

WORLD FOOTWEAR

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THE MAGAZINE FOR THE GLOBAL SHOE INDUSTRY



Graphene-enhanced foam
Woven uppers breakthrough
Traceability back to the farm
Clarks sparks a billionaire's interest

Head office

36 Crosby Road North, Liverpool L22 4QQ, UK
 Telephone: +44 151-928 9288
 Email: wl@worldtrades.co.uk

Editor **Stephen Tierney**
 Deputy editor **Clare Grainger**
 Consultant editor **David Buirski**
 Technical editor **Philip Lattaway**
 Assistant content developer **Charlotte Robson**
 Contributors **Penny Leese**
 Sergio Dulio
 Stuart Cleaver
 Design **Tim Button**
 Global sales manager **Jo Tait**
 Accounts **Lisa Fabian-Smith**
 Subscriptions manager **John Collins**
 Publisher & CEO **Simon Yarwood**

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The Trailfly Ultra G 300 Max shoe from Inov-8, one of a number of styles the brand has developed using graphene-enhanced foam. *Image: Inov-8*



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Sales offices

Global sales manager: Jo Tait

World Trades Publishing
 Tel: (+44) 741 598 9103
 E-mail: jo@worldtrades.co.uk

India: S Sankaran

106 Vepey High Road, Periamet,
 Chennai 600 003
 Tel: 25386566 Fax: 91 44 24612685
 Email: indianleather@vsnl.net

Mexico: Gennaro de la Garza

Calle Schubert 520, Col. Leon Moderno,
 Leon, GTO. C.P. 37480
 Tel: +52 477 712 1882
 Fax: +52 477 712 1882
 Email: genarodelagarza@hotmail.com or
 delagarzagenaro@yahoo.com.mx

Pakistan: Abdul Rab Siddiqi

Office M – 2, DADA Garden,
 Jamaluddin Afghani Road,
 Sharfabad, Karachi – 74800
 Tel: 021-34893095
 Mobile: 0333-2323166
 Email: arsidqiqi@yahoo.com

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News

POLAND Retail group JD Sports has entered into a conditional agreement to acquire a 60% share of Marketing Investment Group (MIG), a retailer of sports footwear, apparel and accessories based in Poland. Brothers Andrzej and Zbigniew Grzaka founded MIG in Krakow in 1989. It has grown into a network of 410 stores and associated websites across nine countries in central and eastern Europe.

SPAIN The countries main footwear industry body FICE has announced that it will run a programme called Global Through Innovation for a second time. The programme seeks to help footwear brands expand their businesses in global markets through embracing new technology, including automation in production and e-commerce platforms. It ran the same project last year, helping brands including Panama Jack, Ria Menorca and Eli 1957 adopt new tools. The new edition of the project started in April.

FRANCE Sporting goods retail and manufacturing group Decathlon has announced a new agreement with the National Basketball Association (NBA), under which it will become an official NBA licensee in Africa, Asia, Europe, the Middle East and Latin America. This is the first time Decathlon has entered into an agreement of this kind with any of the major North American sports leagues. The partnership will feature a dedicated range of NBA team and league-branded baselayers, accessories and footwear (from selected brands).

GERMANY LVMH-backed private equity firm L Catterton recently agreed a deal to purchase family-owned, German footwear group Birkenstock for about €4 billion. Birkenstock's new owners will pursue growth in China and India, as well as expand its e-commerce and direct-to-consumer business, the company said in a statement.

ITALY Footwear and accessories brand Valentino has said it is confident of being able to deliver thousands of pairs of shoes from its spring-summer 2021 collection on time and fulfil the orders it has received in spite of a fire at its production facility in Tuscany. A fire on April 2 at an industrial estate at Levane, between Arezzo and Florence, caused extensive damage to a number of factories, including the Valentino Shoes Lab.



SOUTH AFRICA A delegation from South Africa's Department of Trade and Industry has given an update on its "master plans" that are aimed at facilitating industrial development and job creation in various sectors of the South African economy. One of the main focus areas is leather footwear. The value chain of the Retail, Clothing, Textiles, and Leather Footwear Master Plan is now estimated at R74 billion (£3.6 billion), and the plan is projected to create 212,000 jobs, 120,000 of which will come from the retail sector.

ETHIOPIA Organisers of the XXXVI IULTCS Congress and the fifth World Leather Congress have announced that these will run as hybrid events. Both events will take place in Addis Ababa from November 1-5 this year. Africa Leather and Leather Products Institute (ALLPI), in conjunction with the government of Ethiopia, said that running them as hybrid events would offer participants "the choice of how they prefer to attend". With the backdrop of mounting covid-19 pandemic-related restrictions, the organisers said the hybrid mode will allow those who are unable to attend in person to be able to participate from anywhere in the world.



TANZANIA Entrepreneur and former politician Rostam Abdulrasul Aziz has opened what local media in Tanzania have called the biggest leather-processing facility in Africa. The country has 34 million head of cattle and 21 million goats. Its current annual demand for shoes is 38 million pairs, but Tanzania produces only 1.2 million pairs per year on home soil.

CHINA Leather and Hide Council of America (LHCA) has announced the winners for China of its 2021 student design competition. LHCA organised the competition in partnership with the China Leather Industry Association. More than 400 students at seven participating universities in different parts of the country took part in the competition. Gold winners in each of the competition's three categories were: Zhen Wang, Beijing Institute of Fashion Technology, for footwear; Yuying Gan, Tsinghua University, for garments; and Shanshan Yang, Beijing Institute of Fashion Technology, for accessories.

JAPAN As a follow-up to its summer 2020 Camping Supply collection, Converse Japan has now released three footwear designs, accompanied by a wallet, sacoché and cinch bag by Gregory Mountain Products. The QAK CP (an updated version of Converse's QUAKE outdoor shoe, first released in 1992) is available in two colourways, dark navy and dark beige, along with the RSS CP FR shoe (a new take on the cross-training RESISTOR shoe from 1995) in silver. Both styles feature outdoor specifications.

US Sports group adidas has confirmed its decision to sell the Reebok brand and has begun a formal process to divest itself of the brand. Adidas acquired Reebok in 2006. It said it had carried out an assessment of strategic alternatives for Reebok as part of its development of a wider five-year strategy. Chief executive, Kasper Rorsted, said: "We have come to the conclusion that Reebok and adidas will be better able to realise their growth potential independently of each other." He said the group would work in the coming months "to ensure a successful future for the Reebok brand and the team behind it".



PAKISTAN Leather industry exports from Pakistan brought in \$567.4 million in the first eight months of the current financial year, July 2020 to February 2021. This represents a fall of 4.2% compared to the figure for the same months in the previous financial year. Figures for footwear show exports over the eight-month period of 11.5 million pairs, bringing in revenues of \$88 million. This indicates an increase in volume of 11.7%, but a fall in value of 6.2%.

HONG KONG Apparel and footwear group VF Corporation has announced that it will move the centre of its brand operations in Asia from Hong Kong to Shanghai. The group said it already employs around 900 office and retail associates in Shanghai. Its Asia product supply hub will also move away from Hong Kong, relocating to Singapore. It will also set up a shared service centre for the region in Kuala Lumpur. VF said the moves will begin in April and continue over the next 12 to 18 months.

BRAZIL Brazil's national standards body ABNT is discussing possible changes to one of the standards it has in place for shoe comfort. ABNT has set up a committee to work on standards relating to footwear and at an online March meeting it discussed possible changes to standard 14836, which governs plantar pressure distribution.

SOUTH KOREA Farfetch-owned, New York-based sneaker and streetwear marketplace Stadium Goods has launched in South Korea, the company's first venture outside the US. Opening as a store-within-a-store concept inside Fred Segal in the Asian country's upmarket Galleria department store, which will hold exclusive domestic rights to the sale of Stadium Goods merchandise within Korea.

Footprints

JOBS REBOUND IN BRAZIL'S FOOTWEAR SECTOR

Brazil's footwear industry had a combined workforce of 265,900 people at the end of February. Industry body Abicalçados said this represented a fall of 6.4% compared to the same period a year ago, but it said the total was up by 18,600 since the end of 2020.

Executive president, **Haroldo Ferreira**, said he thought the recovery of employment in the early part of this year was important. "It's a sign of the recovery the footwear industry began to experience in the final months of last year," he said. "It's most likely to be a reaction to restocking activities in retail."

ITALY'S SHOE PRODUCTION FELL BY 25% IN 2020

Turnover and production in the Italian footwear industry fell approximately a quarter in 2020 as the effects of the covid pandemic and subsequent lockdowns took hold, according to industry association Assocalzaturifici.

The latest figures show production fell to 130.5 million pairs during the year, and turnover to €10.7 billion. There was also a significant decrease in exports, in terms of both value (-14.7%) and volume (-17.4%). Assocalzaturifici's chairman, **Siro Badon**, said there had been "severe economic consequences".

SALES APPOINTMENT AT TEXON

Footwear components developer Texon has appointed **Bryan Whitfield** as its new group sales director. He has extensive experience at performance materials manufacturers, including Avery Dennison, Velcro and Bemis.

Texon has said Mr Whitfield will build a long-term sales strategy to drive double-digit growth and strengthen its status as a partner for brands looking for innovative, versatile, sustainable performance materials.

Bryan Whitfield will be based in Dallas, Texas. He succeeds **Matt Smith** in the role. Mr Smith has left Texon after almost a decade of successful service.



SINGER BEBE REXHA TEAMS UP WITH PUMA AND DEICHMANN

Retail group Deichmann has signed up with Puma and singer **Bebe Rexha** to launch a new capsule collection comprising two styles of sneakers and three bags.

It has called it the Power Collection and will market it using the slogan #WhateverSuitsYou.

It said the collection was characterised by a "timeless simplicity, clear lines and rose pink colour". The two sneaker models will be available in a simple white design with a rose pink stripe and gold Puma logo.

CAMPER SAILING BOOT BECOMES OFFICIAL FOOTWEAR FOR SAILGP

A boot that Camper designed with Spain's F50 sailing team will be the official footwear of the SailGP international sailing competition when it resumes in Bermuda at the end of April.

Spanish yachtsmen **Florian Trittel** and **Diego Botín**, who worked on the design with Camper, tried out prototypes of the boot during their preparations for the resumption of the competition. They said the technical design offered a high level of stability and protection from injury.

ASSINTECAL EXECUTIVE DIRECTOR TO LEAVE AFTER 25 YEARS

The executive director of Brazil's footwear component manufacturers' association, Assintecal, **Maria Biason Guimarães**, has decided to leave the role for personal reasons.

Assintecal paid tribute to Ms

Guimarães, who spent 25 years in various roles at the organisation, contributing consistently to the growth and development of the footwear components industry both in the domestic market and overseas.

Specifically, she insisted that an increase of fashion and design elements would be a way to help Brazilian shoe companies differentiate themselves in the global market. She also worked hard to convince shoe companies to focus on innovation and to have sustainability as an integral part of their footwear manufacturing approach. Ms Guimarães was also one of the driving forces behind the Inspiramais exhibition in São Paulo.

Assintecal director **Silvana Dilly** will take up the running of the organisation.

LEATHER NATURALLY BIDS FAREWELL TO RODRIGO HENRIQUEZ

Campaign group Leather Naturally has announced that **Rodrigo Henriquez**

will leave his role on its management board in mid-2021. Mr Henriquez is the communications manager for leather chemicals manufacturer Lanxess. He has served on the Leather Naturally management board for four years but, with TFL's acquisition of the Lanxess leather chemicals business now confirmed, has decided to stand down.

Leather Naturally said it was grateful for Mr Henriquez's "professional and energetic input" and that it would now begin its search for a replacement.

JIMMY CHOO EXPLAINS NEW LONDON ACADEMY IDEA

Footwear designer **Jimmy Choo** has explained his reasons for opening a new design academy in London in September.

Speaking to BBC Radio, Mr Choo said he had no regrets about selling his 50% share of the Jimmy Choo brand in 2001, only five years after setting it up with business partner, **Tamara Mellon**. He said education and passing on his skills and knowledge were now his main aims.

He confirmed that part of the course at the new JCA-London Fashion Academy will be the business side, something he said he had "learned the hard way". He added: "Designers know how to design, but they also have to learn about accounts, how to talk to the media and which markets to sell into."

He said he was optimistic about economies recovering after covid-19. "We've seen things like this before," he said, "for example at the time of SARS [2002-2004]. I think that by June or July [this year] a lot of countries will be opening their doors."

And in the meantime, he recommended following the practice of friends of his who, although they cannot go out and have to stay at home, dress up in the evening as though they were going out with, naturally, glamorous shoes as part of their outfits.

TIMBERLAND APPOINTS BRAND PRESIDENT AFTER EXTENSIVE SEARCH

Footwear and clothing company Timberland has chosen the former CEO of clothing brand NIC+ZOE as its brand president.

Susie Mulder's responsibilities will include product diversification across footwear and apparel and she will

report to **Steve Rendle**, chairman of Timberland's parent group, VF Corp.

Before serving as CEO of NIC+ZOE, Ms Mulder was a partner at global management consulting firm McKinsey & Company where she was a leader in the global retail and consumer goods practice.

