

WORLD FOOTWEAR

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THE MAGAZINE FOR THE GLOBAL SHOE INDUSTRY



Speedfactory update
Home truths for China-India producers
Robots and people together
Dance-craze boost for shoes



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Image: Scarpa

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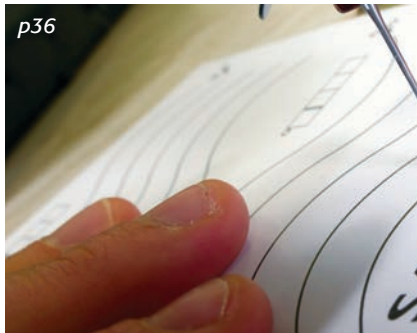
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News

GERMANY The majority of European outdoor brands have reported an increase in wholesale sales in 2015. Around 85% said sales were up, 8% reported they had fallen and the remainder said they were flat, according to the European Outdoor Group. The growth of outdoor footwear, especially multi-functional styles, was "strong", it said.

SWEDEN While most companies in the outdoor companies have rallied against Greenpeace after its singling out of the sector in the Greenpeace debate, Swedish brand Haglöfs has thanked it for its findings. It has withdrawn its Grym hiking boot after Greenpeace found fluorocarbon PFOA. Fluorocarbons is a group of chemicals that are used to make products water and oil repellent but which have controversial byproducts.

MENORCA Local footwear producer Roseta, is to close. Parent company Jaime Pons Sintes said a customer had failed to pay for an order; 16 employees are in line to lose their jobs. Footwear production has long been one of the mainstays of industry in Menorca but a number of producers have closed down since the economic downturn that began in 2008.

SPAIN The president of Valencia footwear association Avecal, Marián Cano, has said footwear manufacturers want a hands-on apprenticeship programme in which young people can learn the trade quickly. The association receives enquiries "every day" from European brands that want to set up production in Spain.

● Spain's shoe exports during the first nine months of 2015 grew 11% in value but fell 0.3% in volume compared with the same period the year before, according to the Federation of Spanish Footwear Industries (FICE). The value reached €2.3 billion, while the volume was 122.2 million pairs.

ITALY Many high-end brands could do twice as much when it comes to providing a luxury experience, according to consultancy ContactLab. Its CEO, Massimo Fubini, said: "Few are fulfilling their potential." Some, including Tod's, do show best practice when it comes to packaging and focus on maintaining that feeling of luxury throughout the process, he added.

● The 85th Expo Riva Schuh exhibition closed on January 19, with the organisers saying they were particularly pleased by a high number of first-time visitors. Visitor numbers were 4.4% higher than for the same show in 2015, with 13,104 buyers coming through the doors.

JAPAN Twenty-three Spanish footwear companies representing 32 brands travelled to Japan as part of a FICE (Federation of Spanish Footwear Industries) delegation to drum up business at the Made in Spain footwear show in February. Exports of Spanish footwear to Japan during the first 10 months of 2015 reached €36 million.

ARGENTINA Footwear companies have complained that tanners in Argentina are holding back from passing on any benefit of lower hide prices. Footwear manufacturers association CIC said tanners had put prices up by as much as 40%.

IRAN Iran's national association of footwear technicians, Assomes, became a member of the International Union of Shoe Industry Technicians (UITIC) at its 19th congress in Chennai. Assomes director AH Rahmanian told *World Footwear*: "This will give us an opportunity to communicate with experts in other countries and to learn from them."

ASIA An industry expert from sister publication *World Leather* has predicted an increasing number of shoe leather tanneries will switch to making leather for the automotive sector this year, following continuing declines in its use for shoes. Shoe manufacturers began to move away from leather when its price rocketed in 2014 but while prices had fallen to 20%-40% in the last year, few have transitioned back. The author puts this down to consumers not caring if they are buying real or artificial leather.

PAKISTAN Overseas sales of leather footwear registered sharp declines in the first five months of the financial year, July-November 2015. Leather footwear manufacturers brought in revenues of \$39.5 million, a decline of 24.6%.

