorities, and to integrate new tools and technologies, such as satellite imagery, when they become available,” she says.

Keeping up to date

The evolution of technology in the past 20 years is shaping how standards work and driving demand for interoperable datasets. This point was raised by Fashion Revolution in its Fashion Transparency report for 2021. “Once again, we are explicitly looking for machine readable lists in alignment with the Open Data Standard for the Apparel Sector to drive convergence on how data is shared. This is critical in helping remediate issues more quickly. In 2020, just 10% of 250 brands disclosed their supplier lists in a machine-readable format and now 31% of 250 do so, showing increased convergence and alignment with best practice disclosure,” it states.

As mentioned earlier, standards themselves have a lifecycle. “Standards change all the time,” Vincent Duret, textile business unit manager for France-based Ecocert tells WSA. “We are currently at Textile Exchange’s version 4; GOTS is at version 7.” They need to adjust not only to an evolution in the hierarchy of criteria but also to an evolution in technology. He mentions the current update applied to the Global Recycling Standard (GRS) which will require brands that wish to use the label themselves to be certified. In the past, they could simply buy a “certified” product and sell it as such. “These new conditions help level the playing field,” he says.

For products of agriculture, the development of generic globalised standards is a subject of intense debate. The goal of the Delta Project was not to create an overarching cotton standard applicable to all types of farming and business practices, but to clean up the back office of certification. Admittedly, a handful of major organisations participated in this mission, but it does not cover, by any measure, all types of sustainably grown and certified cotton fibres. So while both initiatives profess to close some of the gaps in the business of certification, many others may still be left gaping. 🌐



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Authorities and organisations are taking an increasingly critical look at sustainability claims to expose instances of greenwashing. New data on plastics recycling reveals a lack of infrastructure and growing competition from other industries for the high-value waste that is used to make what is arguably the sportswear industry's favourite 'sustainable' fibre: rPET or polyester made from recycled PET plastics.

rPET's future is in danger

The turning-point can be dated precisely to January 1, 2018. From that day on, China, followed by other south-east Asian countries, implemented a ban on plastic waste imports. This put an end to what had been an easy solution for a massive source of waste in western countries. Five years on, new data is bringing to light a lack of an industrial infrastructure for plastics recycling in the global North. New views on circularity are also throwing up questions as to how this form of waste should best be dealt with.

As part of their sustainability strategies, activewear brands, large and small, have committed to increasing the proportion of recycled materials in their products. The fast-track to achieve these goals has been to replace part of their virgin polyester needs with recycled polyester made from beverage bottles. The beverage sector, which is essentially a bottle-making industry, is also being pressed to increase the amount of recycled content in its single-use plastics. The European Union is mandating they reach 30% by 2030, as part of its circular economy strategy. Recycled PET, or rPET, is in high demand.

Without the possibility of exporting plastic waste, its transformation or disposal has been the subject of new research. Campaign groups The Last Beach Clean Up and Beyond Plastics investigated plastics recycling in the United States and found that only 5% to 6% of post-consumer plastic waste was recycled in 2021. This means that 94% to 95% "is disposed of in landfills, burned in incinerators, or ends up polluting oceans, waterways and landscapes after being used just once, often for mere minutes", according to their report, 'The Real Truth About the US Plastics Recycling Rate'. The report also reveals that while plastics recycling is on the decline, the per capita generation of plastic waste in the country has increased by 263% since 1980. It further notes



that current plastic recycling processes generate up to 30% waste. Sports apparel brands readily promote their products containing rPET with claims that they "divert xx beverage bottles from landfills". While this may be true, it has no real impact on reducing plastic waste or pollution.

A project initiated and led by Vermont-based Bennington College, Beyond Plastics seeks to combine the experience of environmental policy experts with the 'energy and creativity' of college students to build an anti-plastics movement. The Last Beach Clean Up is a non-profit committed to curbing plastic pollution.

The shortfalls of recycling

In the European Union, Zero Waste Europe and Eunomia took a critical look at this in 'How circular is PET?', a report published in February this year. Zero Waste Europe is a network of 33 local and national NGOs based in Europe collaborating for a zero-waste future. Eunomia is an independent consultancy based in the UK. Their research found

Since 2020, informal waste pickers in Bengaluru, India, have access to new markets and resources as a result of a social impact project initiated by the H&M Foundation. The PET bottles are recycled to form part of new buttons that H&M Group brands use.

CREDIT: H&M FOUNDATION





that collection rates for PET bottles is about 60% across the EU's 27 countries. The proportion varies widely: from 96%, in countries that have deposit recycling systems (DRS), down to 48%, in those that do not. While collection rates are highish in Europe, they do not infer actual recycling rates. The authors estimate that the recycling rate for PET packaging, for beverage or non-beverage containers, is around 50%, calculated using the weight of PET material at the stage after wash and flake versus the weight of PET bottles (including caps, lids and labels) placed on the market.

The report estimates that 26% of bottle-derived rPET in Europe is used to manufacture textiles. But it notes that "all product categories rely on bottle rPET as this is the only product stream currently recycled on a large scale" and markets can only use rPET recycled from clear and light-coloured bottles. Once PET is used to make polyester fibres, it can no longer be used for food-grade plastics, the report goes on to state.

High-quality rPET is therefore required by both the apparel and consumer goods industries, and it is generally accepted that there is not enough to go around. This is in effect a "Licence to greenwash", as a Changing Markets Foundation's report proclaims. The Dutch-based non-profit works with NGOs and research organisations to expose irresponsible corporate practices. It published the report and launched a

consumer-facing website (greenwash.com) at the same time to expose false claims made by brands and retailers.

George Harding-Rolls, campaign manager for the Changing Markets Foundation, tells WSA that the use of rPET made from recycled plastics in activewear "is an industry smokescreen that is becoming unstuck". Not only do sports apparel companies use huge quantities of synthetic fibres but "the rise to dominance of major sports brands, and the bleeding of sportswear into general apparel markets has led to massive growth for these brands and any increase in their sales spells more fossil fuel usage."

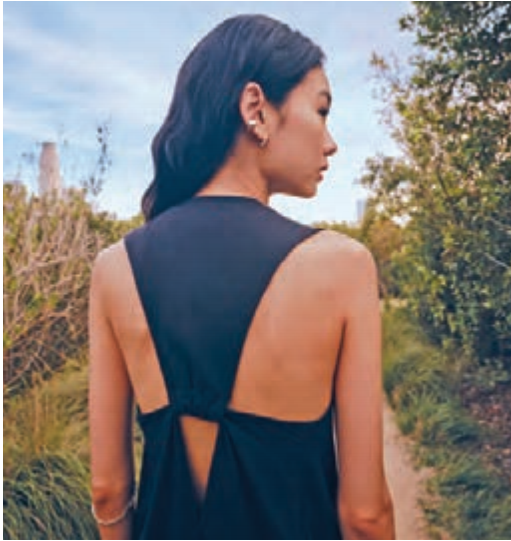
The organisation insists that sustainability claims based on the use of rPET are a source of distraction more than of progress. "They do not address the issue of microplastics from synthetics," says Mr Harding-Rolls. "And they promote the ridiculous idea that we can consume ourselves out of the climate crisis."

Side-tracking the real issue

The upshot of using recycled plastics as a source of rPET fibres is, arguably, distracting investment into the development of an infrastructure for a fibre-to-fibre recycling of polyester. "The business-as-usual scenario delays the point when polyester textiles will be recycled into textiles," says Dr Ashley Holding, a

A Puma yoga collection co-created with model Cara Delevingne takes a 'mindful' approach to materials. All items contain at least 20% recycled content, and the power mesh tulle is made from a blend of 87% recycled polyester and 20% recycled cotton.

CREDIT: PUMA



A capsule sportswear collection by adidas illustrates the blurring frontiers between activewear and urbanwear, and it includes fabrics made from recycled materials. Shown here a dress worn by Korean actress and model Jung Ho-Yeon.

CREDIT: ADIDAS

sustainability expert for Circuvate, a consultancy.

The industry must take the long view, he says, to reduce its reliance on fossil fuels and on recycling plastics for non-food applications. Sustainability experts agree that taking a food-grade material out of the loop by recycling it into fibres is not 'circular'. "What is required is a concerted and multi-decade commitment to invest in recycling technologies for polyester textiles," says Dr Holding. He adds that sports apparel brands also need to design their products to enable them to be recycled, by avoiding blends and low-quality raw materials. "There is no quick and easy solution," he admits.