LOUBOUTIN'S FIRST CHINA AMBASSADOR

Chinese singer and actor **Karry Wang** (also known as **Wang Junkai**) has been named Christian Louboutin's first China ambassador.

Mr Wang has often been dressed in the Parisian brand's products for significant moments in his career, including on the cover of several magazines, his first solo concert performance and at major awards ceremonies.

Commenting on the appointment, brand founder and designer **Christian Louboutin** said: "Being fun, curious, ambitious and committed to social responsibilities, Karry with his fresh energy undoubtedly personifies what I'd like Christian Louboutin to be for the upcoming years."

FORMER NIKE EXEC NAMED VP AT SOREL

Clothing and footwear group Columbia Sportswear as hired **Craig Zanon** from Nike to take over as senior vice-president of its brands Sorel, Mountain Hardwear and prAna when **Doug Morse** retires this summer.

Mr Zanon has spent more than 20 years at Nike, where he held positions including vice-president and general manager of global basketball, vice-president for US footwear and general manager for the Americas.

NOX TARGETS PADEL

Specialist sports brand Nox is to launch its first collection of footwear for players of padel, a racket-sport that has been popular in Spain and Latin America for years and is now growing in popularity across the world.

Barcelona-based Nox has long been a supplier of rackets and clothing for the game but has now launched into footwear too. It has studied the movements of padel players' feet during matches and worked with a specialist sports footwear consultant, **Marta Rueda**, to design prototype shoes.

MANAGEMENT TEAM NOW COMPLETE AT RHENOFLEX

Shoe component manufacturer Rhenoflex began the year with three senior appointments.

Stefan Walther has taken over as the company's chief sales officer for Asia Pacific, based in Dongguan.

In parallel, outdoor footwear sales and marketing executive, **Tres Riordan**, has become sales and marketing director for North America, based in California.

Working at the company's headquarters in Ludwigshafen, **Peter Seng** is the new head of global sourcing.

Chief executive, **Frank Böttcher**, said these appointments meant the management team at Rhenoflex was now complete.

PENTLAND PROMOTES FOR FIRST POSITIVE-BUSINESS

Sportswear group Pentland brand has hired **Sara Brennan** as 'positive business' director, a new role that reflects a focus on "people and planet".

Pentland Brands **Chirag Patel** said: "Today, more than ever, it's essential that we remain focused on our goal of being a positive business as it relates to people and our planet."

CHRISTIE'S AUCTIONS JEANMAIRE FOOTWEAR

Auction house Christie's held an auction earlier in the year of items including footwear from the wardrobe of famed French ballet dancer, actress and singer **Renée Marcelle "Zizi" Jeanmaire** (1924-2020).

A lesser-known muse of French designer **Yves Saint Laurent** (also known by his initials, YSL), standout items from Ms Jeanmaire's private collection included 1980s-era haute couture leather trench coats by YSL, monogrammed Hermès leather bags and a couple of Goyard leather and canvas suitcases dating from the middle of the twentieth century.

Leather over-the-knee boots by **Roger Vivier** also featured alongside leather heeled and flat shoes, pochette bags and belts by YSL, among other pieces of luxury (now vintage) clothing and accessories.

Ms Jeanmaire is said to have led the applause following Mr Saint Laurent's first fashion show under his own name, according to *Vogue*. 📌



Industry&Innovation

SHOE FROM ASICS WILL BENEFIT CADENCE AND STRIDE RUNNERS

Japanese sports brand Asics launched two new running shoes at the end of March, Metaspeed Sky and Metaspeed Edge, each designed with “a distinct running style in mind”, it said.

Researchers at the brand’s own Institute of Sport Science (ISS) analysed the high-performance running shoe market and concluded that most of the products available to athletes favoured one type of runner only. Stride runners, those with a long, loping gait, who increase their speed by extending their stride length, are those who benefit from this.

Asics’s research showed that these shoes fail to give the same level of support to elite athletes who prefer a second running style, cadence. Cadence runners take smaller steps, hovering over the ground with minimal up and down motion. These runners increase their speed both by extending stride length and by increasing the number of steps they take per minute.

In tests, sports scientists at its ISS found that athletes performed better when running in shoes optimised for their specific running style. From this, the company went on to create the Metaspeed Sky for stride runners and the Metaspeed Edge for those with a cadence style.

The first of these allows runners to conserve more energy while maintaining their pace at the later stages of a race. The second style will allow runners to control cadence more easily, the brand claims, and experience “a fast underfoot feel”. The components of both types of shoe include midsole foam and a carbon plate.

COVESTRO'S 'EXHAUST GAS' CO₂ ADDS ELASTICITY TO FOOTWEAR

Polymer manufacturer Covestro has teamed up with Slovenian company Plama-pur for shoe components containing CO₂ in a thermoplastic polyurethane film. Covestro converts exhaust gas CO₂ into a precursor for



HAT-TRICK OF INNOVATIONS IN NEW ADIDAS FOOTBALL BOOT

Adidas has launched a new version of its Copa football boot, incorporating a range of technological innovations. Analysis work that went into the design of the new boot, the Copa Sense, focused on mapping a variety of different sole shapes so that the team at adidas could form a fuller understanding of the parts of the foot that connect most frequently with the ball.

This led to the creation of Sensepods, an innovation designed to eliminate “negative space” around the ankle and the Achilles. It involves placing foam elements on the inside of the heel of the boot, helping to create what adidas calls “a seamless connection between boot and foot”.

Copa Sense boots also have Touchpods, placed on the medial and the lateral sides of the boot. These are designed to absorb energy from the ball at the points where it most frequently connects to the boot.

A third innovation is Softstuds, where adidas has injected softer material into two medial forefoot studs so that they will bend upon impact with the ball.

plastics, replacing up to 20% of fossil-based raw materials, and markets it under the name Cardyon.

Plama-pur’s Eco Foams add cushioning to running, trekking and ski boots. Its customers laminate the cut foam pieces onto self-adhesive materials and punch them out into various shapes. Covestro claims the foams have better elasticity and a finer cell structure than those made from 100% fossil-based raw materials.

TESTS HIGHLIGHT POTENTIAL FOR MUSHROOM WASTE

CTCR, the specialist footwear technology centre for manufacturers in La Rioja in northern Spain, has reported significant progress in a project to develop a new antibacterial and anti-fungal biomaterial

suitable for use in footwear. The material derives from mycelium, the body of vegetation from which mushrooms grow. When the fungus grows, CTCR explains, it endows the mycelium with antibacterial properties.

“This is the basis for the new biomaterial,” the Arnedo-based body said. “It is suitable for use in footwear components, which come into continuous contact with micro-organisms through the atmosphere and through wearer’s skin.” Tests at CTCR have confirmed the new biomaterial’s antibacterial properties, measured against ISO 20645 and other standards.

La Rioja is a small region, but is Spain’s largest producer of mushrooms, according to CTCR, with 55% of the

national output and production reaching more than 70,000 tonnes per year. Mushrooms are the region's second-most important agricultural product, after wine.

The footwear research body has pointed out that this level of mushroom production results in around 40,000 tonnes per year of mycelium that has to be treated as waste imposing an annual cost of around €200,000.

PRIMEASIA COMPLETES LIFECYCLE ASSESSMENT OF ITS LEATHER

Tanning group PrimeAsia has announced the completion of a 12-month exercise to carry out a lifecycle assessment (LCA) of its leather production. It said it had concentrated on using the "high-quality primary data" that came out of a detailed analysis of all elements that contribute to the environmental impact of its production processes.

This evaluation covered 266 process phases, collecting 3,000 data points from operations in five different countries.

Chief executive, Jon Clark, said discussions about the sustainability of different materials are likely to become more and more important in the coming years. He added, though, that many of these discussions seemed to him to be based on assumptions or on "generic and outdated data".

He explained that PrimeAsia had decided to carry out a detailed LCA exercise, collecting precise primary data "to be able to manage our efficiencies in a more precise way".

SPANISH PROJECT WILL AIM TO MAKE 24 MILLION PAIRS PER YEAR

Bonding technology developed by Elche-based Simplicity Works will be one of the main points of focus of a new five-year project that the Spanish footwear industry is about to embark on.

The initiative, called the EcoChallenge project, will have access to funding from the European Union's Next Generation EU recovery plan. The project's main aim is to win back footwear production from Asia.

It will include a new Factory Lab in Elche that will use Simplicity Works' bonding technology to produce around 600,000 pairs of shoes per year. The technology works by placing all the

separate pieces required to make a shoe into a single mould and applying a polymer injection to bond them all simultaneously.

Another aspect of EcoChallenge will be its use of cuttings and other waste from shoe manufacturing to create energy. In total, the companies and industry organisations behind the plan have said they hope to be able to make 24 million pairs of EcoChallenge shoes every year and create up to 1,000 new jobs.

RAW MATERIAL PRICES ARE ON THE RISE

A textile industry body in France, UIT, has issued a statement to warn customers that the prices of raw materials and freight are "soaring".

Specifically, UIT said in mid-April that the price of polyester was between 50% and 80% higher than a year ago and the price of recycled polyester fibre 60% higher. Cotton was 35% more expensive than five months before, while organic cotton was double the price it was a year earlier. Linen rose in price by 25% between September 2020 and April 2021, while wool was 10% higher.

CLARIANT TO SET UP ADDITIVES R&D CENTRE

Chemicals group Clariant is to open a dedicated research and development centre for additives at its campus in Shanghai.

It said its aim was to bring faster lead-times and more speed in the development of fibres, adhesives, coatings, inks and other products. It will also offer customers opportunities for joint development and application testing.

Head of Clariant's additives business, François Bleger, said that demand for high-end additives was growing strongly in China. He said: "As local manufacturers develop more sophisticated processes, technologies and products to align with market needs and China's environmental goals, sustainable additives can be key to boosting progress effectively and efficiently."

ORTHOLITE USES AEROGEL FOR INSULATING INSOLE

Insole provider OrthoLite has developed a thermal technology that traps aerogel in an open-cell PU foam. The US company said O-Therm will keep feet warmer in cold conditions.

Rob Falken, vice-president of innovation at OrthoLite, said: "Our advanced aerogel traps micro-pockets of air without the need for loft, and it won't lose its effectiveness when compressed under foot. The nanoporous inside of a multi-porous structure creates a thermal barrier which blocks both cold and heat."

NEW TOE-LASTER MACHINE FROM CERIM

Footwear machinery manufacturer Cerim has launched a new toe-laster machine, model X78.

It has a set of nine, hydraulic, reinforced pincers with thermo-cement injection, making it suitable for use specifically in the construction of shoes and boots with hard and heavy leather uppers and safety toecaps, the Vigevano-based company said at the time of the launch.

Also part of the new model X78 are enhanced cylinders in the pincer-closing system and a new heel-rest design.


REI TO LAUNCH ITS OWN FOOTWEAR RANGE

Specialist outdoor product manufacturer and retail co-operative REI has announced the launch of its first ever company-made footwear in April. There will be two styles, Traverse and Flash.

Traverse is a backpacking boot that will also work well on day hikes. Flash is more suitable to light hikes and trail-running. REI said the launch of its own footwear products had been a two-year project.

NEW TOOLS MARK MAIN GROUP RESPONSE

Footwear technology provider Main Group has announced a series of technology solutions that it has developed in response to "weaknesses along the production chain" that it believes the international health emergency has highlighted.

Its response includes a series of tools to improve the efficiency and quality of specific phases of the shoe production process. High-precision carding with automatic change for the processing of all types of leather or synthetic materials is one example. Others are the tailor-made siliconising process for any mould, with automatic mould change and the interconnection of all the stations along the production line. 



Backtrack

World Footwear's publishing cycle and limitations on space make it impossible for us to run more than a carefully selected sample of news from across the industry. However, we publish hundreds more stories on **www.footwearbiz.com**. The site is updated every day with news from every continent and every part of the industry, making footwearbiz.com one of the most

comprehensive archives of news anywhere on the web for the global footwear industry.

We list below just a few of the headlines that have appeared on the site in recent weeks – **www.footwearbiz.com** allows you to read those you have missed.