US/BRAZIL The US and Brazil, two of the biggest hide exporters, have reported declining numbers for 2015, supporting theories of the declining use of leather, particularly in the footwear industry. In the first 11 months of 2015, tanners and traders in the US exported 24.5 million hides worth \$2.1 billion, a decline of 18% in volume and value. Brazilian exports of hides and skins fell 23% to \$2.3 billion in 2015, while the volume fell 4% to 33 million pieces.

BANGLADESH Bangladesh's Export Promotion Bureau has reported export revenues for the country's leather industry of \$560.9 million in the first six months of the financial year (July-December 2015), a 2% drop compared with the same period a year earlier. Leather footwear brought in export revenues of \$252 million, 45% of the total.

VIETNAM The country's footwear industry expects a 20% growth in exports this year, due to a number of new Free Trade Agreements including the Trans-Pacific Partnership. "To take advantage of those agreements, the local leather and footwear industry should prepare material at home," said Deputy Minister of Industry and Trade Ho Thi Kim Thoa. Exports of footwear grew 16% in 2015 to \$12 billion.

CHINA Footwear group Belle International is closing more than 400 own-brand stores due to declining sales. However, it also runs stores for Bata, Mephisto, CAT, Hush Puppies, Fitflop, Clarks and Merrell and it said this part of its business had recorded 16% growth in six months and it is adding 100 stores to this network.

● Around 60 shoe manufacturers in Putian have either gone out of business in recent months or have moved production to other Asian countries, according to a report on the China Leather Industry Association website.

ECUADOR As a result of a joint research project, the footwear industry in Ecuador has constructed a national safety boot that will help the country reduce the \$60 million it is spending each year on imported safety shoes and boots. The product, made with Ecuadorean materials, has water-resistant leather in the upper, an electrical-resistant sole and reinforced toe.

BRAZIL The 43rd Couromoda footwear exhibition opened its doors in São Paulo from January 10-13. Innovations included two showcases for Brazilian brands that want to increase exports. Overseas buyers travelled from 50 countries.

Footprints

'CHANGE OF PACE' FOR MILLENNIAL BRANDS

Footwear group Millennial Brands, whose labels include Rocket Dog, Kelsi Dagger Brooklyn and Pour La Victoire, has made two appointments.

Ciaran Henderson has joined as EU marketing manager, covering maternity leave for **Alison Lawton** until January 2017. He joins Millennial after spells at Wolverine World Wide and as marketing manager for Cushe.

Daniel McGinley has also joined as European head of e-commerce, after spending 12 years at apparel brand TM Lewin.

European managing director **Derek Bowen** said the recruits represent "a change of pace within the business".

EMTEXGLOBAL MAKES TWO SENIOR APPOINTMENTS

Lamination and fabric specialist EmtexGlobal has appointed **Vinny Vu** to the new position of vice-president of operations.

Mr Vu has been with the company for more than 14 years. He started as a purchasing assistant and quickly rose up to take control of all of EmtexGlobal purchasing and logistic responsibilities.

The company has also announced **Daniel White** as its vice-president of sales. Mr White has been a member of the EmtexGlobal team for more than nine years and has worked in the textile industry for more than 30 years.

SERGIO ROSSI'S NEW OWNERS NAME PRESIDENT

High-end footwear brand Sergio Rossi has named **Andrea Morante** as its president.

Luxury group Kering sold the Italian brand to private equity firm Investindustrial in December.

Until December, Andrea Morante also worked for Kering, as chief executive for Pomellato.

JIMMY CHOO TUTOR TO TEACH AT NORTHAMPTON

A footwear expert who taught Jimmy Choo, Emma Hope and Patrick Cox has



UITIC PRESIDENT SAYS INDUSTRY MUST 'THINK BIG'

World Footwear attended the 19th UITIC Congress in Chennai, India, with 'the footwear factory of the future' as the event's main theme.

In his opening address, president of UITIC (the International Union of Shoe Industry Technicians) **Yves Morin** of CTC, said it's clear the global footwear industry has "a very promising future".

He pointed out that global production reached 24 billion pairs in 2014, representing growth of 8% year on year. In the context of a world population of 7.3 billion people, this works out at an average consumption of 3.3 pairs per person per year.