Challenges to be met

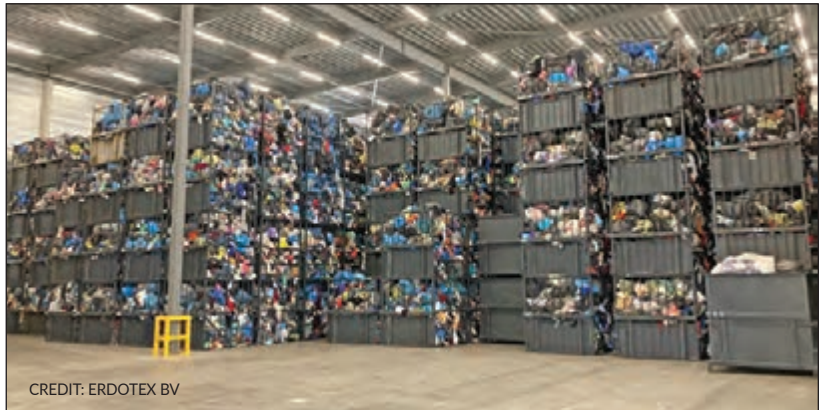
Textile Exchange, a global non-profit that seeks to promote the use of 'preferred fibres', has created several fibre challenges to promote these. The 2025 Recycled Polyester Challenge has attracted 132 companies, a select few of the 750+ members the organisation claims to have. The signatories' ambitions vary widely, with pledges that range from using 45% to 100% recycled polyester in their products by 2025.

In its first progress report for this challenge, the key takeaways Textile Exchange puts forward are that 56% of the signatories, that is 74 companies, have committed to replacing 100% of their virgin fossil-based polyester with rPET by 2025. Things are moving forward, slowly. In 2020, six companies (5%) were already using 100% recycled polyester, nine (7%) were using more than 80%, five, or 4%, more than 60%, and two companies (2%) more than 45%. That leaves 79 companies (or 60%) that were using less than 45% recycled polyester. Also, 41 companies (31%) were able to reduce total polyester fibre volume from 2019 to 2020, while total volumes increased for 24 signatories (18%).

"While the industry may celebrate progress made, further acceleration is urgently needed," the

organisation comments. "More companies need to join the Fibre Challenge and commit to increasingly ambitious targets" and "overall material consumption needs to be reduced, decoupling value creation from new resource extraction." Finally, "the industry must invest in the scaling of both existing and innovative solutions."

For most sustainability experts, along with many industry insiders, shifting away from fossil-derived polyester to bottle-based rPET is a "lazy solution" and, even as such, it is not making much progress. What it offers is an easy claim that a given number of bottles have been "diverted from landfills" to make an item of clothing. It does not promote circularity, nor does it play any significant role in reducing plastic pollution. It is just another case of greenwashing. 🌐



CREDIT: ERDOTEX BV

TEXTILE-TO-TEXTILE RECYCLING IN TRIALS FOR POLYESTER

New data from Textile Exchange suggests that only 0.5% of recycled fibres are made from waste textiles, whether pre- or post-consumer. Three projects in Europe are working specifically to scale up the fibre-to-fibre recycling of polyester. Accelerating Circularity's European branch has completed the research phase for polyester textile recycling and is now moving on to the trial phase to demonstrate what is possible at scale. "More than 80 members are engaged in this collaborative effort," says Karla Magruder, head of the circular textile industry project. Companies collaborating on this project include Jack Wolfskin, Vaude, Sympatex, Antex, Covation, Texaid, Gr3n and the European Outdoor Group (EOG).

French biotech company Carbios has recently set up a polyester textile recycling consortium with sportswear brands Puma, Salomon, On and Patagonia. The goal of this two-year programme is to speed up the application of Carbios' enzyme-based chemical recycling process using textile waste. It will also cover research into how products can be recycled, develop take-back solutions for worn polyester clothing, and sorting and dismantling technologies.

In Italy, NextChem announced in April that it had completed the construction of a demonstration plant for the chemical recycling of PET and polyester from textiles. Known as the DEMETO project, it is part of the EU Horizon programme and is also a collaborative effort counting 14 members, including EOG. Located in the Abruzzo Technology Park in Chieti, the company, which is a part of Maire Tecnimont, will depolymerise polyester by using a technology developed by Swiss tech start-up Gr3n, combining alkaline hydrolysis and microwaves. Various types of materials, including polyester-based textile fibres, will be tested in the plant, which the company says is capable of recycling almost 100% of incoming material, at a capacity of up to 1,000 tonnes per year. It furthermore believes that this technology can treat mixed fibre textiles, another unresolved issue in textile-to-textile recycling.

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“What our team has come up with is a method of integrating the padding into the fabric itself. It’s one piece, and the benefits are mobility, flexibility and next-to-skin comfort.”

DR DILAN FERNANDO, SILUETA.

Lightweight protection

Sri Lanka-based MAS Holdings is one of the world’s most prominent manufacturers of sports, swimwear and intimate apparel. Through Silueta, its in-house technology hub, it has built up a high level of expertise in thermal moulding, developing patented technology, including licenced silicone flocking technology (which uses engineered functional prints to modify fabric modulus) and other techniques to support the core business.

Among the developments this has led to is a patented technique it calls Reaction Injection Moulding technology. A series of early applications in protective sports clothing have come to light using the materials MAS Holdings can create using this. Some have already stood up successfully to competitive action, including at last year’s delayed Tokyo 2020 Summer Olympics and Paralympics. Now the group is making many of the materials commercially available, with partner brands, under the name *Impact 360* by Silueta.

Waste reduction

Lingerie remains MAS Holdings’ bread and butter, but it describes its production of sports apparel as having grown phenomenally over the last few years. Earlier this year, MAS Holdings made an announcement about important expansion plans in the coming years, saying, for example, that it intends to double its production capacity in Indonesia and in India before the end of 2024, but also making a specific reference to its intention to increase production of sports and performance clothing.

The company’s Reaction Injection Moulding technology was first developed as part of wider sustainability efforts, in this case to reduce foam waste created by thermal moulding. Soon the team caught onto the idea that the foam and material produced had features that would work well in the sporting world. These are materials that



RISE TO THE CHALLENGE

An idea that began as a way of reducing foam waste has opened up wide-reaching opportunities for apparel group MAS Holdings in the field of protective clothing for sports, health and wellbeing.

can absorb a high level of impact and vibration, while remaining lightweight.

“We have our own chemists,” explains Dr Dilan Fernando, Silueta’s general manager for research and innovation in impact protection. “And we have a lot of experience in making lightweight materials.” His colleagues found that the key for Silueta would be its ability to fabricate exactly the densities it requires because it is in a position to control the raw materials it uses. The density, weight, grammes per square-metre (gsm) of the fabric are some of the primary considerations before sourcing starts. For this project, it identified a low-weight product as paramount and built formulations with that in mind.

The team was able to find a sweet-spot, with low-weight solutions that are still able to provide adequate protection. The right balance is to give protection effectively but without over-engineering the product or making it too bulky.

Silueta does not work alone; it works closely on this project with a large Europe-based chemical company that it has partnered with for years. This partnership is strong enough for its chemists to be able to spend time working in the partner company’s laboratories on specific projects when they need to. In return, the company has taken its partner into segments in which it has not worked before.

Lightweight mobility and flexible comfort are the benefits Silueta says athletes will experience when wearing protective clothing that incorporates its Impact 360 materials.

CREDIT: SILUETA





The MAS Fabric Park in Thulhiriya, Sri Lanka. Lingerie is still the group's main product category, but it says its production of sports apparel has grown phenomenally in the last few years.

CREDIT: MAS HOLDINGS

Field tests

Intense brainstorming about the best way to take the *Impact 360* by Silueta technology forward identified sports as one of the best areas to consider. This was in addition to specific applications in industrial and health-and-wellness products. At MAS, there are over 100 athletes who have represented Sri Lanka at an international level, including both the Olympics and Paralympics. The team has worked with many of these athletes to develop the products, which have also been field-tested by the different brands.