14/04/2021

Tributes as respected shoe leather professional loses cancer battle
Logistics centre will help Kering meet global e-commerce demand
Under Armour commits to renewable energy

13/04/2021

Cash available to help Japanese leather companies recover from covid-19

12/04/2021

Nike tops brand value list again

09/04/2021

Rockport walks with purpose into its fiftieth year
Vietnam's footwear companies invest in digital

07/04/2021

Leather milestone for H&M
Bangladesh tanners ask for tax concessions

06/04/2021

Gore adapts to pandemic with virtual lab tours

01/04/2021

Adidas chooses digital platform to increase buy-back programmes

31/03/2021

New version of Reebok plant-based shoe
Balenciaga's Track trainer now offered as mule
Daphne International's revenues drop 83%
Tencel provides the 'fluff' for Ugg

30/03/2021

Pushing up hide prices is self-inflicted harm, leather manufacturer says

29/03/2021

Ford gifts leftover leather to social enterprises

26/03/2021

China's full-year leather imports fell overall, but a mixed bag
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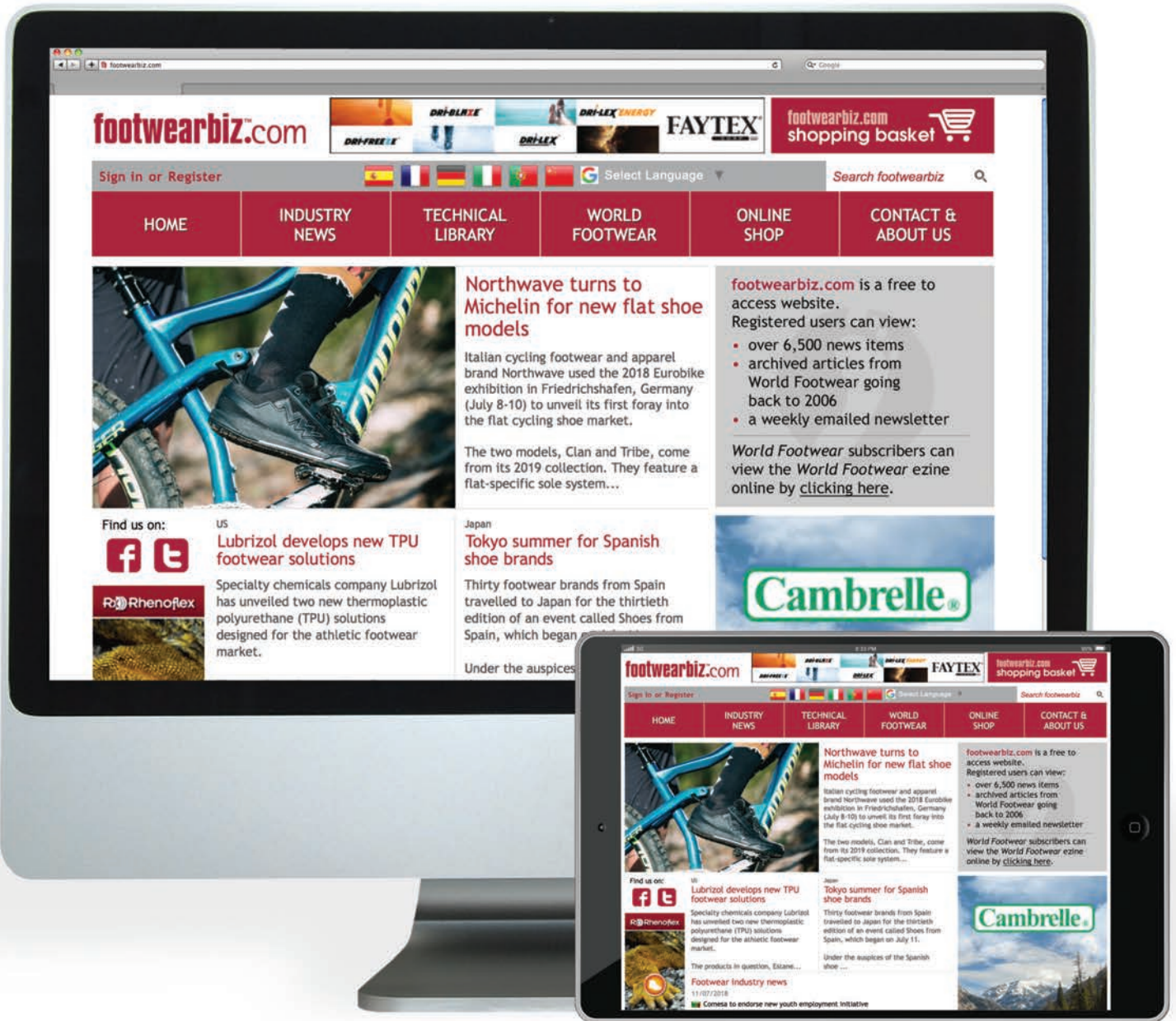
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Sustainable Susterra

Eco-efficiency has been proposed as a key tool in promoting a transformation from unsustainable development to one of sustainable development. It is based on the concept of creating more goods and services while using fewer resources and creating less waste and pollution. It can be said to measure the ratio between the added value of what has been produced expressed as GDP and the added environmental impacts of the product or service involved as, for example, carbon dioxide (CO₂) emissions from fossil fuels.

We now realise the extent to which CO₂ adversely affects the environment in so many ways, not least of which is global warming and all the implications this holds for the world and its people. Unfortunately, CO₂ emissions from petrochemicals production continue to grow substantially, despite all the efforts to recycle petrochemical materials. We therefore need to decarbonise the

planet, reduce dependence on petroleum and seek renewable, sustainable sources for the materials we use. One way to do this is by using renewably sourced feedstocks that take CO₂ out of the air and put it into bio-based materials and recycle those rather than recycle petrochemical based materials.

A report by the Ellen MacArthur Foundation says that besides decoupling virgin feedstock from finite resources, renewably sourced plastics can, under certain conditions, decrease carbon dioxide emissions and potentially act as a carbon sink throughout their life cycle. For plastics sourced directly from captured greenhouse gases, such as methane and carbon dioxide, this link is clear. For bio-based plastics, this happens indirectly as plants capture carbon dioxide from the atmosphere as they grow and this carbon is then harnessed in the polymer.

The message is beginning to strike home and the global demand for eco-efficient materials across industry as a whole is rising and the footwear industry is undergoing a pivotal shift to reduce its environmental footprint. There is an increasing realisation that we need to transform the way in which footwear is made and to increasingly use more sustainable materials from natural resources. Dupont Tate & Lyle Bio Products (DTL) is at the forefront of this movement.

RENEWABLY SOURCED FEEDSTOCK

The US Midwest produces enormous quantities of corn (maize) of which 99.7% is industrial field corn used for animal feed and processing into a variety of other products. First generation carbohydrate crops, and field corn in particular, are currently the most resource efficient and renewable feedstock available. Field corn's high



CO₂ emissions are still growing.
CREDIT: SHUTTERSTOCK / NYC ROSS

carbohydrate efficiency leads to relatively low land use, it has high performance potential and is scalable using existing technology and infrastructure. In addition, it is capable of usage in a wide variety of applications and yields valuable co-products.

Depending on location, natural fibre crops such as cotton, flax, beech and bamboo can be resource intensive due to high water and/or energy use. Fossil fuels such as crude oil are, while widely used for a myriad of products, non-renewable and have environmental and public health impacts from their extraction and usage. When taken holistically, field corn is positioned very favourably (field corn used to make Susterra is covered under the Tate & Lyle sustainable agriculture partnership with Truterra Insights, an interactive on-farm digital platform to help farmers advance their stewardship goals and return-on-investment in real time, acre-by-acre and help food companies measure sustainability progress).

DTL uses corn to produce Susterra, a 1,3-propanediol (Bio-PDO) which can be used as a building-block for bio-based polyurethane chemistry. The variety of corn involved is known as yellow dent and has a high starch content. After harvesting and drying, a wet milling process is used to separate it into its four basic components: starch, germ, fibre and protein. The nutrient rich components are used for animal feed while glucose is derived from the remaining starch content and is the raw material used for making 1,3-propanediol.



Field corn provides the raw feedstock for Susterra PDO. CREDIT: SHUTTERSTOCK / FOTOKOSTIC

The company says that in addition to using a renewably sourced raw material, this sustainable manufacturing process on a 'cradle-to-gate' basis, produces 47% less greenhouse gas emissions and consumes 49% less non-renewable energy than equivalent petroleum-based diols. Compared to the typical petrochemical building block found in polyurethane materials in footwear butanediol (BDO), the figures are 48% and 46% respectively on the same 'cradle-to-gate' basis. The result is a building block for bio-based polyurethane chemistry that allows any footwear material or component made from petroleum-based polyurethane to be replaced by one that is partially bio-based. Applications for footwear

include outsoles, insoles, synthetic upper materials, waterproof breathable membranes and adhesive films.

GOING TO THE LIMIT

A company that has sought to go as far as possible in the use of bio-based materials is UK brand Vivobarefoot. In its Primus Light Bio shoe introduced in March 2019, Susterra based materials feature prominently in the equation. Analysis demonstrates how far the use of plant-based material can extend in an athleisure type shoe. The inclusion of Bloom EVA is also significant as this is derived from toxic algae harvested from lakes and used to produce a sustainable natural additive to EVA (ethylene vinyl acetate) to improve its performance

PRIMUS LIGHT BIO COMPOSITION AND BIO CONTENT		
Upper	Composition	Plant based/recycled %
Double ply mesh	25% Sorona, 75% Polyester	9.25% Bio
Single mesh	100% RPET	100% RPET
No sew	65% Susterra, 35% Polyurethane	65% Bio
Linings		
Lining	40% RPET, 60% Polyester	40% RPET
Footbed	60% RPET, 40% Polyester, 50% RPET, 50% Polyester	60% RPET, 50% RPET
Bottom unit		
Insole	10% BLOOM, 90% EVA	10% Bio
Outsole	45% Natural rubber, 5% BLOOM, 10% Synthetic rubber, 40% additives (silica, accelerator)	50% Bio
Sundries		
Lace	50% RPET	50% RPET
Other		
Other materials	EVA, Polyurethane, Polyester, PU; TPU	

while at the same time helping to offset an environmental problem. Although such an extensive use of bio-based materials is not possible with all types of footwear, it does show the potential as far as unstructured casual and athleisure shoes are concerned.

ALL ABOUT PERFORMANCE

Susterra is very much all about performance and problem solving for different parts of the shoe. Paired with the right chemistry, DTL claims it can perform as well as—or better than—traditional TPUs based on those performance requirements. In laboratory tests, it has been evaluated against traditional polyols as a polyester and polyether thermoplastic polyurethane for outsole applications with a bio-content of up to 75%. Compared to traditional petrochemical based TPU, Susterra-based TPUs can have better low-temperature flexibility and performance, as well as better hydrolysis resistance. They also offer excellent slip resistance and come in a wide range of colours including fully transparent. Susterra-based TPU membranes also offer enhanced stretch and flexibility characteristics while maintaining high performance.

Combined with adipic acid (AA), it exhibited excellent low temperature flexibility when compared to butanediol (BDO) combined with AA. When combined with sebacic acid (Sb), a bio-based alternative to AA, it further improved low temperature flexibility. Dupont says that wear trial participants were impressed by its performance, even in blizzard conditions. In snowy conditions, hydrolysis performance is important as well and the company says that Susterra propanediol can be paired with the right chemistry to again equal or even outperform traditional TPUs.

HOT MELT ADHESIVE FILMS

Another area where Susterra is increasingly found is in the production of TPU-based hot melt adhesives and laminating films also known as no-sew films. Depending on the nature of the substrate involved, these can then be used as backers for uppers and vamps or toe and heel reinforcements in the form of toe puffs and counters which cover a huge range of footwear types.

TPU films using Susterra PDO offer the same sort of tensile strength,



DTL's manufacturing plant at Loudon, Tennessee.

CREDIT: DUPONT TATE & LYLE BIO PRODUCTS

hydrolysis resistance, bonding strength and easy processability shown in its other applications. Given the performance enhancing nature of TPU hot-melt films, DTL states that compared to traditional petrochemical-based films, those based on Susterra demonstrate higher bonding strengths at lower temperatures, better hydrolysis resistance, easy processing excellent bonding strength as well as a high bio-based content of up to 70%.

GOING FORWARD

Influential pressure group EU Bioplastics (EUBP) in a report on the industrial use of agricultural feedstock states the discussion about the use of biomass for industrial purposes is often linked to the question whether the conversion of potential food and feed to materials is ethically justifiable. It also says that this emotional debate lacks empirical research to support these claims with actual facts. As it happens, enough food to feed the world is being produced and, unfortunately, wasted each year.

97% of the global agricultural area is used to grow food and feed or used for pasture. The area needed to grow biomass for material use accounts for approximately 2% and, within this share, bio-materials only account for about 0.02%. Using sugar, starch or oil for bio-based chemicals, plastics or fuel still leaves all the plant-based proteins which are an important feedstock for the food and animal feed industries.

What will happen to footwear manufacture post covid-19 is still a matter of conjecture. Vivobarefoot has shown that there is enormous scope for the use of bio-materials in footwear and, as Susterra amply demonstrates, they are more than capable of matching or exceeding the performance of petro-chemical derived materials. One thing is certain however and that is there will be some changes and, with an ever increasing realisation that many of the world's natural resources are fast running out, we must turn to those that have a truly sustainable future and this is where bio-materials can play an important part. 🌱



Vivobarefoot's Primus Lite Bio shoe has a high bio-material content.

CREDIT: VIVOBAREFOOT



75

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From linear to circular

MARIA JOSÉ FERREIRA, VERA PINTO, ISABEL GONÇALVES, ISABEL SANTOS - CTCP

Footwear production worldwide has increased by 21.2% since 2010 at an average annual growth rate of 2.2%. In 2019 the industry slowed down, growing by only 0.6% over the previous year, but this was still enough to establish a new production record of 24.3 billion pairs. Footwear production continues to be strongly concentrated in Asia where almost nine out of every 10 pairs of shoes are manufactured.