Mr Morin then invited the delegates to imagine if this average of 3.3 pairs moves closer to the US average of 7.7 pairs per person. "The population will continue to grow," he said, "and we are going to have to grow global production. Changes are coming that will modify the entire supply chain, but we still have a promising future."

The UITIC Congress was co-organised by Lyon-based research and testing organisation CTC and by India's Council for Leather Exports.

joined the University of Northampton to tutor the next generation of shoe designers.

Chris Hill, who has over 30 years' experience in the footwear industry, will teach on the BA (Honours) Footwear and Accessories course.

After graduating with a degree in fashion from Leicester Polytechnic, she began her career as a footwear designer and pattern cutter for shoe factories in the East Midlands. Later she joined the staff of Cordwainers College in London, becoming its first female lecturer.

After leaving the Cordwainers, Ms Hill worked in Asia, setting up courses for the London College of Fashion and Central St Martins.

She also worked as head of footwear for Hobbs before returning to education in 2011 to head up the Cordwainers

footwear design course. Some of her more recent students have gone on to work for Alexander McQueen, Ecco and Clarks.

WOLVERINE CHOOSES SAUCONY PRESIDENT

Outdoor and sports footwear group Wolverine World Wide has named **Pat O'Malley** as the president of its Saucony running brand.

He succeeds **Richie Woodworth**, who was appointed president of the company's Lifestyle group of brands.

Mr O'Malley has more than 25 years' experience in the footwear industry, most recently serving as Saucony's senior vice-president for global product. During this time, he led the launches of the brand's Isofit collection and Everun cushioning construction. Prior to his 12

years with Saucony, Mr O'Malley held various leadership positions at Nike and Reebok.

He commented: "Saucony has a long and rich history, with a great track record of game-changing products. I am excited by the opportunity to continue the brand's success and drive growth for its footwear and apparel businesses."

AAFA APPOINTS CHAIRMAN AS CHIEF EXECUTIVE

The American Apparel & Footwear Association Board has appointed **Rick Helfenbein**, director of the US operations for Hong Kong-based apparel and footwear giant Luen Thai, as CEO.

Mr Helfenbein has served as AAFA chairman for the past two years and has been a member of the board since 2008.

He said: "Having worked in the industry my entire career, I understand the important issues that we face and will continue the fight to expand and protect opportunities for all our member companies."

ADIDAS ANNOUNCES HAINER SUCCESSOR

Adidas has named the successor to long-standing CEO **Herbert Hainer** as **Kasper Rorsted**, who will take up the role at the end of September.

Mr Rorsted has been CEO of German company Henkel since 2008 and will join the board in August to "ensure a smooth transition".

Chairman **Igor Landau** commented: "Kasper Rorsted is the perfect candidate to succeed Herbert Hainer. He has extensive international management experience, having held positions with high-calibre companies such as Oracle, Compaq and Hewlett Packard. For eight years, Kasper Rorsted has very successfully headed up Henkel, a DAX company that just like the adidas Group is known for its growth, internationality and sustainability."

HONORARY DOCTORATE FOR SHOE ZONE FOUNDER

The University of Leicester is to confer an honorary doctorate on **Michael Smith**, founder and former chairman of UK footwear retail group Shoe Zone.

Mr Smith said that he was "especially honoured" by the offer because,

although he did not attend university after school, he has lived and worked in Leicestershire all his life.

Michael Smith trained in accountancy and only entered the footwear business in 1980.

He had family ties to the industry, however, because his grandfather had been a shoe manufacturer and owned shares in footwear retail group BensonShoe.

When the opportunity arose to acquire BensonShoe in 1980, Mr Smith and his brother decided to make the investment and later went on to acquire other local shoe companies such as the Oliver Group, Shoefayre and Stead and Simpson.

The Shoe Zone name was adopted in 2000, and Michael Smith served as the company's chairman until 2014.

Shoe Zone owns over 500 stores in the UK and the Republic of Ireland, sells 20 million pairs of shoes annually and has 3,750 employees.

The Shoe Zone Trust was established under Michael Smith's chairmanship in 2005 and has made charitable donations of over £1 million.