Successful tests of prototypes in a variety of high-impact sports have provided valuable insight and led Silueta to the conclusion that there are unmet consumer needs for products like the ones it can help brands create using Reaction Injection Moulding. In rugby, an important product that it has developed with Canterbury, one of that sport's most prominent brands, is a head-guard. Other rugby products include shoulder pads and padded baselayer shorts that offer protection in the thigh area. In basketball, elbow pads and knee pads are products that have emerged so far.

Seamlessly integrated

The biggest pain-point with many of the products already in use is that the protective material is not flexible enough. "Products already on the market all seem to require stitching around the protective padding and, wherever you have stitching, you have an allowance for the padding to start moving, meaning wearers are always having to adjust the pad after going into contact," Dr Fernando explains.

He describes what the company's research and development team has come up with instead as a method of seamlessly integrating the padding into the fabric itself. "It's one piece, it's next to skin and the benefits are mobility, flexibility and next-to-skin comfort," he explains.

"Lightweight" and "functional" are other

keywords the team uses to describe *Impact 360* materials. Silueta's solution to over-engineered products already in the market is to make lighter-weight products and to allow athletes to move and play as though they were not wearing any protective clothing at all. "We want them to have protection where it is necessary," Dr Fernando continues, "but we also want them to have freedom of movement."

Olympic and Paralympic success

The Tokyo Olympics and Paralympics proved to be a good showcase for some of the *Impact 360* developments so far. Rugby athlete Kevon Williams wore the head-guard, now branded as the Canterbury Raze head-guard, while representing the US at the games.

A sports brand specialising in impact protection for women athletes, Zena Sport, used Silueta technology to develop a vest that Australia's goalball team wore at the Paralympics. Goalball is a sport designed specifically for athletes with visual impairments in which, as the name suggests, players attempt to throw a ball into their opponents' goal. The ball weighs 1.5 kilos and has noise-bells to allow players to use hearing and hand-coordination to locate the ball and, when defending, try to block it. During matches at the Paralympics, analysis has shown the ball can travel at speeds of up to 60 kilometres per hour and the players require protection. Silueta's and Zena's joint response is a protective vest, the Zena Z1, that players can wear under their team shirts.

Opportunities for sportswomen

In developing the protective vest, the company collaborated closely with the founders of Zena Sport, Brad and Donna Johnson, who recognised the need for an advanced protective vest for female athletes competing in the AFL, the Australian football league. Having understood the significant physical implications of impact sports

due to their personal involvement with the AFL, Brad and Donna Johnson realised that female adolescents faced many rib and breast injuries that go unreported, despite their impact at a critical stage of physical development.

Start-up collaboration

This was a product that was not available in the market before, according to Silueta. Or the products that were there before were in what the company says you might call “a raw state”. What Zena has done is take two of Silueta’s patented technologies to make a hybrid product. The vest uses silicone flocking technology for comfort in the bottom band, where it touches the skin, and material developed using Reaction Injection Moulding technology to protect the ribs and the breasts.

No more silent suffering

Around 50% of women who play impact sports will suffer a severe breast or chest injury in the course of their sporting careers, according to research Silueta has studied and discussed in depth with academics in Europe and Australia who specialise in analysis of breast injuries in women’s sport. Research suggests only 10% of these athletes report those injuries to their coaches because they think there is nothing the coach can do.

The team points out that MAS Holdings has among its core values the empowerment of women and feels it has found common ground with Zena Sport.

Athletes at their peak

Other developments include hip, elbow and knee protection in training gear for goalkeepers in association football, which also includes muscle compression functionality thanks to Silueta’s silicone flocking technology. For the same sport, there is a new shinguard that complies with the regulations of the EN13061 standard but is lighter at 50 grammes than products on the market at the moment, which tend to weigh around 70 grammes. It can be integrated into a calf-sleeve that also provides muscle compression, meaning it will stay in place, reduce weight and help players avoid a build-up of lactic acid, allowing them to perform at their best for a longer period of time.

Another idea is an elbow protection guard for cricketers, which allows players to dive for catches and scramble to save runs without fear of suffering cuts and scratches. In all, Silueta’s *Impact 360* materials are already in use in 20 different sporting disciplines, with more to follow.

Beyond sport

Health and wellbeing and industrial apparel possibilities are emerging too. A specialist Belgian clothing brand provides protective headgear for people with neurological conditions including epilepsy,



autism, cerebral palsy and Parkinson’s disease. It now has baseball-style caps that incorporate *Impact 360* technology.

Often, young people with epilepsy, for example, have to wear protection that looks a little like the caps amateur boxers use. Wearers have complained of feeling an element of awkwardness in school settings, leading to a reluctance to keep the caps on. This brand’s products look much more like street-fashion accessories. On top of that, Silueta finds that *Impact 360* protection makes them more effective than memory foam. Whilst memory foam absorbs the first impact well, it takes longer to recover in the case of repeated impact. As such, when someone is having a seizure and hits their head on a wall or a table with a quick, repeated impact, Silueta’s high resilience, quick recovery foam is much better suited.

Silueta is on track to make the advanced materials that comprise *Impact 360* available to a wide range of people, in sport and beyond, proving once again that waste material can add untold value, if you know what to do with it. 

The Zena vest for female Australian Rules athletes. Co-founder Donna Johnson is delighted women have more opportunities to play this high-impact sport now, but insists they need adequate protection.

CREDIT: ZENA SPORT

*Elbow protection for goalkeepers is one of the football applications to have come out of the *Impact 360* project so far.*

CREDIT: SILUETA




 INTERLOOP

A leading innovator in athletic performance

The company was one of the first manufacturers in South Asia to produce globally competitive, high quality hosiery products. In the past three decades, Interloop has made significant investments in research and innovation, combining its engineering expertise with industry-leading technology.

The manufacturer began focusing on performance yarns and sports socks from the beginning, and they have doubled down on that strategy ever since. Interloop's forward-thinking teams secured various patents and over two dozen trademarks in Europe and North America relating to high performance materials and knitting construction techniques for endurance, comfort padding, and moisture wicking.

One such innovative technology is Arikool™, a trademarked moisture management system that not only absorbs and wicks away moisture from the sole of the foot, but also keeps the skin dry, providing optimal comfort¹. This combination of features reduces friction blisters and other problematic skin conditions like athlete's foot.

Previous industry standard technologies were developed for outerwear applications and then adapted for use in socks. However, Interloop engineered Arikool™ from the ground up to address consumer needs, resulting in superior performance.

Yaser Riaz, former Head of Research & Innovation and currently leading Seamless Activewear at Interloop, confirmed that, "Leveraging our process expertise from spinning to knitting to processing, we have developed trademarked knit structures and special dyeing techniques, enabling us to create products which offer ultimate comfort and performance."

ADVERTORIAL

At Interloop, the drive for athletic performance and comfort is fueled by innovative thinking.

The vertically integrated business is also looking to expand adoption of Hyperglide™, their proprietary topical friction reduction treatment which reduces the coefficient of friction by up to 40%². For endurance athletes such as hikers, trekkers, cross-country skiers, and marathon runners, less friction between their feet and socks means less toll on the foot and fewer blisters.

Focusing on delivering high quality products engineered to improve performance and efficiency has helped the company develop extensive strategic partnerships. They are now a multi-category manufacturer for sports giants including Nike, Adidas, Puma, Reebok, and Prince. Speaking about the relationships Interloop has fostered based on a culture of innovation, Vice President of Sales and Marketing Faryal Sadiq said "Our partnership with top athletic brands has meant consistent investment in research, innovation and people, enabling us to create consumer-led, purposeful products. We can now offer this expertise across a range of categories including, hosiery, underwear, apparel, activewear and denim products."

In European and North American markets, Interloop's high performance socks are recognized by partner brands for their



Arikool™ is an innovative fabric technology that keeps feet dry under the most extreme conditions.

ALL CREDITS: INTERLOOP

mesh knit structures which provide athletes a lightweight feel and improved air flow. The use of specialized knit construction techniques allows for seam-free toes, arch support, and heel guards for a more secure, robust, and comfortable end product.

Where consumers need durability and comfort in endurance activities like trekking and hiking, Interloop also produces socks constructed with compression fabric, featuring arch and ankle support, and incorporating anti-microbial and anti-odour technologies. Combining different yarns such as Merino wool, Thermolite®, and nylon has proven popular in running and training socks.