Footwear consumption is more evenly distributed. Asia's consumption accounts for more than half of all shoes in the world, Europe and North America represent 15% each, Africa and South America 6% to 9% and Oceania 1%. Nonetheless, there are important geographical differences in consumption patterns. Per capita footwear consumption is around 5.6 pairs in North America, 4.4 pairs per person in Europe and Oceania, 2.6 in Asia and 1.6 pairs in Africa. Therefore, in the latter

continents, there is more room for consumption to grow.

Footwear production and consumption have both grown considerably over the last decades due to the demographic and economic dynamics across the globe and increased per capita sales in more mature economies. The latter is closely related to the 'fast fashion' phenomenon, with quicker turnaround of new styles, increased number of collections offered per year with attractive models and prices.

In 2020, footwear production and consumption slowed down mainly due to the global pandemic. Additionally, both the negative impacts of the footwear industry and 'over consumption' in general are becoming more transparent and understood by environment friendly and digitally enabled consumers. This has led to increased risks to the reputations of companies and brands, and to regulatory

trends that could affect the profits of businesses. A further growth in the use of online retailing in 2020 nevertheless supported an increase in consumption for some footwear segments.

LINEAR VERSUS CIRCULAR

The current economic model for producing, distributing and using footwear operates in an almost linear manner. Large amounts of resources are extracted to produce materials and products that are often used for a short period, after which they are mostly disposed of in landfill. This linear economy puts high pressure on resources, pollutes the natural environment and menaces ecosystems.

Up until now, brands and the footwear industry in general have mainly focused on reducing the impact of the current linear system by selecting materials with less environmental impact or using more efficient production, distribution and selling

techniques. The footwear of the future, however, needs a vision more aligned to the principles of a circular economy, one that tackles the root cause of the current economic model's wasteful nature directly: namely the short periods of footwear utilisation and low rates of recycling after use.

Ideally, in a circular economy, footwear and materials are kept at their highest value during use and to then re-enter the economy after use, 'never' ending up as waste. This could provide the growing world population with access to the footwear it needs while, at the same time, regenerating the earth's resources, reducing pollution and using renewable resources and energy to contribute to overall sustainable ecosystems and economies.

Realising this, transition is fundamental and will not happen spontaneously. It requires planning and collaborative efforts across the value chain involving both private and public sectors. While there are immediate opportunities for some businesses, namely materials and composites makers, others will benefit from research and innovation as is the case with recyclable or biomaterials.

CONTRIBUTING TO THE FUTURE

The European Commission Green Deal and related member states' plans, such as the Portuguese Recovery and Resilience Plan, can give a relevant pull to the implementation of bio-economy and circular economy actions by the footwear industry. The European Green Deal aims to respond to the escalating climate crisis by achieving net zero

greenhouse gas emissions from the EU by 2050. It advocates a rapid movement towards a circular economy based on recycling, reuse, remanufacturing and shared use. The proposal also aims to establish a toxic-free environment, promote bio-economy and protect biodiversity, and the health and well-being of citizens from environment-related risks and impacts.

Aligned with these policies and technical orientations, the Portuguese Footwear Cluster Sustainability Action Plan, launched in 2019, proposes a holistic approach to growth. Maria José Ferreira, Director at CTCP, the Portuguese Footwear Research and Technological Centre with responsibility for this area, says that the plan takes into consideration people, the planet and companies' activities and profitability. It also covers strategic areas of intervention, including the circular economy. The following paragraphs suggest some essential steps in order to make the footwear industry of the future circular.

DURABILITY AND LONGEVITY

Increasing the number of times shoes are worn is the most direct way to embed value and reduce resources needed, energy, waste and pollution. Designing and producing footwear of quality that lasts longer, 'ages well' and is easily maintained with, for example, a hydrating cream, can help shift the perception of products from being a disposable item to being a durable product. Shoes that, in addition to being aesthetically pleasing and durable, fit well and are comfortable to wear, can have extended life cycles.

Promoting long use, repair and/or re-use ensures all resources (material and energy) put into a product during its manufacture are preserved. One singular example is given by Belcinto, a Portuguese bags and belts manufacturer. Ana Maria Vasconcelos, the company's CEO, says that despite being a vegetarian herself, leather is the prime material used in the company's products since it recycles a by-product of the food industry and is very durable and repairable. "Belcinto high-quality products are for life," she emphasises.

To support the promotion of footwear and accessories' durability and longevity, there are international standards and guidelines applicable to materials, uppers, insoles, soles and other components. CTCP collaborates with companies in testing and improving the quality and performance of materials and products supporting commitment and transparency in regard to durability and longevity.

FOOTWEAR FOR RECYCLING

Products and services are frequently designed and marketed in order to achieve a specific positioning, aesthetic appeal, functionality, customer experience, brand image or unit cost. Now, it is critical to add the objective of designing and marketing footwear 'for recycling' by including recycled and recyclable materials and components as far as possible, thus triggering the collection and recycling of post-consumer products. Increased recycling represents an opportunity for the industry to recapture some of the value of the materials and resources lost every year, and reduce their extraction

Lemon Jelly grinds down its old shoes and incorporates them into Recycled Lemons. CREDIT: LEMON JELLY



and the negative impacts associated with their disposal.

Several approaches may be followed in designing footwear for recycling. One approach is conceiving a product made mainly of one type of material that could, at the end of its useful life, be collected, cleaned and recycled into new shoes. An interesting example is given by the company Lemon Jelly. Through a recycling technology, Lemon Jelly can transform old shoes by grinding them down and incorporating them into the production of new Recycled Lemons. And because the factory runs entirely on renewable electrical energy, it claims to generate new shoes with 90% less CO₂ emissions.

Another approach is 'design for disassembly' whereby a product contains a multitude of different materials and components. Design for disassembly addresses the selection of these materials and sets their recycling rate. In the materials choice phase, one can choose less impacting materials, reduce the quantities of materials and improve process techniques. These choices can be supported by life cycle analysis tools. In any case, the main aspect to retain is that 'less is more'. Particularly, using fewer materials, light weight durable materials, fewer dissimilar materials in assemblies, or in sub-assemblies and modules of products designed for disassembly, will improve the possibilities of material life extension.

NEW SALES AND SERVICE MODELS

Creating consumer awareness for responsible consumption of durable and recycled products will create market opportunities and will also benefit from private and public sector collaboration. Buying and wearing shoes fulfils diverse consumer needs and desires, therefore a variety of awareness, sales and service models can be deployed to support the circular economy.

Consumers may be engaged in the circular economy concept by rewarding their commitment and collaboration in the logistics of collecting used shoes. For those desiring frequent outfit changes, subscription-based models can offer an attractive alternative to frequently buying new shoes. For one-off occasions, shoe rental services could increase their



Soling producer Atalanta offers a vast range of soles in natural or recycled materials.

CREDIT: ATALANTA

utilisation. For used footwear that becomes unwanted and is still in good enough condition to be used again, cleaned and disinfected resale models could offer an attractive opportunity.


NEW RECYCLING TECHNOLOGIES

New materials that are recyclable, coupled with efficient logistic and recycling systems and processes, are fundamental for scaling up recycling and making it sustainable. Innovation is required in order to obtain easy to recycle materials, to incorporate high percentages of materials to be reprocessed and obtain recycled materials with properties similar to those of virgin materials. When the latter is needed to feed the economic cycle, steps should be taken to ensure they increasingly come from renewable resources.

Development of this kind will entail researching and promoting the use of bio-based renewable feedstock to produce leather, fibres and rubbers among other materials. A good example is given by sole manufacturer Atlanta that, within the framework of internal and collaborative projects such as FAMEST and GreenShoes4All, has

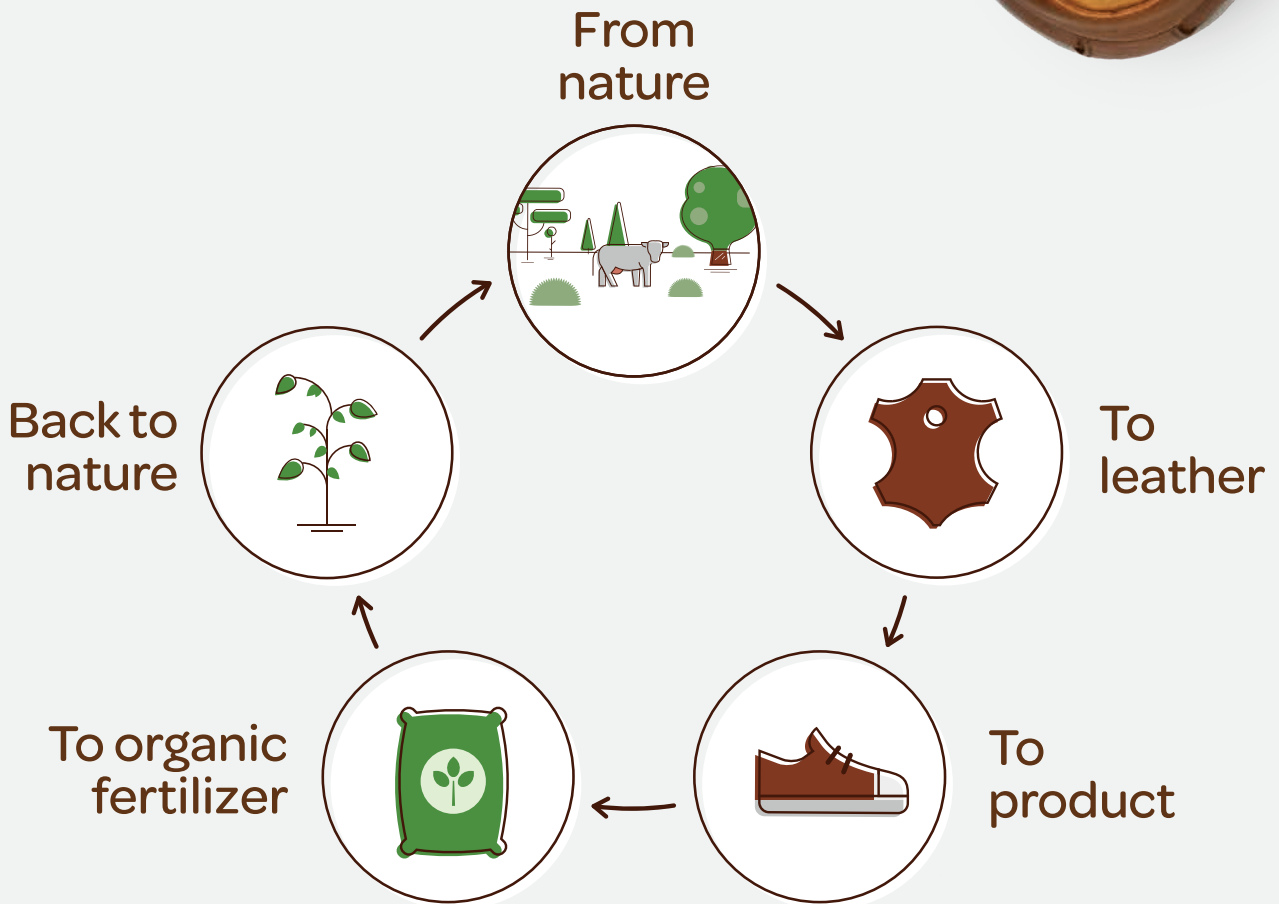
developed and offers a vast range of soles in natural or recycled materials, from thermoplastics to rubbers.

Regarding collection systems and logistics, steps are already being offered by some brands and countries. To truly upscale, plans and solutions need to be defined and implemented and scaled up in the future in line with regional specifics. Technologies and methodologies to identify the materials and products and how they are sorted are key to capturing the full value of the materials they contain in order for the process to be economically viable. QR (quick response) codes and user-friendly platforms could provide a useful contribution here.

Implementation and, when necessary, development of sorting and separation technologies permitting the mechanical and chemical separation of materials and blends, will provide cleaner feedstock and so potentially increase the quality and value of recycling. However, in footwear containing many different materials, this is complex and solutions that require detailed separation can be costly. To overcome this problem, CTCP has been developing materials that incorporate a range of ground footwear waste that feature properties that allow them to be used in quality outsoles. 

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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.



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Treating footwear against Covid

GLORIA LILLO-DANGLA, ANA M. TORRÓ-PALAU & ELENA ORGILÉS-CALPENA - INESCOP

The pandemic caused by covid-19 burst into our lives unexpectedly, affecting in a remarkable way the activity of different industries, including footwear and its components. Once the crisis caused by the first wave of the pandemic was overcome, the footwear sector, used to reacting to adversities, focused on measures that allowed the reactivation of production and the commercialisation of products in a safe way.

As the highly infectious nature and ease of transmission of coronavirus, as well as its survival in common objects and on their surfaces became known, hygiene became an essential measure to prevent contagion. In this sense, footwear was no exception. The in-

store sale of footwear, therefore, needed to be carried out in such a way that the consumer's shopping experience was safe and satisfactory. The same applied to online sales where disinfection of the products sold and returned had to be guaranteed.