FDRA WELCOMES OBAMA'S COMMENTS ON TPP

Shoe industry body the Footwear Distributors and Retailers of America (FDRA) has welcomed comments on the Trans-Pacific Partnership (TPP) free trade agreement that **President Barack Obama** made in his final State of the Union address before stepping down from office later this year.

In the speech, the president made a strong case for the US Congress to approve TPP in the course of 2016, paving the way for duty free imports of footwear and other goods into the US from important manufacturing countries in Asia, especially Vietnam.

"This historic, 12-nation free trade agreement will provide significant value to US footwear consumers and companies," FDRA said in a statement, "helping them save \$450 million in the first year of TPP's implementation and \$6 billion over the first decade.

"We applaud the president for using his final State of the Union address to make a bipartisan appeal on an issue that is important to the hundreds of thousands of Americans who work in footwear design, innovation, retail,

marketing, logistics, administration, and warehousing."

SPORTSWEAR CEOS LOBBY EC FOR SINGLE MARKET

The Federation of the European Sporting Goods Industry (FESI) coordinated a meeting between CEOs from Salomon, Nike, adidas and Puma and representatives of the European Commission, among them the vice-president and commissioner for the Digital Single Market Initiative, **Andrus Ansip**.

The entrepreneurs shared their requirements in terms of the digital single market with the politicians.

FESI president **Luca Businaro** said that, as FESI's members deal with a variety of cultures and member state regulations, they need to meet different requirements.

"The industry is calling on the vice-president to help the Commission to engage with our industry in terms of specific requirements and regulatory amendments," he said.

FLYKNIT 'CREATED A REVOLUTION', SAYS NIKE

Nike executive **Samy Vaikundamani** has said the company's Flyknit technology for knitted footwear uppers "has created a revolution around the entire footwear industry" since its introduction in 2012.

Mr Vaikundamani has only been at Nike for five months, but he spoke on the company's behalf at the 2016 UITIC Congress in Chennai.

He told delegates the trigger for Flyknit had come from athletes. "When they are engaged with their sport, they don't want to think about shoes," he said.

"They want to concentrate on their performance. They also wanted us to make their shoes lighter and act like a second skin on their feet, without the need for socks."

He described Flyknit as "true innovation" because the upper consists of only one component rather than the 30 or 40 you might find on other shoes. He claimed that Flyknit reduces weight by between 30% and 40%, lowers labour costs by 50% and waste by up to 80%, mostly through the avoidance of cutting waste, part of the benefit of having a single-piece upper. 🌀



Products & Services

ZDHC INCLUDES LEATHER CHEMICALS IN MRSL

The Zero Discharge of Hazardous Chemicals (ZDHC) programme has extended its Manufacturing Restricted Substances List (MRSL) to include for the first time chemical formulations and substances that it wants companies involved in leather production to avoid.

ZDHC formed as a coalition of six brands and retailers (H&M, Puma, Nike, C&A, Li-Ning and adidas) in 2011 following a campaign against hazardous chemicals in clothing and footwear by Greenpeace. It has 26 brands and organisations as signed-up supporters.

It has had an MRSL in place for textiles for some time but announced last year it would work with multi-stakeholder body the Leather Working Group to review the textiles list and adapt it for the leather industry.

SHOE DESIGN CENTRE TO BOOST JALISCO MAKERS

Mexico's second-biggest shoe-producing state, Jalisco, will open a footwear design centre next year.

The facility, which has involved an investment of more than \$500,000, will be located in the city of Guadalajara.

President of the local footwear association Salvador González said manufacturers in Jalisco have an opportunity to claim a larger share of the domestic market than they have had in recent years owing to the high value of the US dollar.

Exchange rates are making it difficult for Mexican shoe retailers to bring product in from other origins and they are looking to domestic manufacturers to fill the gap.

Having access to an up-to-date design centre will help local shoe manufacturers develop styles and attract extra interest among Mexican buyers.

BUENOS AIRES TO HOST PLASTICS EVENT

Argentina's plastics industry association, CAIP, will host the XVI



EUROPEAN SHOE MACHINERY COMPANY CELEBRATES 20TH ANNIVERSARY

The European Shoe Machinery Company (ESM), a UK-based supplier of USM and BUSM Goodyear welted machinery, is celebrating its 20th year in business at its home in Kettering.