Branching out from socks to activewear

The athleisure market, with its blending of performance and fashion provided Interloop another opportunity to innovate. The demand for athleisure has grown at incredible rates, continuing through the global pandemic—consumers facing lockdowns, remote work, and the closure of commercial gyms needed comfortable and stylish athletic apparel that could do it all.

Embracing this trend, Interloop is using its proprietary dying techniques, multi-blend materials, and state-of-the-art manufacturing to produce seamless garments. Sadiq confirmed that “While hosiery has been our flagship category, we have now diversified into seamless activewear and apparel using our knowledge and manufacturing expertise.”

Investing in technology, research and innovation, and workforce capacity development is allowing the company to produce seamless apparel with multiple fabric constructions within the same panel, all while retaining a high degree of breathability and 360-degree stretch. These flexible production techniques enable production of garments for different sizes, genders, and construction requirements. Seamless construction lets Interloop hit lower minimum order quantities with shorter lead times than were possible with traditional cut-and-sew manufacturing techniques.

For high performance activities, garments made with body mapping technology to meet the requirements of different body zones are ideal. Highly breathable sections for improved airflow and temperature management, moisture wicking capabilities, and seamless stretchable sections ensure comfort even in intense

conditions. Interloop also offers an expanding range of performance finishes such as moisture management, anti-microbial, skin moisturizing, and anti-UV to further enhance the functionality of activewear.

Vision for the future

Interloop is now positioned as a true full family clothing supplier offering multi-category products across all ages, genders, and abilities. They see the global athleisure market as an incredible opportunity for expansion and technological innovation.

The company has full-fledged manufacturing capability in producing socks, denim, knitted apparel, and seamless activewear. With seven facilities globally, Interloop is a fully vertically integrated business. Starting from raw material sourcing, Interloop carries out their own air covering of fine yarns, filament dyeing, spun yarn dyeing, knitting, garment dyeing, sewing, finishing and packing, warehousing, and logistical support.

In their Vision 2025, the company’s goal to grow into a full family clothing partner of choice is led by their heavy investment and expansion plans for each product category. This vision highlights Interloop’s aspirations to continue leading industry standards in responsible business practices, with a view to contribute to continual progress of all its partners and the communities they serve.

The plan to operationalize this Vision is underpinned by a three-pronged focus on people, digital transformation, and agile manufacturing³. With a people-first approach, concurrent innovations in sustainability and efficiency, and an unwavering focus on technological growth, Interloop is an innovator to watch. 🌐

1. “Arikool™ Booklet.” Interloop Limited, Research & Innovation Centre, Document Reference # 1311-26-01

2. “Hyperglide™.” Interloop Limited, Research & Innovation Centre, Document Reference #14066.

3. “Vision 2025.” Interloop Limited.





NEWCOMERS

The stage is set for a summer 2022 launch of Zozofit, an accessible – and highly accurate – wearable 3D body-measuring system designed to track physical transformation from the comfort of home, the gym or wherever else one gets their wellness fix.

Vital statistics

Poised to take off across the United States in the not-too-distant future, Zozofit's technology can be traced back to the Zozosuit, a three-dimensional (3D) body measurement suit first introduced to the Japanese market in 2018 to help shoppers order custom-fit clothing from domestic e-commerce site Zozotown. Now in its second iteration, the stretchy, skin-tight garment has since evolved to help customers capture precise body measurements and shape in 3D, enabled by a dedicated smartphone application or app. These dimensions are intended to support weight loss, fitness tracking, sizing and more.

With the pairing of proprietary software algorithms and the suit's roughly 20,000 dot-like fiducial markers – a significant improvement, in accuracy terms, on the original suit's 400 – Zozofit technology allows customers to capture measurements down to 6.35 millimetres or a quarter of an inch. According to parent company Zozo, this latest version (ie, the Zozosuit 2), first released back in 2020, has an average error of around 3.7 millimetres when compared to a typical 3D laser scanner. The Zozomat, a 3D foot-measuring device similarly operated via an app, forms part of the same product portfolio.

Social credentials

Zozofit, as a fitness-forward concept specific to the American market, was inspired by organic patterns of behaviour that were detected among local Zozosuit users on social media platforms such as Instagram and Facebook, vice-president of strategy and business development at Zozo USA, Alisa Gould-Simon, tells WSA. Instead of only using the garment to map their measurements ahead of online shopping, as expected, some customers would wear the suit to track their weight loss and monitor other body transformation goals. They would then take this data and share it with friends using social media channels as a way of demonstrating their fitness progress.

The \$98 Zozofit suit departs from past versions of the measuring mechanism by allowing users the in-app option of tracking changes in body measurements, proportions and shape over time, in addition to the built-in ability to share their results directly with coaches, communities and even social media. The app therefore not only

facilitates the tracking of bodily changes, down to approximately 6 millimetres at a time, but also generates sharable, 3D graphic data to support visual comparison. The suit garment itself is manufactured in Asia, partly for reasons of proximity to Zozo's Chiba headquarters.

Helpful exercise

Commenting on feedback received during Texan tech conference South by Southwest (SXSW) earlier this year, chief executive of Zozo Apparel USA, Utahiro Inui, remarked that peoples' physical aspirations are more diverse today. He thus suggested that, as a result of the "high-precision" nature of Zozofit body scans, the technology meshes well with current industry demand for an increasingly personalised – and, hence, satisfactory – overall wellness experience. "We're really excited and thrilled that people may not only find the tool helpful, but also empowering – and [something they can share] when they feel excited about their journey," Ms Gould-Simon adds.

In this vein, the company is actively growing its pool of fitness, nutrition and wellness coaches, each of whom is expected to serve as an ambassador for Zozofit and advise on app features and user experience, more generally. "In our conversations with many coaches and trainers we kept hearing how helpful this tool would be for them and their clients," the vice-president explains. Beyond at-home use by individual enthusiasts, it is hoped that the technology will be adopted by gyms, health centres and the like. Further, there is always the possibility of entering new international markets in the future, she adds, with all the localised opportunities this would bring.

Outside of the Zozofit product launch, the company's medium-term plans include exploring licensing partnerships with various industries across its suite of technologies, which beyond Zozofit and Zozomat, also extend to skin tone-matching device Zozoglass.

The portable, app-enabled technology is intended to support highly personalised health and wellness activities in the gym, at home or anywhere else.

ALL CREDITS: ZOZO



Zozofit's 20,000 fiducial markers enable users to track measurements down to 6.35 millimetres or a quarter of an inch.



Boa-sponsored athlete Florian Grasel puts the new shoe through its paces while training at Monte Grappa in northern Italy.
CREDIT: BOA



Double discs

Performance footwear brand Altra has launched a new trail running shoe, the Altra Mont Blanc Boa, that it claims will revolutionise long-distance running.

Altra worked on the shoe in close partnership with lacing system technology developer Boa and, as a result, each Mont Blanc shoe features not one but two Boa Fit System discs.

In 2001, Boa launched its system of allowing sports and outdoor enthusiasts to adjust the fit of their footwear by 'dialling into it'. It emerged in Colorado, where founder, Gary Hammerslag, was living out his passion for snowboarding. He loved spending his spare time in the Rocky Mountains, but at the same time kept trying to think of ways to keep his boots tight on his feet. He used his experience in developing medical devices to come up with Boa, a system that uses an adjustable dial, strong but lightweight laces and low-friction lace guides to give footwear "precision fit" and fast release functionality.



FOOTWEAR TECHNOLOGY

Footwear brand Altra has partnered with lacing system specialist Boa to create its latest long-range trail-running shoe, the Mont Blanc. It uses not one but two Boa discs on each shoe.

Colorado was also the birthplace of Altra, which launched in 2011 and quickly became well known among runners for its foot fit from heel to-toe box and its zero-drop platform. It was acquired by VF Corporation in 2018. In spite of their Rockies connection, the companies have taken inspiration from the highest mountain in the Alps for the new shoe. Inspiration also came from specialist mountain-trail runners, athletes who cover huge numbers of kilometres of mountain track.