In a very short time, a wide variety of products appeared that claimed to offer companies solutions and technologies for the disinfection of footwear, leaving those companies' choice of sanitising products or systems potentially both tricky and risky. On the one hand, there were liquid sanitising systems applied directly on to the product after use, which had been previously authorised by the Spanish Ministry of Health as effective against SARS-Cov-2. On the

other hand, there were radiation-based systems such as ozone or UV, the disinfectant effectiveness of which had already been proven against other microorganisms.

Given the wide availability of solutions and technologies available for the sanitation of products and surfaces, companies did not have an easy choice. Faced with this situation, INESCOP made its capabilities, knowledge and resources available to the Government, as well as companies and other users, in order to offer a suitable response. As a direct result of this, the COVIDSHOE project was launched in March 2020, at the outbreak of the pandemic and when there was still not much information about it. Funded by IVACE (Valencian

Institute of Business Competitiveness) and the ERDF (European Union Regional Development Fund), its main objective was the effective sanitisation of footwear in order to fight coronavirus.

In the development of this project, two possible actions were considered. One was to evaluate the effects of different sanitising treatments on the aesthetic, mechanical and functional properties of footwear, as the effect of a continuous application of these treatments on the materials involved was unknown. The other was the development of new materials with viricidal (ability to destroy viruses) properties included in the nature of the material to prevent the possible contagion caused by people's movement, especially in places where contamination could be high.

SANITISING TREATMENTS

Three types of sanitising treatment were used for this study, all of which are considered to be effective viricides against SARS-COV-2 by the Spanish Ministry of Health. First, liquid products sprayed on the surface of various materials were used, with the application of up to 96 sprays. Those used were:

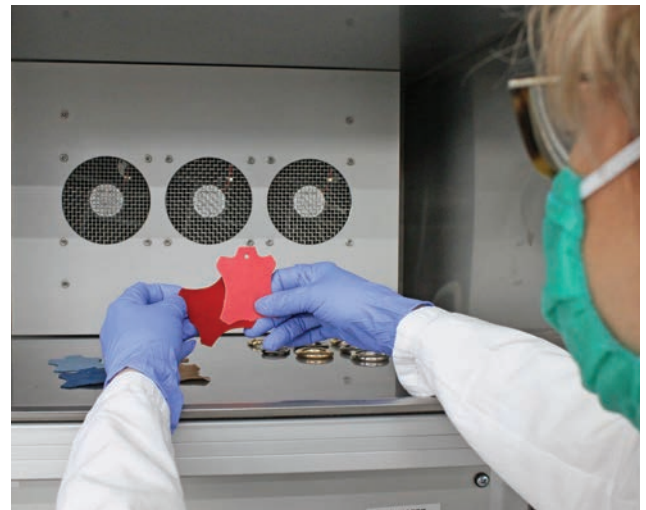
- Sodium hypochlorite (4.5% active chlorine)
- Alkyldimethylbenzyl ammonium chloride (1.6%)
- Biphenyl-2-ol (0.4%)/Ethyl alcohol (30.6%)
- Didecyldimethylammonium chloride (2.7%)

The other type of treatment tried was UV radiation with a wavelength of 254 nm with up to 240 hours of continuous exposure, as well as daily exposures of 45 minutes for 10 days. Ozone was also used as a sanitising treatment, with up to 72 hours of application.

To apply these treatments, different types of footwear were selected (flip-flops, trainers, men's and women's footwear), as well as dark, light and translucent soling materials including thermoplastic rubber (TR), polyvinyl chloride (PVC), styrene-butadiene rubbers (SBR) of different hardnesses, thermoplastic polyurethane (TPU), and copolymers of vinyl acetate (EVA). Different types of upper materials were also tested including leather (patent leather, split leather, metallised leather, finished leather), fabrics (woven, 3D knitted and coagulated fabrics) and ornaments (buckles, different metal pieces), covering the whole range of materials used in footwear.

After each application of the corresponding treatments, the materials were checked for any visual alteration. In addition, the evolution of their mechanical properties (hardness, density, abrasion, tear, tensile properties, elongation, flexing, etc.) was also analysed. They were further subjected to ageing (light, temperature and humidity) and chemical analysis (REACH regulation) to ensure that no substances harmful to users or the environment were generated. The results obtained regarding the effect of the various sanitising treatments on the different upper and soling materials commonly used in footwear manufacturing were compiled in a digital guide to be available to companies.

The general conclusion from this study is that excessive or uncontrolled exposure to some treatments could lead to staining, loss of colour or brightness, and even microcracks affecting the mechanical properties of materials or footwear. Therefore, and based on these results, it is advisable to



Comparing sanitising treatments.



Best Practice Guide for footwear manufacturers.

preferably use alcohol-based viricides specific for footwear, being able to spray soles up to 100 times and being careful with patent or finished leathers that could 'dry out' after more than 70 sprays, always bearing in mind that their mechanical properties could be weakened.

Ammonium salt-based products can also be used specifically on textile materials and soles can be sprayed up to 100 times. Patent and metallic leathers should also be treated with the same care. However, special attention must be paid to products based on ammonium salts that are not specifically for textiles or footwear as they can damage soles and some finishes, causing them to lose their qualities/properties.

DEVELOPMENT OF VIRICIDAL MATERIALS

Regarding the development of footwear materials with viricidal properties, work was conducted on the addition of different percentages of viricidal agents to footwear materials, incorporating them into the formulation of both soling and upper materials in the form of microcapsules. Antimicrobial tests were carried out on these materials using different bacteria and viruses. The results obtained were very satisfactory, proving in some cases that the samples with an additive showed a positive antimicrobial effect that was not observed in those without. 🦠



Reimagining fabrics for footwear

Over the last decade there has been a steady rise in the growth of footwear with flexible woven or knitted uppers, particularly in the athletic and performance field. This trend looks set to remain a firm fixture in the footwear industry for the foreseeable future. In the light of this, footwear materials supplier Texon has taken the design and manufacture of woven uppers to the next level with its patented ProWeave technology. The company claims that it is a revolutionary solution that totally transforms the way that performance fabrics are made and, crucially, how woven uppers can look, feel and function.

Developed to meet the exacting requirements of the world's biggest footwear brands, ProWeave now makes it possible to seamlessly integrate functional and design weaving directly into the finished upper. Using a jacquard weaving technology, the process is able to interlace hundreds of warp threads or just move a single wrap yarn independently in order to create unique, intricate designs. For footwear manufacturers, the end result is a woven upper with all the physical performance properties and visual characteristics they want, exactly where they want them.

Texon's business acceleration leader for ProWeave, Paul Jackson, explains: "Texon is a global leader in the production of innovative structural components including heel counters, box toe puffs and insoles. Integral to the shape, comfort,

support and fit of shoes, these products are largely hidden from sight, but are used by some of the biggest brands in the business. We are also a front runner in high-end performance fabrics that play an important role in the visual design of consumer goods including footwear. Our Italian division, based in Prato, Tuscany, has a long track record in the manufacture of materials with unique properties that are both functional and aesthetically pleasing, and can be used in shoe uppers, performance garments and fashion accessories. It's here, in Italy at the creative heart of the global textile industry that ProWeave was invented."

A NOVEL PROCESS

The process is certainly novel in its ability to create different elasticity, tenacity and abrasion zones all within the same weave. The company claims that it is ground-breaking in its approach as it is able to easily blend diverse yarn thicknesses and weights, fabric references and colours together with distinctive gradient, rib, waffle and 3D effects to create unique woven pattern combinations all on the same loom.

Paul Jackson goes on to say: "Using ProWeave, the design possibilities are endless. Footwear manufacturers can come to us with high-level thoughts on how they want a woven upper to work and what they want it to look and feel like.

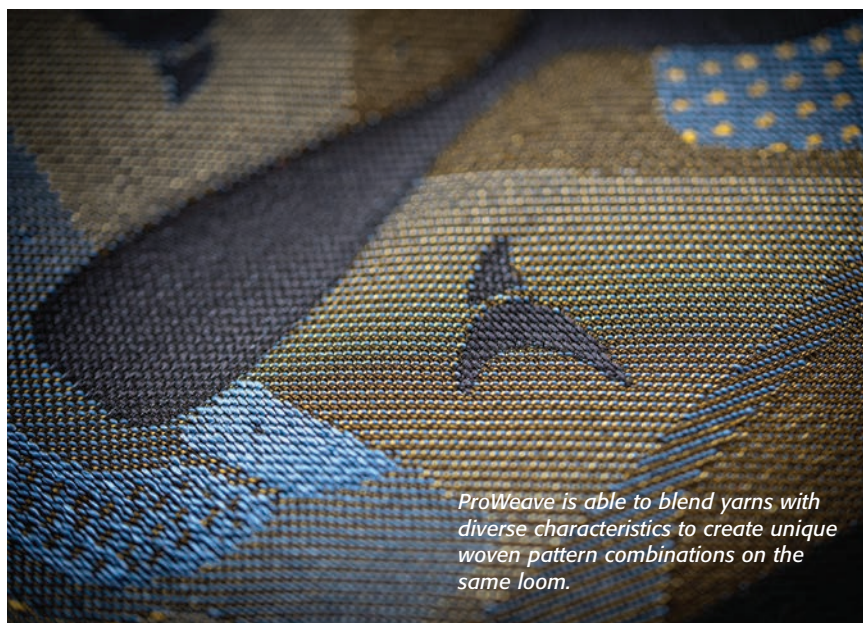
Together, we'll map out a concept upper in more detail, pinpointing the location of specific physical characteristics, functional zones and visual patterns. Once we've agreed a design, we put the upper into production bringing the customer's ideas to life. From start to finish it's a liberating process that frees designers from conventional fabric restraints which can hamper the creative process. Delivering limitless functional and aesthetic options, ProWeave allows designers to unleash their creativity and let their imagination run wild in ways that can differentiate their products and unlock real competitive advantage."

A TECHNOLOGY WITH MUCH TO OFFER

The innovative technology involved is the culmination of years of experience and expertise that brings together Texon's Italian division's know-how in high performance occupational and safety woven fabrics with wider expertise in branded footwear from across the Group. Being suitable for use throughout the footwear industry, the company says that the process will appeal to brands that want to stand out from the crowd and are therefore continually looking out for the next big material or manufacturing innovation. By actively aiding the footwear design process, it is an ideal solution for all kinds of footwear and from the sports and outdoor footwear sector, to top luxury and premium brands and even industrial and safety footwear.

In sports shoes, where the trend for woven uppers originated, having the ability to seamlessly blur the lines between form and function is certainly a game-changer. Adding stretch, comfort and dynamic support exactly where required, alongside cool visual effects and patterns will certainly appeal to sportswear designers whether they are making footwear for elite athletes, everyday trainers for joggers and gym enthusiasts, or simply fashionable athleisure shoes.

In the luxury market, where the main drivers are style and creativity, having the ability to use custom yarns and an innovative process to create something unique is a compelling proposition. In the world of haute couture, Texon has already secured a deal with a major international design house. Renowned



ProWeave is able to blend yarns with diverse characteristics to create unique woven pattern combinations on the same loom.

for its avant-garde style, this global brand will be creating an eye-catching shoe with a bespoke ProWeave upper for its spring/summer 2021 collection.

For the outdoor footwear market, ProWeave can be used to create uppers for technical shoes for specific recreational pursuits such as hiking or climbing. As well as combining properties of comfort and stretch with strength, durability and abrasion resistance, different coatings, membranes, linings, foams, pads and insulation can be included as required.

These characteristics also underpin its possibilities for industrial and safety footwear where shoes need to meet international standards such as EN ISO, CSA and ASTM. Uppers woven with the process are said to be stronger and more resilient than those made from traditional knitted weaves using Raschel and seamless machines. With ProWeave, it is possible to simultaneously weave different yarns together that have differing characteristics, counts and sizes. Mixing recycled, high tenacity, flame retardant, stretch, ballistic and TPU coated yarns together, Texon says it can help footwear manufacturers create different properties in the same upper in order to increase protection.

Elaborating, Paul Jackson says: "We are getting really enthusiastic feedback from customers across the footwear industry. Discussing ProWeave with many key brands, it's apparent that there is a real curiosity about an upper technology that is so radically different to anything that's on the market. Lots of the brands we've spoken to already

trust us to make their structural components. As a result, they are keen to learn more about ProWeave, how it fits within our wider portfolio and the value it can deliver."

SUSTAINABILITY

Texon is aiming to be a zero waste business by 2025 so, like other recent product developments, ProWeave is designed to support the footwear industry's sustainability drive. For instance, it can employ recycled yarns and Texon can give advice on the use of compatible fibres to build recyclable structures for circular projects. It also uses eco-friendly PFC-free printing, dyeing, mechanical and chemical treatments. With fewer offcuts, the manufacture of ProWeave uppers also generates less waste. In addition, the product is supported by Texon Group Zero Waste Programme.