"We are proud to support the Goodyear welted footwear industry, particularly the heritage and tradition of manufacturing in Northamptonshire," said ESM's founder, Roberto Petrozzi. "We have a real passion for what we do and feel really privileged to be working with some of the world's most famous footwear brands."

ESM offers a range of services to welted manufacturers in terms of spares, rebuilt machinery and servicing packages. In addition to upgrades, the last two years have seen the introduction of a range of Goodyear welted machines covering making-room operation, plus one in finishing.

This year, ESM is launching service and maintenance programmes to help manufacturers reduce machinery downtime. (See *World Footwear* January/February 2016).

International Plastics Exhibition in Buenos Aires between June 13 and 16.

The event will have as its theme the idea that, with plastic, "innovation and the future are sustainable".

Raw materials, rubber and finished and semi-finished plastic products will be among the segments to feature.

UNDER ARMOUR UNVEILS FIRST 'SMART' SHOE

Following significant investment in the digital fitness sphere, Under Armour has unveiled the brand's first Connected Fitness product portfolio.

The line includes SpeedForm Gemini 2 Record Equipped, the brand's first smart shoe that tracks and stores data including time and date, duration, distance and splits, and two models of wireless headphones.

CEO Kevin Plank said: "Combining the world's largest health and fitness community with the game-changing connectivity of UA HealthBox and UA Record, we are taking Connected Fitness to another level. With the HealthBox suite of products being introduced, athletes will be empowered with the information to make better decisions and ultimately enrich their lives in a way that's never been done before."

The US brand also announced partnerships with HTC and Harman International Industries.

ADIDAS UPS COMMITMENT TO RID OCEAN OF PLASTIC

Following on from a shoe upper concept made with yarns sourced from recycled ocean plastic, adidas has launched a 3D printed midsole and has given *World Footwear* further details of its partnership with Parley for the Oceans.

The shoe is not suitable for use as it's not cushiony enough, but is said to be an indication of things to come.

"We don't know how to scale up this process [3D printing], but we have to keep working on it," said Eric Liedtke, head of global brands at adidas.

The midsole is 3D printed using recycled polyester and gill net content.

It is made from a 72 km long fishing net obtained from a "pirate" fishing vessel that the Sea Shepherd ship chased for 200km.

He told *World Footwear* that Taiwan-based supplier Far Eastern New Century is making the polyester for the shoe and upcoming apparel projects with recycled ocean plastic collected on beaches and within a mile of the coast.

Adidas sustainability director Alexis Olans Haass added that recycled polyester is no longer of inferior quality to virgin polyester, and the German company is "steadily increasing recycled content".

LANXESS HIGHLIGHTS RESTRICTED SUBSTANCES

Leather chemicals manufacturer Lanxess organised a two-day seminar to raise awareness among finished product brands of the implications for leather of restricted substance lists (RSLs).

World Footwear was among 50 delegates who attended the event in Cologne and heard talks from Lanxess, with the presentations covering technologies for the preservation of hides and finished leather and the framework to make sure they are safe for consumers, workers and the environment.

Major footwear companies that were represented included Deichmann and Ara.

DWR DEVELOPMENT IS A 'MATCH FOR THE BEST'

A "superhydrophobic" nanomaterial that could simplify the process of increasing the water-resistance of footwear has emerged from a research project involving universities in the US and Europe.

A material made by scientists at Rice University in Houston, the University of Swansea in Wales, the University of Bristol in England and the University of Nice Sophia Antipolis in France is inexpensive, non-toxic and can be applied to a variety of surfaces via spray or spin coating, the team of researchers said.

Led by Rice chemist Andrew Barron, they have reported the findings in the American Chemical Society journal, ACS Applied Materials and Interfaces.

The hydrocarbon-based material could be a "green" replacement for fluorocarbon-based durable water-resistant (DWR) solutions, Professor Barron said.

"Nature knows how to make these materials and stay environmentally friendly," he added.