To meet their demands, Altra has applied a system it calls Perform FitWrap to the vamp, with easy-to-adjust, but reliable fasteners across the top to reinforce stability and control. These are controlled by the first of the two Boa discs, positioned at the side of the shoe, just where the ankle meets the instep of the foot. The disc appears high up on the shoe, but is really only halfway between the top of the upper and the outer sole, which is from Vibram's Litebase range. The sole is thick, to provide comfort, grip and what Altra describes as unparalleled spring on all types of terrain.

Users push the button down to engage the mechanism, turn it to tighten the laces to the level they prefer, and pull the button up again at the end of the road for fast release. A second disc sits further along the upper, towards the centre on the vamp, flatter against the top of the foot. It works in the same way as its partner, but controls a separate set of laces that tighten the shoe in the area around the base of the toes.

The shoe's upper is in a combination of white and burgundy. One Boa disc sits in each half, colour-coded to match the material. The discs are from the company's L6 range, with the L standing for lightweight and low-profile, according to the technology provider. There is proprietary Altra Ego Max gel in the midsole. All of these factors combine to give each shoe a weight of 318 grammes.

Altra has said it has constructed the Mont Blanc to be adaptable enough to fit any foot morphology and to suit the needs of any long-distance runner. Only essential components and materials have made it into the finished product to keep the shoe as light and as breathable as possible, specifically with long-distance runs on mountain terrain in mind.

With an August 2022 launch date, the new shoe will be released in time for the 2022 Ultra-Trail du Mont-Blanc. This ultramarathon has been running since 2003 (with an interruption in 2020 because of covid-19). It follows the route of the Tour du Mont Blanc hiking trail, which is a circular route around the mountain, running for 171.5 kilometres, starting and finishing in Chamonix in France, but with stretches in Italy and Switzerland as well.

This race has attracted as many as 2,500 competitors, with the fastest completing the course in a little over 20 hours, and others taking more than a day-and-a-half to reach the finish. An evening start, and with the race continuing through the night, the early finishers return to Chamonix towards the end of the afternoon on day two. Slower runners often have to run through a second night before reaching the finish (there are rest areas and places to eat a hot meal and receive medical attention along the way). Courage, strength, resilience, tenacity and skill are prerequisites for being able to take part in the event. Shoe comfort and performance are high-up on the what's needed list, too. 🌐



PERFORM FITWRAP LACING SYSTEM

The Altra Mont Blanc uses two Boa dials on each shoe. These discs allow wearers to adjust the shoes easily and quickly. In the Boa system, the dial winds in the laces to help runners adjust the fit of their shoes.



CREDITS: ALTRA / BOA



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Discrepancy in water usage between organic and conventional cotton depends largely on location rather than method, the NCA has concluded.
CREDIT: CRS PHOTO / SHUTTERSTOCK

Higg MSI claims under scrutiny

In mid-June, three big news stories out of Norway had the apparel world buzzing. First, the Norwegian Consumer Authority (NCA) announced it had determined that environmental claims made by outdoor brand *Norrøna* — claims based on data from the Higg Materials Sustainability Index (MSI) — were potentially misleading for consumers. The brand, the NCA advised, had until August 14 to change or remove the relevant claims in its product descriptions and marketing campaigns.

Next, the NCA turned to fashion group H&M and issued a warning that while the consumer group had not yet assessed the company specifically, “using the Higg MSI or data from the Higg MSI in marketing towards consumers could easily be considered misleading and constitute a breach of the Marketing Control Act.”

Finally, the NCA told the Sustainable Apparel Coalition (SAC) — the non-profit organisation behind the Higg MSI — that the *Norrøna* investigation was unlikely to be an isolated case.

Reactions were swift and significant: *Norrøna* accepted the decision and is currently taking steps to remedy the situation. Fashion industry analysts and activists, long concerned with widespread ‘greenwashing’, celebrated the news, though acknowledged it was just a discrete positive step within a sprawling problem. And, most significantly, the SAC announced it was pausing the consumer-facing transparency aspect of the Higg resources globally as it works



SUSTAINABILITY

The Higg Materials Sustainability Index has often been the object of criticism and debate, but an investigation conducted by the Norwegian Consumer Authority into Higg-based marketing claims has added the question of liability to the conversation.

with the NCA and other consumer agencies and regulators “to better understand how to substantiate product-level claims with trusted and credible data”.

More about each of these responses later, but first let’s take a closer look at what happened.

Questioning claims about organic cotton

In May 2021, a writer and board member of the Union of Concerned Researchers in Fashion, Tone Skårdal Tobiasson, reached out to London-based sustainability consultant and former World Bank economist Veronica Bates Kassatly about *Norrøna* Sport AS’s claims regarding organic cotton T-shirts. “By August 2021,” Ms Kassatly has said, “the indefatigable Tone, with the help of Ingun Klepp, had marshalled all that was required for the Norwegian Society for the Conservation of Nature

(Norges Naturvernforbund) to file a complaint with the Norwegian Consumer Authority.”

In February this year, the NCA began an investigation into sustainability claims by Norrøna regarding those organic cotton T-shirts. At issue was the brand’s marketing material which said, based on data from the Higg MSI, that organic cotton used 87% less water than conventionally-grown cotton. Providing that kind of information without adequate context is misleading, according to the NCA.

After researching the topic, the NCA came to understand that organic cotton farms tend to need less water because they’re often located in places with more rainfall than where conventional cotton farms are typically found. It explained: “Thus, the real reason behind the reduction in water consumption is not because organic cotton farms always require less water compared to conventional cotton farms, but rather because of variations in rainfall in the regions where the respective cotton farms are located.”

The NCA also pointed out that data in the Higg MSI is based on global averages rather than specific to the production of garments for any given brand, and that the data underlying the Higg MSI are “partly scientifically outdated and not meant for comparisons”. Finally, it pointed out that Higg MSI – and in this case Norrøna – presented only some of the ways products impact the environment. When relevant context or Higg’s other impact categories are omitted, the NCA said, it is difficult to assess the real environmental benefits.

As a result, the NCA felt the stated reductions in environmental impact of a specific organic cotton T-shirt were “oversimplified, inaccurate and imprecise”.

Correcting this is not simply a matter of adding disclaimers. NCA concluded that initial efforts by Norrøna to clarify the marketing text – such as adding that “environmental impacts are based on generalised global standards from lifecycle assessments (LCAs) and can be different from the actual product listed” or inserting the word “estimated” – are not adequate, because consumers will still view the provided information as pertaining to the product in question, it argued. To avoid misleading consumers, Norrøna must provide sufficient evidence that the reductions in environmental impact marketed are “true and correct” for the specific product being marketed.

Industry players react

It’s important to note that while Norrøna made headlines for receiving this censure, the brand cooperated fully with the NCA, accepted the decision, is working to improve its data and messaging, and is unlikely to be the last apparel company to undergo similar scrutiny by the authorities.

“Everyone is pointing the finger at Norrøna. But Norrøna just got unlucky,” Ms Kassatly said soon after the NCA announced its conclusions. “When Tone Skårdal Tobiasson emailed Norrøna to express concern at their organic cotton claims,

Norrøna replied. I emailed the same complaint to Leyla Ertur of H&M on August 19, 2021. I followed up on September 3. But I heard nothing back.”

(When WSA’s partner news website, sportstextiles.com, asked H&M chief executive, Helena Helmersson, how she responded to the NCA’s letter regarding the company’s use of the Higg MSI to present its products as sustainable, Ms Helmersson said that H&M was following discussions between the Norwegian Consumer Authority and the Sustainable Apparel Coalition.)

It is not surprising that Ms Kassatly is keeping a close eye on this case. She was one of the authors of The Great Green Washing Machine, the two-part report issued by Eco-Age and discussed earlier this year in WSA (see Seven Concerns About Sustainability, Issue Two 2022). The questions explored through NCA’s Norrøna/Higg MSI investigation are a clear example of the types of concerns raised in the Eco-Age report.

Ms Kassatly pointed out that “false water and GWP [global warming potential] claims have been on websites across the industry for a decade”. She gave an example of comparable marketing content from Patagonia regarding the impact of organic versus traditionally grown cotton. As recently as last year, she said, the outdoor brand’s website included claims of 90% reduction in water from growing organic cotton. (Now the numbers on Patagonia’s website have been replaced by more general statements, such as: “Organic methods support biodiversity and healthy ecosystems, improve the quality of soil and often use less water.”)