ProWeave is produced in Italy but woven uppers using this technology can also be made at its Vietnam facility which opened in mid 2020. In terms of supply, small quantities can be supplied for series or limited-edition collections or, conversely, it can also be provided for mass production with multiple upper designs on one roll. Concluding, Paul Jackson says: "ProWeave is a big, bold, exciting development for Texon that sets us apart from our competitors. Unparalleled in the market, it is the perfect addition to an already versatile portfolio of products and demonstrates our commitment to innovation and sustainability for the footwear industry." 🌱



Two in one

When the subject of polyurethane soling comes up, one may automatically think of DESMA. This is because the German manufacturer has been the major supplier of PU moulding machines for 50 years. It has also been the leading innovator in PU soling technology. A prime example of this is the DESflow process introduced in 2012 by which a colourant could be premixed with natural PU immediately prior to it being injected into the mould cavity.

Another German company with a long and successful track record of supplying PU and TPU polymers for a wide range of footwear is chemical manufacturer BASF. Besides supplying raw materials, BASF also develops highly functional surface solutions at its Coatings division. The two companies have now jointly announced NovaCoat-D, a new and radically different process for adding a coloured skin to direct moulded PU soles which, at the same time, also acts as a release agent to ensure easy extraction of the shoe once the moulding cycle is complete.

The process involves spraying a coating of NovaCoat-D into the mould cavity in the same way that a mould release agent is applied except, in this instance, the spray forms a coloured film on the inside of the cavity which chemically bonds to the injected polyurethane foam of the sole. By the time the moulding cycle is completed, it has become a permanent part of the outer skin of the finished sole. The chemistry BASF has used is clearly an excellent innovation as it also acts as a mould release which it says provides easy de-moulding with no further processing necessary.

Furthermore, the company says that it is compatible with many polyurethane foams and produces a tough and flexible finish. It also offers a number of extra benefits as it makes the sole more resistant to scuffs and scratches, as well as UV light

and dirt. It is apparently also able to cover up small imperfections on the surface of the moulded sole which is another useful feature. Applied by the specifically upgraded former release agent robot attached to the table of a rotary moulding machine, the spray is available in a wide range of colours and offers finishes ranging from glossy to matte depending on the exact chemical composition and mould design.

DESMA says that it can cope with the fast cycle times of round table moulding machines and that most of its machines can be upgraded to integrate the application of NovaCoat-D in the moulding process. The best way to do this is to test it and, to this end, DESMA has a team at its headquarters in Achim which is carrying out testing in conjunction with BASF teams in Asia, Europe and North America prior to conducting trials together with interested parties. However, as a first step, it is recommended that initial trials are made in order to check the compatibility of the coating with the foam the customer is currently using. This can be carried out either at one of BASF's technical centres or by DESMA if the main focus concerns automated processing. After this initial validation, further tests can then be carried out using one of the following standard coatings, Clearcoat 5KG, Orange metallic 5KG, Purple metallic 5KG, together with the necessary NovaCoat-D hardener.

This is a clever concept from two companies with strong reputations for both innovation and quality products so there can be little doubt that it will do all that they claim. By combining two operations in one, the process further streamlines the manufacture of polyurethane direct moulding for footwear as well as adding extra benefits in terms of finish, aesthetic appeal and abrasion resistance to an already successful soling material. 🌀



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Following on from its graphene-enhanced outsoles, the collaboration between UK-based Inov-8 and the University of Manchester is yielding more benefits for footwear.

Wonder material works magic again

Dodging rocks and stones and navigating uneven terrain are key skills for trail and ultramarathon runners, and footwear brand Inov-8 believes feeling a connection with the ground is crucial to speed as well as avoiding injury. While other manufacturers “seem hung up on” carbon plates to propel runners forward, the UK company has invested heavily in the potential of ‘wonder material’ graphene over the past few years. The quest for a trail shoe with better grip, adaptability, ride and fit,

but which lets the foot move naturally, has culminated in its latest release, the G-Fly Max 300.

Inov-8’s relationship with the UK’s University of Manchester, home of the National Graphene Institute, began in 2017, after Dr Aravind Vijayaraghavan, a reader in nanomaterials, published a paper on how graphene could enhance rubber. Graphene is single atomic layer of graphite – which itself was discovered in Inov-8’s home, the English Lake District, in 1555, and was originally used to mark sheep (now commonly used in pencils).

A smoother ride for longer. The insoles include hundreds of expanded TPU beads that compress and spring back for 40% more energy return than standard insoles.

ALL CREDITS: INOV-8

Graphene was 'characterised' by University of Manchester professors Andre Geim and Konstantin Novoselov in 2004, earning them a Nobel Prize for physics in 2010. It is the thinnest and strongest material by weight, offering strength that is 200 times that of steel, at only one atom thick, and additional properties include transparency, flexibility and an ability to conduct heat and electricity. "It is remarkable that one material has all these properties," says Dr Aravind. "That is why we call it a wonder material."

Its potential is such that the EU committed €1bn to the Graphene Flagship for 10 years' research from 2013, and Manchester's Graphene Institute and Graphene Engineering Innovation Centre are among multiple academic facilities and private companies around the world that are dedicated to finding commercial uses in sectors from transport to energy.

Trial and error

The Inov-8 team began research and development with Dr Aravind and his team, and soon after launched a graphene-enhanced outsole collection, Graphene-Grip (see *WSA* Jan-Feb 2018). They say the resulting rubber is stronger, stretchier and more resistant to wear than standard rubber. Its G-Series won multiple awards and was rolled out across other footwear

categories. This research piqued footwear specialist Doug Sheridan's interest. "Graphene often enhances the characteristics of the elements it's mixed with," he says. "Graphene is so new, it has the ability to surprise and frustrate but also it has the unique ability to make these other materials perform their best."

Over the next couple of years, they experimented with foams: 50 mixtures tested in the lab and by 40 athletes in the field. Adding the graphene meant certain polymers were able to perform better, "but it's a sensitive chemistry, it's not just a question of adding more," says Mr Sheridan.

The final foam, which they call the G-Fly, is reported to give 25% better energy return than standard EVA foam as well as longer-lasting performance. Even after accelerated aging, it still offers 10% better energy return than the standard EVA and 'compares favourably' with EVA TPU blends, the company states. Added to style and performance updates including 10mm underfoot grooves that increase flex, The Trail Fly Ultra maintains underfoot bounce and comfort for longer. The three patent-pending technologies (Graphene-Grip, G-Fly and Adapter-Flex) could help runners maintain a faster speed over greater distances, help feet feel and prolong the life of their footwear.



Environmental impact

The increased durability extends the shoe's life, which the company points to when questioned on the environmental impact of adding graphene. Various graphene suppliers were considered, with the chosen one being certified to EU chemicals standard REACH. "Graphite is a natural material and we use a relatively small amount of graphene to deliver the impact so it doesn't measurably add to the carbon footprint of the shoe," explains Dr Aravind. "And the gains in sustainability by having a shoe that lasts a lot longer is the dominating aspect."

Guided by Mr Sheridan and working with the university team, Inov-8's footwear supplier was able to work with the new recipe. "Like everything else, it was a technology challenge: how do you scale up something you do as a small scale in the lab to production scale in the factory?" Dr Aravind tells *World Footwear*. "But we work very closely with Inov-8 and people in their partner factory, as well as Doug Sheridan. The manufacturability was one of the things we addressed as part of collaboration." He adds that the foam was launched into the ultramarathon sector because the energy return over long distances provides obvious benefits, but that he sees it being rolled into other types of footwear and, longer-term, could yield further advancements elsewhere in the shoe.

Cost cutting

With a number of outdoor brands — including Haglöfs and Vollebak — experimenting with graphene in textiles for clothing, it would seem the athletic footwear industry has been quite slow on the uptake, but Dr Aravind argues the opposite. "Graphene itself is a brand new material, it's less than 20 years old, and generally it takes much longer for a new material to make it into a consumer product," he tells us.

Years of outsourced research and development generally add to the cost of any product, but Inov-8 was able to benefit from a Knowledge Transfer Partnership, a UK government scheme that provides funding for innovative developments. This allows brands to bring expensive innovation to the marketplace, as research can be shared, keeping the costs acceptable for the consumer.



Founder Wayne Edy bought the company back from French group Descente at the start of 2020. "It would be easy to follow others, but that is not in our DNA," he says.

Inov-8 aims to stay the frontrunner when it comes to using graphene in footwear. "We have made a heavy investment into graphene but our name is Inov-8 so we have to lead with innovation and it's something CEO Wayne Edy really pushes through the company," says Michael Price, Inov-8's chief operating officer. "The investment is also about the future. We really believe we can grow the business and provide runners with product that makes a big difference to them and their running." 🌱



Vertical grooves cut into the rubber allow the foot's metatarsal bones to move more independently, aiding adaptability and flexible grip when running over uneven terrain.

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Shortly before he became seriously ill last summer, ultrarunner Tommy Rivers Puzey (Tommy Rivs) lent his expertise during the development of the running shoe.

ALL CREDITS: CRAFT



Distance learning

Swedish sportswear brand Craft has launched a new running shoe, the CTM Ultra Carbon, which it describes as “ultra- innovative”. Its durability and grip on a wide variety of surfaces mean the shoe is destined to break new ground and set new personal records across the world, according to the brand.

Explaining this claim, the brand’s product and marketing director, Daniel Högling, says Craft spent years in the laboratory obsessing (his choice of word) over aspects such as energy-return and heel-drop. In the end, this work led to the durability and versatility the company was looking for in a shoe that he insists will help runners gain vital seconds, perhaps even minutes over longer distances. “If you are competing at extreme distances,” Mr Högling says, “this is your shoe.”

Lug love

A three-piece, lugged traction rubber outsole, the Ultra Trac, contributes to this. The different shapes and the configuration of the lugs help with landing and with toe-off traction, and provide grip on varied surfaces. This outsole is designed to be lightweight, flexible and to maintain high levels of durability.

The construction of the shoe also combines a proprietary, lightweight ethylene-vinyl acetate- based material called Vault

Durability, an outsole to provide grip on a wide variety of terrain types, a split in the carbon plate and the insight and expertise of ultrarunner Tommy Rivs combine to make a new shoe from Craft a product of interest for long-distance runners.

Foam in the midsole with a carbon plate for energy-return. The carbon plate is also a proprietary component, which the Swedish company has called the Ultra Carbon Plate.

One point the brand makes about this is that the carbon fibre in the plate is carefully sourced from specialist suppliers and that its thinness makes it work “almost like a trampoline” in terms of energy-return. “It’s crucial how you put the fibres together to get the exact stiffness, torsion, proportions, flex-points and weight you are looking for,” Daniel Högling says. “We tested several versions during the development process.”

Split vote

There is a split in the plate, which allows a runner's big toe to press on the medial side while the other toes press on the lateral side. According to Craft, the benefit of this is that it creates torsion and, as a result, provides added rebound. The brand says it wanted "an aggressive shape" for the carbon plate. This was one of the areas in which it benefited from working on this design with well-known trail runner, ultramarathoner and physical therapist Tommy Rivers Puzey. This happened before the athlete, known in the running community as Tommy Rivs, became ill with cancer in July last year. "At first Tommy felt the carbon plate was too stiff, torsion-wise, during the field tests," Mr Högling continues.

Bearing in mind that ultra-distance races often involve quick turns on difficult terrain, they came up with the split-toe design, which makes the torsion less stiff in the forefoot but represents no compromise on the forward drive that a carbon plate can give.

Tommy Rivs began his dialogue with Craft about shoes several years ago and began working formally with the Swedish brand in 2019. "We had the idea of making the most versatile carbon-plate running shoe on the planet," Mr Högling says, "and to take it to an extreme fastest-known-time (FKT) challenge, but those plans changed due to Tommy's health conditions. He contributed a massive amount of insight to the research and development process and performed a number of field-tests on prototypes. He is still in direct dialogue with our research and development team. He is a fighter."



The shape and the configuration of the lugs on the sole are designed to help runners keep their grip on a variety of surfaces.

Whole system

Mr Högling explains that the considerations developers need to bear in mind when working on shoes for ultra-distance running differ only slightly from the requirements for standard-performance running shoes. "The sole profile, the foam technology, the weight, the toe-off geometrics, the last, the upper and, in this specific case, also the carbon plate need to come together as one piece," he says. "They all need to work as a system together. For ultra-distances,

what we found was the midsole profile and geometrics can help the runner a lot, if designed in an optimal way."

Combining the carbon plate profile, the rocker shape and various other details have led, Craft believes, to a design that can help runners save energy; their muscles work more efficiently during the run, the product director says. As mentioned, durability, because the distances are longer, and grip that adapts to various types of terrain were other points of focus. 📍

Craft says its new CTM Ultra Carbon shoe incorporates lessons it has learned about the ways in which midsole profile and geometrics can help runners.



The Garant work shoe from Hoffmann offers a weight-dependent range of damping to help reduce stress on the wearer's knees and back.

CREDIT: HOFFMANN



Prize winners

The winners of the 2021 German Design Awards were named in March at a ceremony that, this year, had to be digital only. The German Design Council, which presents these awards every year, describes the competition as one of its core duties as it attempts to “observe, analyse and evaluate international developments in design”. It’s an international competition and, in 2021, there were 4,200 entries from 60 countries.