As mentioned, Norrøna is not contesting NCA’s stance. The brand’s chief executive, Jørgen Jørgensen, shared with WSA his thoughts on the findings of this investigation and steps Norrøna is taking to keep moving toward its goal of becoming a “100% responsible company”.



Marketing language for the Norrøna organic cotton T-shirt was found to be potentially misleading to consumers.
CREDIT: NORRØNA

He said Norrøna chose to use the Higg Index as part of assessing its facilities, operations, and the environmental impacts of products. “To our knowledge, the [Higg Index] is the leading tool provider to help measure the overall social and environmental impact of our industry, based on the best available information. We have not found any perfect tools and recognise we are at the beginning of a long journey that requires constant improvement.”

He added that a company of Norrøna’s size cannot afford to do all of its own assessments. While the company is committed to providing clear and honest information, he said, “[we] think it is important that small companies are not left behind when it comes to analysing and communicating environmental impacts.”

To this end, Norrøna will continue to work with both the NCA and the SAC to find the “right balance between simplifying verified information and ensuring the customer is provided with information that cannot be misunderstood or encourage the wrong buying decisions”. The company is also in discussion with non-profit organisation Textile Exchange to “see how we can best support their efforts toward addressing data accuracy and completeness from material feedstocks”. Mr Jørgensen hopes LCA information will improve through regional comparisons and adding additional impacts to programmes.

As for the Sustainable Apparel Coalition, the NCA sent the SAC a letter which explained that the coalition could potentially be liable as an accessory if other traders go on to make Higg-based marketing claims that are found to be inadequately substantiated.

Although investigations would be handled on a case-by-case basis, NCA wrote, “we consider that traders’ use of the Higg MSI and results from Higg MSI data in marketing towards consumers [will easily] constitute a breach of the prohibition of misleading marketing practices”. SAC, the letter suggested, should perhaps “inform all members that the Higg MSI cannot be used in marketing towards consumers and make this clear in standard contract terms towards partners.”

The letter also indicated that if, after September 1 this year, NCA observes breaches similar to what was identified in the Norrøna case, the organisation has the authority to impose economic sanctions on the SAC.

It was not long before SAC responded. CEO, Amina Razvi, announced they were pausing the consumer-facing transparency programme globally as the group works with the NCA and other consumer agencies and regulators to find the best way to apply Higg MSI data (the general) to individual products from individual clothing brands (the specific).

“This means temporarily removing the published Higg Index seal and scorecard from the participating online retail platforms while further evaluation takes place,” Ms Razvi stated. SAC is commissioning an independent, third-party expert review of the Higg MSI data and methodology, she



said, but the Higg MSI and other Higg Index tools will remain active and available during the review.

A similar review was last carried out in 2016; this imminent one was already planned, but is being accelerated in response to the NCA notification, she said. “We are also working on a comprehensive programme, through industry partnerships, to gather and update the environmental impact data quality and accessibility needed for the industry to drive more informed decisions.”

It makes sense for the SAC to act swiftly, considering the NCA’s threat of potential sanctions, although critics point out that removing the Higg Index seal from online retail platforms has little discernible bearing on the tool itself. The data and approach that raised concerns from the Norwegian Consumer Authority and reports like The Great Green Washing Machine remain visible and available for influencing the decisions of companies up and down the apparel supply chain.

Bigger than Norway

However, the news out of Norway may be a sign that some sort of shift is imminent. The SAC is ready to undertake an independent review, and the NCA has shown what can happen when concerns are taken seriously and probing questions are asked.

And, as pointed out in the letter to H&M, NCA’s conclusions regarding Norrøna are likely to reverberate well beyond the outdoor brand and indeed beyond the borders of Norway.

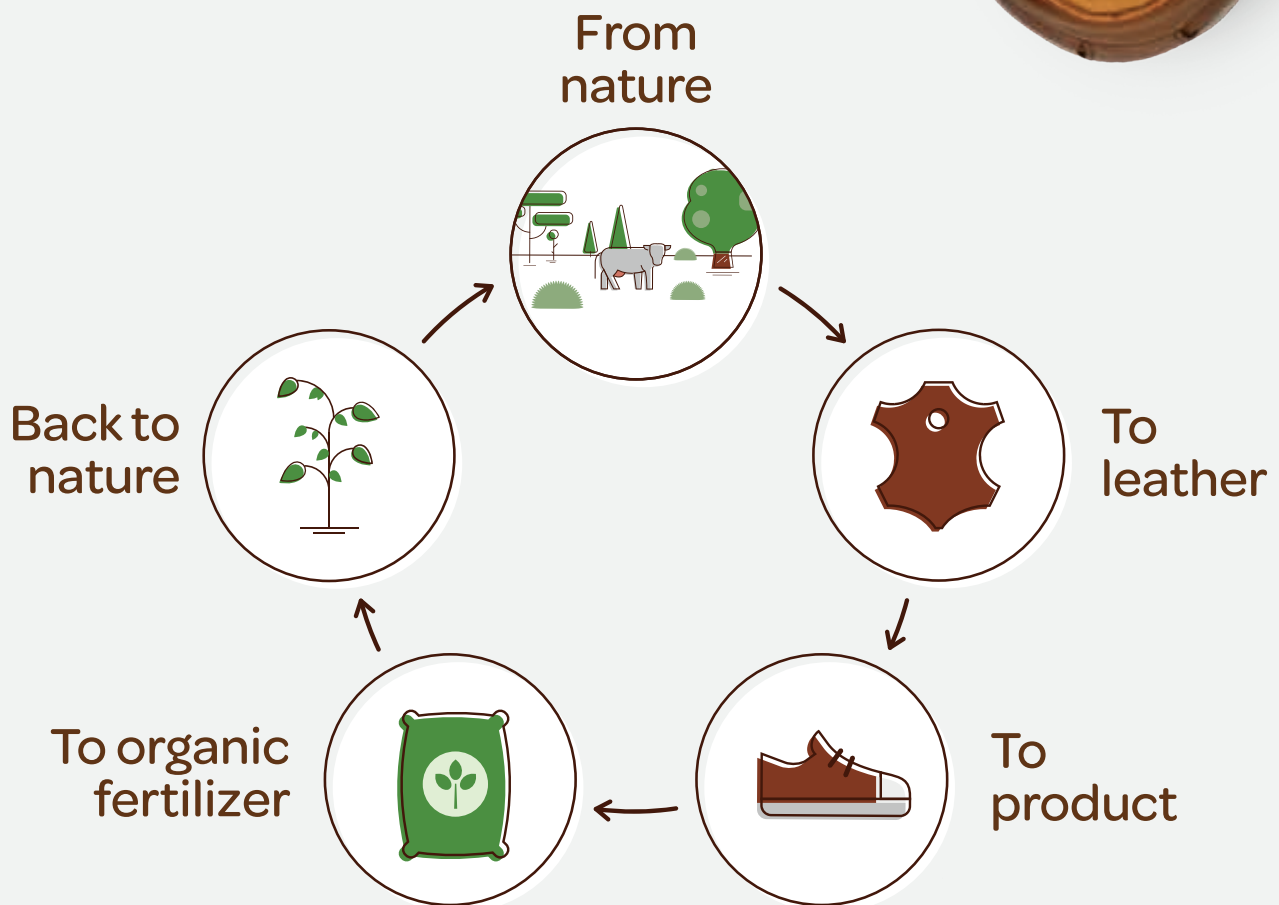
Although the group only has authority in its home country, it has informed H&M that the relevant regulations in the Norwegian Marketing Control Act are based on a harmonised European Union directive. “What constitutes a breach of the Marketing Control Act,” it wrote, “will thus presumably constitute a breach of the law in the other countries”.🌐

The head office of Forbrukertilsynet, the Norwegian Consumer Authority.

CREDIT: NORWEGIAN CONSUMER AUTHORITY



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This tanning technology uses patent pending tannin based products and has been developed thanks to a partnership between Silvateam, Biofin, Fertilizzanti Certaldo and some of the world's best tanneries.



Innovation in seaming

However well designed they are, outdoor performance clothes all share the same essential weakness: they are stitched. Needles puncture laminates and downproof fabrics, compromising their ability to keep water out or feathers in. The common solution to this problem is to cover each seam with an adhesive waterproof tape. It effectively seals the holes made by sewing needles, but adds painstaking steps to garment manufacturing.

Stealth, a company based in Hong Kong, and founded by two apparel industry veterans, has developed and patented a process that replaces stitching with welding to bind fabrics together. It avoids two issues related to traditional stitched and taped seams: it does not use glue, which rarely ages well, and it does not apply any heat, which tends to singe lightweight synthetic fabrics.

The seeds of this new technology were sown at a meeting in Jangzhou, China, in 2007. Richard Stropf and Karl Lu realised they faced the same questions over lightweight performance gear. They had found that traditional manufacturing methods meant lightweight fabrics of less than 100 deniers were problematic in production and led to quality issues; stitching weakened the seams, and the glue used to fix a water-proofing seam-tape was prone to delamination. High-frequency welding was not always possible as the heat used to fuse seams would often damage fabrics. The duo committed to overcoming the problem and founded Stealth Welded Seam Technology in 2016.

A combination of welding techniques may provide a new solution to a critical feature of performance outdoor clothing: making watertight and airtight seams. A process developed by Stealth Welded Seam Technology promises to extend the life of climate-proof garments and increase the thermal insulation of cold-weather gear.

“There’s too much outdoor gear today that fails after only a few seasons, and we wanted to create performance products that last,” says Karl Lu. A chemical engineer and manufacturing expert, Mr Lu has a 20-year history of developing new products and production technologies.

Richard Stropf has 30 years’ experience in performance wear production and adventure sports. “He has the unique vantage point of knowing how performance wear fails across ocean and land, and the pitfalls of current production methods,” Ben Mears tells WSA. Based in London, Mr Mears is a designer, consultant and business development manager for the team.

Dual welding

The technology developed by Stealth uses a combination of ultrasound and high-frequency

Stealth has been making sleeping bags and packs for Cascade Designs brands Sealine, MSR and Thermarest.
CREDIT: SCOTT RINCKENBERGER /SEALING

techniques to weld two fabrics together edge-to-edge and cover the seam with tape made from the same fabric. "We use specially modified ultra-sonic and high-frequency machines that are customised in-house," says Mr Lu. The process can be applied on synthetic woven materials, but not on knitted fabrics. "All fabrics must be coated or laminated to Stealth's specifications for the welding process to work effectively," he says. Ultrasound welding is used to join the two fabrics edge-to-edge, and high-frequency welding is used to apply the tape to the seam.

In 2017, the company began applying its Stealth welding technologies to make air mattresses, before moving on to sleeping bags and watertight packs. The range of products it manufactures has since expanded to include a full range of performance gear, from tents to apparel. It is now preparing to scale up its manufacturing capabilities with the opening of a new solar-powered factory due to begin production this autumn.

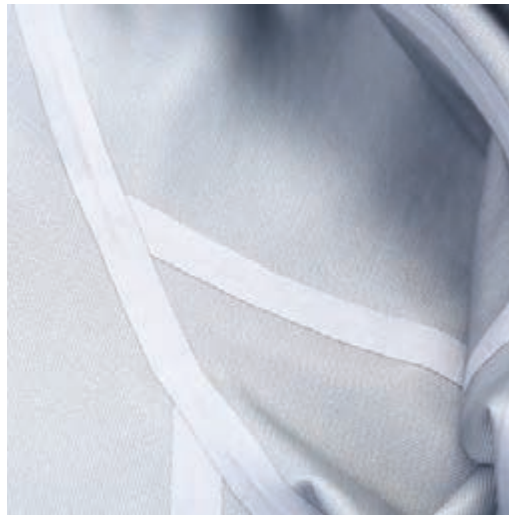
Increased strength and warmth

In tests, Stealth-welded seams have been found to have superior strength and to increase the thermal insulation of puff jackets. The seam's robustness was assessed using an ASTM D1683 test method. A force perpendicular to the stitched seams is applied until seam failure occurs. Two identical swatches were made from the same 100% nylon woven material weighing 275 gsm. One swatch was welded, the other stitched.

The pull test was repeated three times in-house and results showed that the stitched seam sample had an average tensile strength of 240.36N while the Stealth welded sample returned a tensile strength of 385.03N, making the welded seam 46% stronger than the stitched one. This confirms, the company says, that holes made by sewing needles make stitched seams prone to breakage and tearing. "The results are impressive, as the fabric comes apart before the seam does," says Mr Mears.

The technology has also been found to increase the thermal power of ultra-light down jackets by reducing cold spots caused by stitching holes. Tests show that its welded baffles improve a product's warmth retention by 90%. Intertek conducted a series of tests that compared sewn and welded down-filled pillows under BS EN31092-1993 guidelines. Both samples were made from a same 100% nylon woven fabric, weighing 62 gsm, and filled with 90% goose down fill using a baffle-box construction. Results showed an insulation rating of 1.2 CLO for the stitched sample and a 3.3 CLO rating for the Stealth-welded seam sample.

"As there are no puncture holes caused by the needle in stitching, there is much-reduced air loss and subsequent heat loss. This leads to a huge performance benefit," says Mr Lu. For down jackets, he says Stealth "is unique because it can be used on fabrics of less than 100 deniers". Existing welding techniques are impossible on such weights, he argues, as they damage the seams, which is why current lightweight quilted



Thinner, more durable seam sealing makes it possible to reduce the weight and improve the aesthetics of waterproof-breathable performance clothing.

CREDIT: STEALTH WELDED SEAM

styles are still stitched. Mr Mears adds that "due to the higher warmth retention, a Stealth-welded garment may contain less filler, making it lighter for the same level of insulation."

Clean lines

Beyond the improved performance, Stealth seams also contribute to cleaner aesthetics. The same-fabric taping is said to be 50% thinner than conventional waterproof taped seams, making the finished garment more flexible and lighter in weight.

From a sustainability point of view, this solution is believed to further a garment's useful life. Adhesives used for seam-taping tend to lose their holding power over time leading to delamination and frayed edges that are difficult to repair.

The founders believe their technology can be compared to the performance breakthrough W.L. Gore introduced some 50 years ago with the first waterproof-breathable laminates by providing a solution to make outdoor apparel and gear last longer. 🌐

The Stealth patent is based on two different welding techniques, one to join fabrics and the other to seal the seams.

CREDIT: STEALTH WELDED SEAM



“It’s extremely hard to make a product that is going to last a lifetime.”

JOE NOCITO, DARN TOUGH SOCKS



CREDIT: WTP

Community focus

Outdoor sock brand Darn Tough says it is in a period of intense growth and that it intends to push ahead with plans for international expansion. However, a strong commitment to its local community in Vermont remains at the core of its strategy.



DIALOGUE

Joe Nocito, international sales manager, Darn Tough Socks

Darn Tough Socks says no one ever outsourced production of apparel and footwear for the sake of quality. How did the model of outsourcing production become the norm?

I would presume it was heavily financially driven in many cases. We live in a global world. It's not that all outsourcing is evil; it does help in developing economies where people need work, but in Darn Tough's particular case, it affected the Cabot family, the founders, and their business, and they nearly lost their entire business due to their customers outsourcing. So this theory, that outsourcing is the future, is how the brand was born in 2004. The family felt there was a necessity to maintain a community and that helped them build this business in small-town Vermont.

The company famously went against the grain on outsourcing. Looking at the global outdoor apparel market now, more than 15 years on from that decision, what are the main reasons for being glad the company decided to make its products on home soil?

For the founders, it's maintaining and helping the local community. But it goes two ways; without the local community, Darn Tough would not exist either. There is huge value in being able to work with your neighbours. There are maybe 2,000 people in Northfield, where the company headquarters are, but people commute from the surrounding towns, too. It's a local population of tens of thousands, not hundreds of thousands. A

second reason is quality; quality control is a huge aspect for us, especially coming to market with a product that we want to guarantee for life. For our product development team to be able to walk down the hallway to machines that are making our products and be able to see them live, that has tremendous value. Just having that high level control under one company roof is very important.

What are the specific aspects of running the business in this way that make you, if not regret the 2004 decision, look at rivals with a tiny bit of envy sometimes? What advantages do they have?

Well, there is financial gain, I suppose, but that's not why we do what we do; it's one part of it because if you run a business you have to make a profit. I have honestly never heard anybody talk about regrets. What you hear more is gratitude that we have this community around us to support growth and all our endeavours.

Why does Darn Tough use superfine merino wool in its socks and where does it source the wool?