In the end, the council this year chose 76 winners in three award disciplines: Excellent Product Design, Excellent Communications Design and Excellent Architecture. The product design category breaks down further into more than 30 sub-categories. Shoe companies are at liberty to submit entries for a number of these, including luxury goods, sports, outdoor activities and leisure, as well as lifestyle and fashion.

However, it is the industry sub-category that is of greatest interest to makers of safety and work shoes and boots. Among the winners in Excellent Product Design this year, there were several work and safety shoe styles, with the winners being reviewed here.

Sporty look

Lippstadt-based footwear group ISM Heinrich Krämer celebrated the success of two of its safety shoes in the awards. The Aer55 Impulse Blue Orange Low, which it makes under its Albatros brand, and the Frontside Low shoe, which it makes under the Puma Safety brand, were both named as winners.

The Aer55 Impulse Blue Orange Low uses proprietary

Safety footwear styles made an impression on the jury at the German Design Awards 2021.

technology called Impulse foam in the midsole, which the manufacturer says returns up to 55% of energy to the wearer. It has loops on the tongue and at the heel for the specific purpose of making the shoe easy for workers to put on and take off, but ISM Heinrich Krämer claims that it has managed to make these loops into “an additional design element”. Comments from the jury at the German Design Awards included compliments for a sporty look that helps makes this a modern work shoe.

High-level comfort

ISM Heinrich Krämer’s other winning entry, the Puma Safety Frontside Low, also has a modern sneaker look, the manufacturer states. But it has safety-enhancing footwear technology throughout. There is a fibreglass toe-cap and FAPLite proprietary protection against penetration. The shoe also has a non-slip rubber outsole with thermoplastic polyurethane (TPU) reinforcements.

This style also has foam technology to provide energy return that ISM Heinrich Krämer calculates to be 60%. This technology is called Effect Foam, which the company uses throughout a safety footwear line called Urban Effect. It further calculates that the foam can lower the impact on the



The Albatros Aer55 Impulse Blue Orange Low offers energy-returns of up to 55% to the wearer.

CREDIT: ISM HEINRICH KRÄMER



The Puma Safety Frontside Low has a non-slip rubber outsole with TPU reinforcements.

CREDIT: ISM HEINRICH KRÄMER

wearer's bones and joints by 47%, offering what it calls "a permanently high level of comfort for fatigue-free working, all day long". In its statement about the product, the jury said it combines a fashionable, sporty look with technology to provide safety aspects and "the promise of great comfort".

For women

Another winning entry, the Nora safety shoe from Louis Steitz Secura, is designed specifically for women to wear at work. It is light in weight, and is especially adapted to fit women's feet well.

Fit is at the forefront of the design, with four widths for each shoe length. It avoids seams and uses a leather insole for a healthy foot climate for wearers, with safety features that include an abrasion-resistant toe-guard, a heel trim in TPU for stability and an anti-slip sole. The jury at the Awards said the shoe combined safety aspects with "outstanding accuracy of fit and maximum wearing comfort".

Long-term health benefits

Lightness in weight and special attention to shoe width and comfort are qualities that also characterise the Garant safety shoe from Hoffmann, which completes the safety footwear line-up at the 2021 awards.

The Garant shoe also has an aluminium protective toe-cap and a weight-dependent range of damping. The manufacturer insists that this can reduce stress on the wearer's knees and back, offering health benefits over the long term.

The German Design Awards first ran in 1969 as 'The Federal Awards for Good Design'. The competition adopted its current name in 1992 and it was in 2012 that the German Design Council began to host the competition. The Frankfurt-based body has an interesting history. In the late 1940s, German-designed products came in for criticism at international exhibitions and the government responded by setting up an organisation that would promote good design as a means of bringing economic and cultural benefits to German companies and to encourage them to use design to build "a bridge to the world". It began its work in 1953 and is still going strong today. 🌐



The Nora shoe from Louis Steitz Secura is especially adapted to fit the feet of female workers.

CREDIT: LOUIS STEITZ SECURA

A footwear company from Denmark believes that using leather that consumers can trace back to the farms that reared the cattle that supplied the hides strengthens its brand and enhances its sustainability story. This level of traceability connects its products more clearly to the natural world.

Total transparency

Traceability is the name Danish footwear brand Roccamore has chosen for a new capsule collection it brought to market in late January. The collection's heeled ankle-boots in beige, blue and black are the first products to use traceable leather from Spoor, another Danish company.

Spoor, spun off from wet-blue and wet-white producer Scan-Hide, launched in September 2020. Its aim is to convince customers to support an idea it developed inhouse, a laser-technology based system for marking and identifying hides. A year before launch, Scan-Hide chief executive, Michael Sondergaard, spoke about the technology at a workshop on traceability that leather industry organisations COTANCE and UNIC arranged at Lineapelle in Milan. Mr Sondergaard said the system would be able to provide access to the whole life-story of the animal a hide had come from, from farm to finished product. He insisted this would add value to products because today's consumers are keen to know as much as possible about what they are buying.

The idea revolves around using laser technology to mark fresh hides with a sequence of characters. Through accurate supply chain management, these characters can link to the information contained in an animal's ear-tag about where it was born and how many times it moved farms before going to the abattoir. These laser markings survive tanning processes so that the code that denotes the hide's origin is still present in the finished leather. With careful control of what happens after tanning, including shipping the leather to finished product factories and, eventually, cutting it into pieces for, in this case, a particular shoe pattern, the system makes it possible for brands to connect all the upstream supply chain data to every style of shoe or boot, every sofa or every bag they sell.

Fashion connection

When Mr Sondergaard presented this idea to Birgitte Holgaard Langer she signed up to lend her in-depth expertise of innovation in fashion and retail to the project. Ms Langer was the chief operating officer and chief marketing officer of Lego Wear, a children's clothing brand run under licence from the toy company by fashion group Kabooki. Another achievement at Kabooki was establishing a childrenswear partnership with high-end automotive group Lamborghini, creating Automobili Lamborghini Kidswear. She has also worked for Vero Moda, part of the Bestseller fashion group. "We met," Ms Langer explains, "and Michael explained what Scan-Hide had developed, showing me this completely unique system for laser-printing an individual code onto each hide it sends out. The connection to the data on the ear-tag on each animal gives



The QR code on the inside of the upper unlocks access to the entire back-story of the leather, proving that the provenance of the hides is farms that look after their animals well.

CREDIT: ROCCAMORE

proof and a guarantee that we can provide, not just premium leather, but also security and transparency about the raw material and how it has been processed. I said it was amazing. I started as a consultant, but I realised that my real wish was to stay with this mission and bring the idea to life." As a result, since its launch in September, she has been the business development director of the Spoor division of Scan-Hide, heading up this new brand for the group.

She wasted no time in talking to her contacts in the fashion industry about the ways in which the new technology might help them add value to their products and brands. "There is no lack of great stories in fashion and lifestyle," she says. "What Spoor makes possible is to present stories that are grounded in data."

The first person to see the potential of this was Frederikke Antonie Schmidt, the shoe designer who founded Roccamore. She is a graduate of the Polimoda school in Florence and worked for a number of high-end brands before returning home to Denmark to set up on her own. She uses her ties to Tuscany to source shoes and boots from artisan manufacturers there. She is now using her ties to Spoor to incorporate traceable leather into her latest capsule collection. She can show that the hides originate in Scandinavia, are made into wet

Roccamore's latest capsule collection.

CREDIT: ROCCAMORE





blue by Scan-Hide, are then shipped to Germany for retanning and finishing and sent from there to the artisan shoe factories in Italy that make her products.

Spoor's laser identification system provides all the back-up data Ms Schmidt requires to prove all of this, to guarantee that the cattle from which the hides came were well treated by Scandinavian farmers. Roccamore has taken that upstream supply chain information and made it available to consumers by means of a quick-response (QR) code printed on the inside of the upper of each of the boots in its Spoor-Traceability range.

Five freedoms

Scanning this code with a smartphone is enough to give consumers the assurance that the leather in the shoes and boots in the collection is from animals that lived in keeping with the so-called 'five freedoms' for livestock. These commitments seek to make sure the animals have been protected from pain, disease, discomfort, hunger and thirst, and have been allowed to carry out behaviour that is in keeping with creatures of their own kind. "Frederikke saw that she could use this extra traceability to strengthen her brand," Ms Langer explains. "She had already had meeting after meeting with suppliers about this. Some offered a little of the traceability she was looking for but she was not satisfied; they could not offer the depth required for what she defines as true traceability."

Spoor can provide that depth. After years of working in the meat industry, Michael Sondergaard brought a high level of knowledge of the livestock supply chain to this project. If they want to, supermarket chains can use the data they have in their systems to inform customers about the farm an individual, small joint of meat comes from. The information is there. In a similar way, Spoor's customers, including Roccamore, will, if they want to, be able to launch future capsule collections that use leather from only Danish hides, or, drilling down even further, only hides from the special landscape of southern Jutland. Again, the information will be available.

The only future

Roccamore founder, Frederikke Antonie Schmidt says she is very happy with the way the original project has gone so far, giving her confidence that traceable leather was a good step for

Spoor's system uses laser technology to mark hides with a unique alphanumeric code. CREDIT: SPOOR

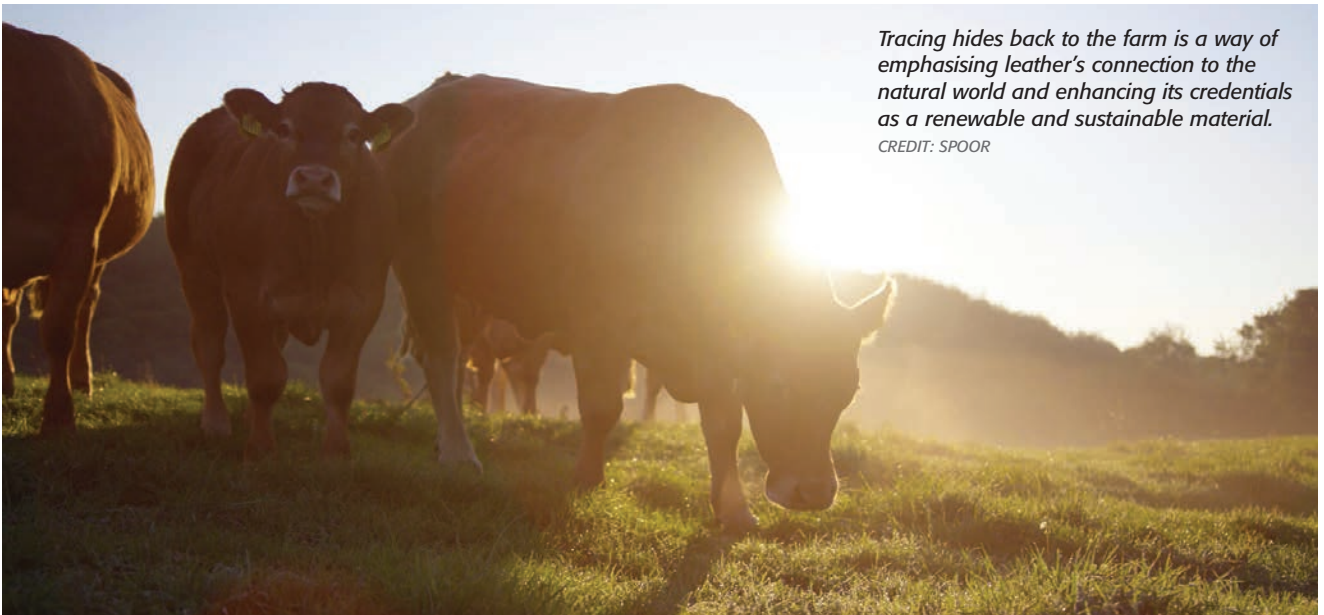
her to take, following previous capsule collections that highlighted biodegradable leather, water-saving leather and naturally tanned leather. She says that she thought long and hard about bringing "yet another fashion business, a high-heeled shoe brand" into the world before she launched Roccamore. But she decided to go ahead with the launch because she saw the scope for building a brand in a better way.

Working with Spoor is another part of this. "It's important," she says, "because it ensures animal welfare. With the 100% traceable concept from Spoor, we have 100% certainty that the animals really have had a good life. This project is very important to me and I'm proud of how well it has turned out. We've had overwhelming interest from our customers and from people in general. Everybody is positive about the possibilities that we have launched with this concept. I am convinced that total transparency is the only future the fashion world has. The concept of 100% traceability is an important step in that direction." Roccamore intends to bring out three new Spoor collections in the course of this year. One is in the pipeline for the end of April and others are planned for September and October.

The company has made a financial contribution towards a biodiversity project at a farm near Vejle from every sale it has made of products in the Spoor-Traceability collection. The farmer involved in the project, Michael Kjerkegaard, wants to return parcels of land on his farm to the way they were 500 years ago to enhance the quality of the soil and encourage flowers, insects, birds and wildlife to flourish there. "Cows are smart," Roccamore has observed. "They eat grass but avoid most flowers, unlike goats, who love eating flowers, causing all the insects, plants and small animals, who need the flowers to survive, to disappear."