Superfine merino is soft. With the machines we use, 168-needle knitting machines, we couldn't really go much thicker. The Cabot family picked 168-needle machines as a sweet spot. We source the wool in the US and globally. We are working to make our wool supply chain 100% Responsible Wool Standard (RWS). We are at about 85% now. Like everyone else, we have had supply chain challenges these last two years and it has felt a bit like taking two steps forward, then half a step back. But when those issues subside, we should be able to do this. It will help because it will certify that the wool comes from proper sources, that the animals are treated ethically and so on. On non-mulesing, for example, we have always had this as a clause in our supply chain, but it was more a question to our vendors and a box that they would have to check. RWS will guarantee it for us. Compared to some of the larger apparel companies, we're not big enough to be able to guarantee things down to the individual farm on our own. RWS will allow us to support our claims.

Australian industry body The Woolmark Company issued a statement in June this year welcoming the highly publicised challenges to the Sustainable Apparel Coalition over the Higg Materials Sustainability Index. It said the index was unable to represent a level playing field for all fibre types. As a champion of merino wool, what was Darn Tough's reaction to that?

This, partly, is why we feel very comfortable with RWS. When we use non-merino wool, it's Oeko-Tex certified and that carries a lot of weight for us, too.

Many brands have begun to emphasise the importance of product longevity. Few, however, offer a product lifetime guarantee. Why is that? How does your lifetime guarantee programme work?

I couldn't answer why other people don't do this, but I will say it's extremely hard to make a



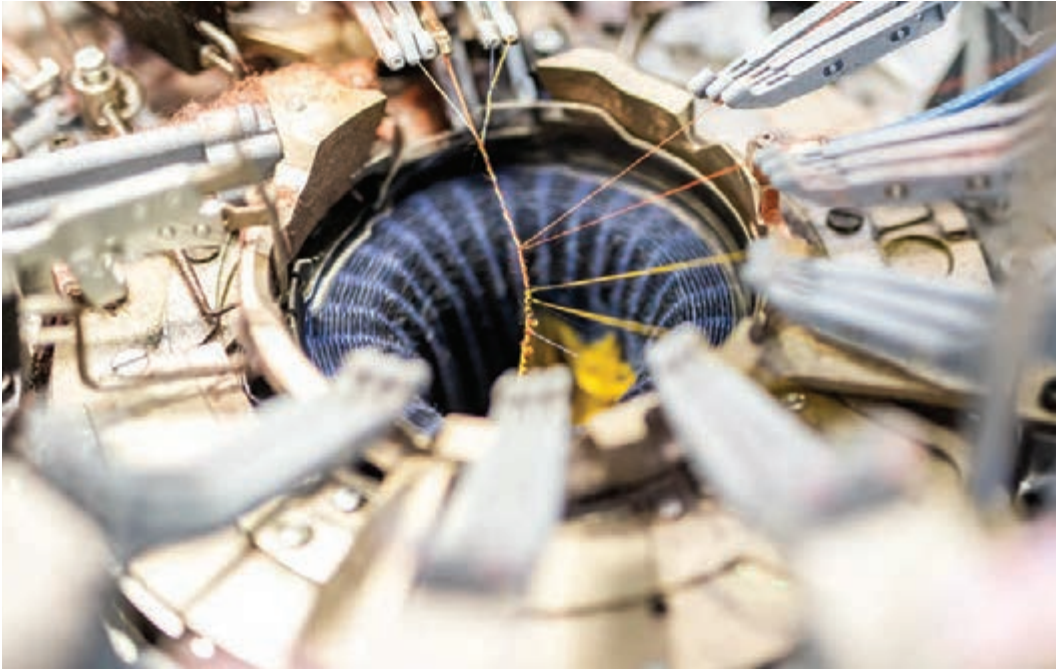
product that is going to last a lifetime. Other apparel has many areas that could make a product fail and I'm sure that's one of the things that keep brands away from this. In our programme, we try to make it as easy as possible. We work closely with retailers on this. The retailers will look at the socks a customer brings back and as long as there is no obvious sign of avoidable damage, from a campfire, say, or socks that have been chewed by a dog, they will look after the customer with a replacement pair and we will look after the retailer. It sometimes leads to a benefit for the retailer because it brings customers into the store and creates an opportunity to build a relationship and perhaps customers will buy something else when they are in the store anyway. It's also possible for consumers in the US and in the UK to mail socks to us if anything is wrong with them, but it's easiest and best to work with retailers. We receive warranty claims on sub-1% of the products we sell and there is no question that there are still socks out there from 2004, when Darn Tough launched. People are always telling us about socks that still look the same after many years.

You use nylon and elastane to reinforce the wool in your socks. Do you think this fibre combination will continue into the future or is the company looking at alternative fibres?

Yes, the fibre combination will continue in the short-term and longer-term too because durability is paramount. What we are doing is moving to use recycled instead of virgin nylon as much as we can. We have a couple of suppliers, one of which is Repreve. We have around 85% recycled nylon at the moment and we want to increase that. All of the nylon we use in our range of tactical socks for all branches of the US military, for example, comes from them because it has to be a US supplier [under the famous Berry Amendment]. Some of our other recycled nylon comes from Canada, but we are only 60 miles from Canada so it's pretty

One of the company's in-house technicians. Manufacturing in a remote place like Vermont makes it important to have people with the skill and know-how to maintain the machines.

CREDIT: DARN TOUGH



Superfine merino wool and knitting machines from Italy are core to the brand's success too.
CREDIT: DARN TOUGH

local. For elastane, it depends upon the end use; some socks, such as running socks, need more stretch in some areas than others and to be more form-fitting. So, yes, this mix will continue into the future. However, our product development team is always testing new fibres and has recently looked at some plant-based products but in durability it's difficult for them to match some of the synthetics.

The company talks about its home state, Vermont, as being beautiful but remote. What implications does this have for running and maintaining the specialist, fine-gauge knitting machinery you use?

The 168-needle knitting machines we use are from Lonati. They are beautiful, Italian knitting machines and Lonati technicians from Italy come help us when we install fresh sets of machines, working with and training our in-house technicians. Lonati also has a base in the south-east of the US, where there are a lot of older mills. All of our techs are part of the company and they are on the machine floor all of the time. They have the specialist tools and the know-how to be able to look after things. We've got an amazing team behind us.

Many brands run community support programmes. What is the special importance to Darn Tough of focusing on its own local community? What do you say to business contacts in the international market who wonder why advanced economies, including the US and most of Europe, need food banks in the 2020s?

It's a tough question to answer. We want to be a good, local company and in 2021 we passed the milestone of donating 1 million meals to our local foodbank. Vermont is remote, and it's not the most wealthy state. One in four Vermonters suffers from food insecurity. We pick particular days and have events such as GivingTuesday, the Tuesday after Thanksgiving, that are heavily linked to our

e-commerce platform. All profits from online sales that day go to the Vermont Foodbank. More recently, we have added quarterly events, too. This is something that the Cabot family holds very dear. You have to fuel people if you want them to be their best selves, so that they can be great parents and great employees. The question we are asking ourselves is how to spiral this out to other countries we work in. We would like to do that and we plan to, but right now we don't have direct-to-consumer business outside the US. We have been too focused on keeping everything else going because the last two years have been a time of extreme growth. People have been forced outside so they have bought new footwear and new socks. This is fortunate for us and we are thankful for it, but it means we took a step back on other, longer-term plans. 🌍



The brand offers a lifetime guarantee on its socks. It says it is able to do this because of the high levels of quality control that manufacturing on home soil allows it to have.
CREDIT: DARN TOUGH

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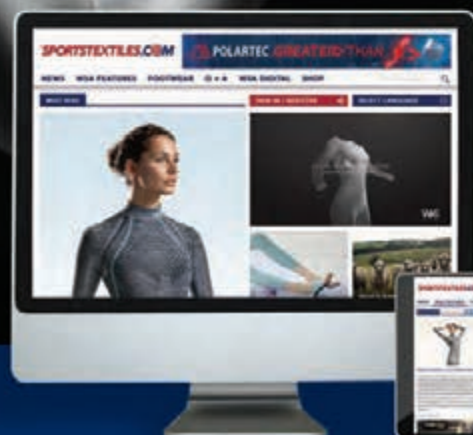
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