Pioneer trail

Ms Schmidt has been a pioneer for a long time. Roccamore shoes have a special insole that she developed herself, working with an orthopaedic shoemaker. This insole allows wearers of the brand's heeled footwear to walk with their feet in a more



Tracing hides back to the farm is a way of emphasising leather's connection to the natural world and enhancing its credentials as a renewable and sustainable material.

CREDIT: SPOOR

natural anatomical position than high heels often allow. Tests have shown that, as a result, Roccamore products promise 19% less pressure in the heel area of the foot, 44% more arch support and 26% less forefoot pressure.

In addition, she has, in the words of Ms Langer, "always looked at the industry from a sustainable point of view". She does not over-produce to avoid waste; like Spoor-Traceability, all Roccamore products are limited-edition. She does not work with wholesalers, but sells her collections in her own stores in Copenhagen, Aarhus and Lyngby and through her own online shop. "She has created her own space and is doing things the way she wants to do them," the Spoor business development director says. "Roccamore is a small start-up, but I have to tell you: Frederikke is a powerhouse."

To prove the point, she explains that the government of Denmark has already recognised Ms Schmidt's talent and the force of her personality. In August last year, the minister of economic and business affairs, Simon Kollerup, announced a new export promotions forum to help Danish companies rebuild their export activity following the first wave of the covid-19 pandemic. The new forum consists of eight "restart teams", each one dedicated to a specific area of the export economy and the wider business community. Mr Kollerup said he wanted to create "the best conditions for Danish export companies to remain strong in the global market". One of the eight teams is devoted to fashion and textiles; the minister appointed Frederikke Antonie Schmidt as its chairperson.

To believe or to know

Lots of brands go to great lengths to show that they are sourcing their raw materials and their finished products carefully, that they avoid cutting any corners on matters of fair treatment of workers or environmental responsibility. And for many, making statements to this effect is enough. But this wasn't enough for Roccamore; it wanted to remove any doubt in consumers' minds and to show the full story behind its material selection for the new capsule collection. It was determined to prove that it had put deep thought into the origins of the leather it was using. "It's one thing to believe something," Ms Langer says, "and it's another thing to know.

Frederikke wanted people to know and we were able to help her deliver that."

The Spoor director's insistence is that higher levels of traceability can help the wider leather industry claim its rightful place in the circular economy of the future and she says other brands will begin using the laser-based technology in the course of 2021. "It's through transparency that people will see clearly that leather is a by-product of the meat and dairy industries. I believe deeply that this can make a difference. Roccamore is definitely seeing already that connecting its products to nature is increasing the trust that customers have in the brand."

As is often the case when pioneers push forward, Roccamore's launch of a collection made from traceable leather involved a leap of faith. But it wasn't alone; Spoor insisted that the two companies would take this leap together, hand in hand. 🤝



Cows on a farm in Denmark. Brands working with Spoor can specify where they want the leather in their collections to come from.

CREDIT: SPOOR

A Clarks store in the UK. Its home market is the source of around 70% of group revenues.

CREDIT: CLARKS



The billionaire backing the Clarks deal

Hong Kong-based private equity firm LionRock Capital has confirmed the completion of its “partnership” with footwear group Clarks. It announced its intention to acquire a majority stake in the group towards the end of 2020, saying it would invest around £100 million. LionRock managing director, Daniel Tseung, has described Clarks as “one of the world’s most recognised consumer names”. He says LionRock is looking forward to working with the Clark family and Clarks’ leadership team “to build on its tradition of providing customers around the world with top-quality products and exceptional service”.

It has wasted little time in putting its own imprint on the leadership team, with Víctor Herrero taking over as chief executive of Clarks, replacing Giorgio Presca, in February. Mr Herrero was formerly chief executive of Guess and, before that, held several senior roles at Inditex, including the position of head of Asia Pacific and managing director for China.

Clarks’s business year runs from February to January. For the 12 months to January 31, 2016, it reported revenues of just over £1.5 billion, an increase of more than 25% compared to the previous year. The top-line figure stayed close to that figure

LionRock’s interest in Clarks could result in major changes in the way the footwear group functions, not least because of the interest a major figure in brand-building and business expansion in China has taken in the deal.

for most of the next four years, reaching £1.65 billion in 2017 and dipping below £1.4 billion in the most recent results, for the year ending February 1, 2020. But profits have fallen. Also in the most recent 12-month period, Clarks sold 42.9 million pairs of shoes and boots, a fall in volume of 7.1% year on year. Then covid-19 hit.

One of the first tasks the new Clarks chief executive faces, therefore, will be to present a set of results that have been “challenging”, to use the group’s own word, for years but are now made vastly more challenging by the pandemic. Another

has been to answer questions from UK media about store closures and job losses, especially in its home markets; sales in the UK and Ireland have typically accounted for around 70% of group sales.

Perhaps with LionRock taking a majority stake, Clarks will be one of the first UK-based businesses to effect what the government in London has spoken of as a post-Brexit “tilt” towards Asia. When the investment company declared its intentions, Clarks non-executive chair, Stella David, said: “We are entering a new era for Clarks. Our partners share our long-term vision for a successful and sustainable future for Clarks and the strategy for growth on a global scale.”

Victor Herrero’s Asia experience could help. During his time as chief executive of Guess, he told Spanish business media: “If you have the right brand proposition, the right concept and a good product, the sky is the limit in Asia.”

Since LionRock’s initial announcement in November, an even more experienced figure in brand-building and business expansion in Asia has joined the fray. Former Olympic gymnast and entrepreneur Li Ning decided he wanted to be involved in helping Clarks build its business back up. Mr Li has acquired a 51% stake in LionRock and is now its non-executive chairman. On completion of the venture capital company’s purchase of a controlling stake in Clarks, he said: “I am thrilled that LionRock Capital is partnering with one of the UK’s most iconic brands during this momentous new phase for the business. We look forward to leveraging our network and experience to support Clarks through the next phase of development.”

Anyone wondering what a former gymnast would know about it should reflect on what Mr Li has achieved since hanging up his singlet. In 1989, he launched his own-name brand. He has built it into one of China’s most successful brands. In spite of covid-19, it recently reported revenues of \$2.25 billion for 2020, an increase of 4.2% compared to the previous year.

In 2020, 43.8% of Li Ning’s revenue came from footwear, with most of the rest coming from apparel. However, its attempts to expand beyond China have been largely unsuccessful so far. Mr Li’s status earned him the privilege of



Li Ning at a press conference in Beijing in 2017.

CREDIT: ZHANGJIN_NET/SHUTTERSTOCK

being the final torch bearer for the opening ceremony of the Beijing Olympics in 2008. He didn’t just run into the Bird’s Nest stadium, though, but, attached by wires, engaged in a routine in which he appeared to fly around the roof.

In the wake of the global publicity this earned him, he first attempted to enter the US market in 2011. Ten years later, sales outside China still contribute only 1.5% of the Li Ning brand’s revenues. It is possible that his involvement with Clarks can help change this. Perhaps he can help Clarks become strong again, especially in Asia, while Clarks helps his brand achieve the ambition of making an impression on the global stage. 🚀



Li Ning has described Clarks as one of the UK’s most iconic brands and has promised “a momentous new phase for the business”.

CREDIT: CLARKS



Pentland's creative director, Katie Greenyer, giving a masterclass to National Saturday Club students at the University of Wolverhampton.

CREDIT: PENTLAND GROUP

This could be your job

The creative director of Pentland Brands, Katie Greenyer, talks with admirable frankness about the lengths to which she had to go to launch her own career in the 1990s (it involved chocolate-spread sandwiches and persistence in pursuing the attention of prominent fashion designers). However, she also makes it clear that she received inspiration and encouragement at home. Her father was an old-school graphic designer and, in a recent interview for a design podcast called 'If Not Now Then When?', which Pentland Brands shared on social media, Ms Greenyer says she was "brought up under his drawing board".

She believes she was fortunate and now works hard to pass on some of her luck and a lot of her knowledge to creative young people who may not have received the same encouragement as she did. She thinks some of the youngsters she is working with may never have imagined that careers in the design of footwear or other fashion products could be an achievable ambition for them.

Edgy Liverpool

After school, she did an art foundation course close to her home in the south-east of England. This provided her with a pathway northwards to Liverpool School of Art. She loved her time there and loved the city, which she found slightly wild, but edgy and inspirational at the end of the 1980s and early

Teaching young people to be creative, and helping them to imagine careers for themselves in areas such as shoe design, have long been passions for Katie Greenyer.

1990s. On returning home, she set up her own label and used the skills she had learned at art school to create some initial products. She worked hard and earned commissions, from fashion designer Vivienne Westwood among others.

Her brother showed her a magazine article about Red Or Dead, the footwear, clothing and eyewear brand with which Wayne and Geraldine Hemingway were making names for themselves in design circles. "I totally fell in love with Wayne and Geraldine, their whole aesthetic and the maverick way the company seemed to work," Ms Greenyer recalls. "I wedged my way in there."

She achieved this by turning up in the car park at Red Or Dead's headquarters in north London and asking Wayne Hemingway to take her on. He told her to leave him alone; she refused to give up and, in time, convinced him to look at

her portfolio, after which he hired her as a freelance. She is still involved in Red Or Dead because Pentland acquired the brand in 1998. To expand her business, win more customers and earn more money, she wrote to a number of Paris-based designers, told them she would call on them at their studios at appointed times (times she had chosen, spread over one week) unless they called to say it was inconvenient. No calls came, so she looked for a cheap way to travel to Paris and spent a week there.

Paris appointments

The answer was to travel by bus and ferry and stay in a small hotel on the city's outskirts as part of a party of retired people who were as keen to visit the French capital on a tight budget as she was, albeit for different reasons. Her first appointment was at Yves Saint Laurent, with the retired people in the tour party insisting that the bus-driver drop her off at the studio; she and her portfolio only got as far as reception. She arrived early at the next appointment, which was at Christian Lacroix and, with time in hand, sat outside and ate an improvised lunch of bread and chocolate spread, filched, with the help of the women on the bus-trip, from the hotel's breakfast buffet. A man in a passing car stared at her intently enough to earn himself a rude gesture, but she found out shortly afterwards that he was only trying to work out what she had done with her hair (she had styled it to make it look woven). The man was Christian Lacroix. He bought all the ideas she had in her portfolio and hired her to work on print, colour and trends projects for him.

For an all-too brief time, she went between Paris and London (not by bus), working for Red Or Dead, for Christian Lacroix and for her own company, Squinty Totty. She called home one evening to hear the news that her mother had become seriously ill. "Just as everything was going in the right direction, it stopped," Katie Greenyer says. "I'd had so many 'no's', made so many phone calls and, even when I did get work, it was really hard to get paid on time and in full. Nothing is easy; it's still not easy, but that was my real low." Her mother died in 1995. She decided that nothing worse than this could happen to her, so she made up her mind to go back to her career and try to make a success of it.

Family firm

In 1996, she went to work at Pentland and says she has always loved that it is a family business with, currently, the fifth generation involved in the running of it. Its best known footwear brands include Kickers, Lacoste, KangaROOS, Mitre, Berghaus and, of course, Red Or Dead. Pentland has given her opportunities to grow as a person and as a designer, and the chance to influence the lives of young people, Ms Greenyer says.

Like all businesses, Pentland needs to bring in young talent. She sympathises with young, creative people who cannot find a job because of a lack of training and work experience and has decided that Pentland's talent pool will accept people who do not have a conventional design education. "They just have to offer something that will be beneficial to our brands," the creative director says. "We want to capture their energy. It's not a scripted programme, but around 200 designers have come through it since 2003. Even if they leave us and go to a competitor, I don't mind. Maybe one day they'll come back."



Growing up, Katie Greenyer received lots of encouragement from her graphic designer father. She says she was brought up under his drawing board.

CREDIT: PENTLAND GROUP

Young creatives

Katie Greenyer frequently gives up time to serve on the judging panel for the Cordwainers National Footwear Student of the Year competition, and she is also carrying out a similar role for the Leather and Hide Council of America's 2021 international student design competition, part of its Real Leather, Stay Different campaign.

In 2018, she became a trustee of a charity organisation called The National Saturday Club. For years, this body has arranged free learning sessions on Saturdays for young people aged between 13 and 16 at local universities. Its aim is to help young people discover strengths and talents they may not know they have in four areas: art and design; science and engineering; writing and talking, and fashion and business. Ms Greenyer has, so far, conducted seven masterclasses at universities including Northampton and Wolverhampton. On one occasion, the Kickers brand supported a special shoe design project for the students.

"It's about teaching young people to be creative," she says. "If your parents have nothing to do with the creative industries, how do you know if you might be capable of designing a shoe? How do you know if people would wear that shoe and that this could be your job?" 🤖

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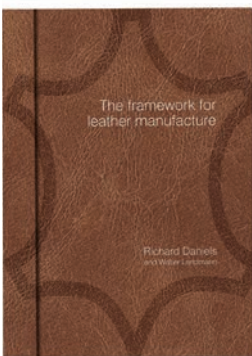
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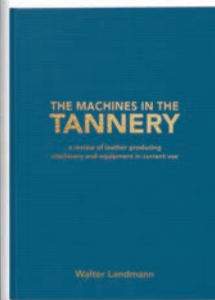
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