"Our job has been to figure out how and why, and to emulate that. In the lotus leaf, there are papillae within the epidermis and epicuticular waxes on top. In our material, there is a microstructure created by the agglomeration of alumina nanoparticles mimicking the papillae and hyper-branched organic moieties simulating the effect of the epicuticular waxes."

Fabrication and testing of what the researchers call a branched hydrocarbon low-surface energy material (LSEM) were carried out by Shirin Alexander, a research officer at the Energy Safety Research Institute at Swansea.

To be "superhydrophobic", a material has to have a water contact angle larger than 150 degrees. Contact angle is the angle at which the surface of the water meets the surface of the material.

The higher the angle, the greater the beading. An angle of zero degrees is, basically a puddle, the research team said, while a maximum angle of 180° defines a sphere just touching the surface.

The research team's LSEM, with an observed angle of about 155 degrees, is equivalent to the best fluorocarbon-based superhydrophobic coatings, Professor Barron said. Even with varied coating techniques and curing temperatures, the material retained its qualities.

MICHELIN STRIDES AHEAD WITH TECHNICAL SOLES

Michelin has expanded the number of outdoor footwear brands it is working with to four.

The company, best known for tyres, began a project to develop technical soles for footwear in 2014.

Last year, Italian outdoor brand Salewa agreed to use its technology for styles in its footwear collection for spring-summer 2016.

Now the company has signed

partnerships with Hi-Tec, Kodiak and Ride.

Michelin announced a joint-venture with Chinese textile manufacturer Jihua at the end of 2014 to make high-performance soles. The partners said they believe the footwear market is "hungry for technology".

BASF PRICE RISE COULD AFFECT POLYURETHANE

Chemicals manufacturer BASF has announced it will, "with immediate effect, or as contract terms allow", increase the price of its Lupranate TDI products by \$100 per tonne.

The price increase will apply in the Middle East and Africa, with BASF giving as the reason for the rise its desire to "restore prices to a sustainable level".

TDI is toluene diisocyanate, a core ingredient in the production of polyurethane foams.

SAZI CELEBRATES 30 YEARS IN BUSINESS

Brazilian footwear machinery manufacturer Sazi has just completed a year of celebrations to mark its 30th anniversary.

Founder Antonio Zini set the company up in 1985, renting a small space in a factory run by his brother. Now he has customers in Europe, Asia and across Latin America for his range of footwear machines, which have had energy saving as a key attribute for at least a decade.

In a statement to customers, Mr Zini said Sazi has been through a lot, but added that he'd do it all again.

AUTODESK FOOTWEAR NAMES FORUM VENUE

Software supplier Autodesk Footwear – formerly known as Delcam Crispin – has announced that the second North American Footwear Technology Forum will be held in Boston on 24 and 25 May, following what it says was a successful debut in Portland.

Topics for The Future of Making Things will include 3D printing, 3D prototyping, sustainability of materials, manufacturing, customisation and orthopaedics and scanning technology.

The event will also include foot health topics previously discussed at the Ortho Technology Forum. 📍



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.

08/02/2016

Job losses on cards as Deckers closes stores and restructures brands

05/02/2016

Asics chooses gel for revamped midsole construction

UITIC president says footwear industry must "think big"

04/02/2016

New Designers' Fair brings European, US and Brazilian designers to Chennai

03/02/2016

India can double its domestic footwear market

Chennai UITIC Congress will be one of CLE's biggest ever events

OEKO-TEX proposes chemical certification system Eco Passport

02/02/2016

IILF exhibitors up by 2.7%

Chinese snap up Ferragamo shoes

01/02/2016

Growth for Jimmy Choo

29/01/2016

UITIC Congress organisers expect a record attendance

Under Armour's Q4 footwear revenues leap 95%

27/01/2016

LWG has audited 220 tanneries

New executive committee for Bangladesh industry body

Leather MRSI must not become "gold

rush" for testing houses, Lanxess warns

Stuart Weitzman boots hitting the right note with consumers

26/01/2016

Adidas to cancel IAAF sponsorship, BBC insists

G-Star takes over design of its shoe ranges

25/01/2016

Quality and innovation are key for growing Tod's

21/01/2016

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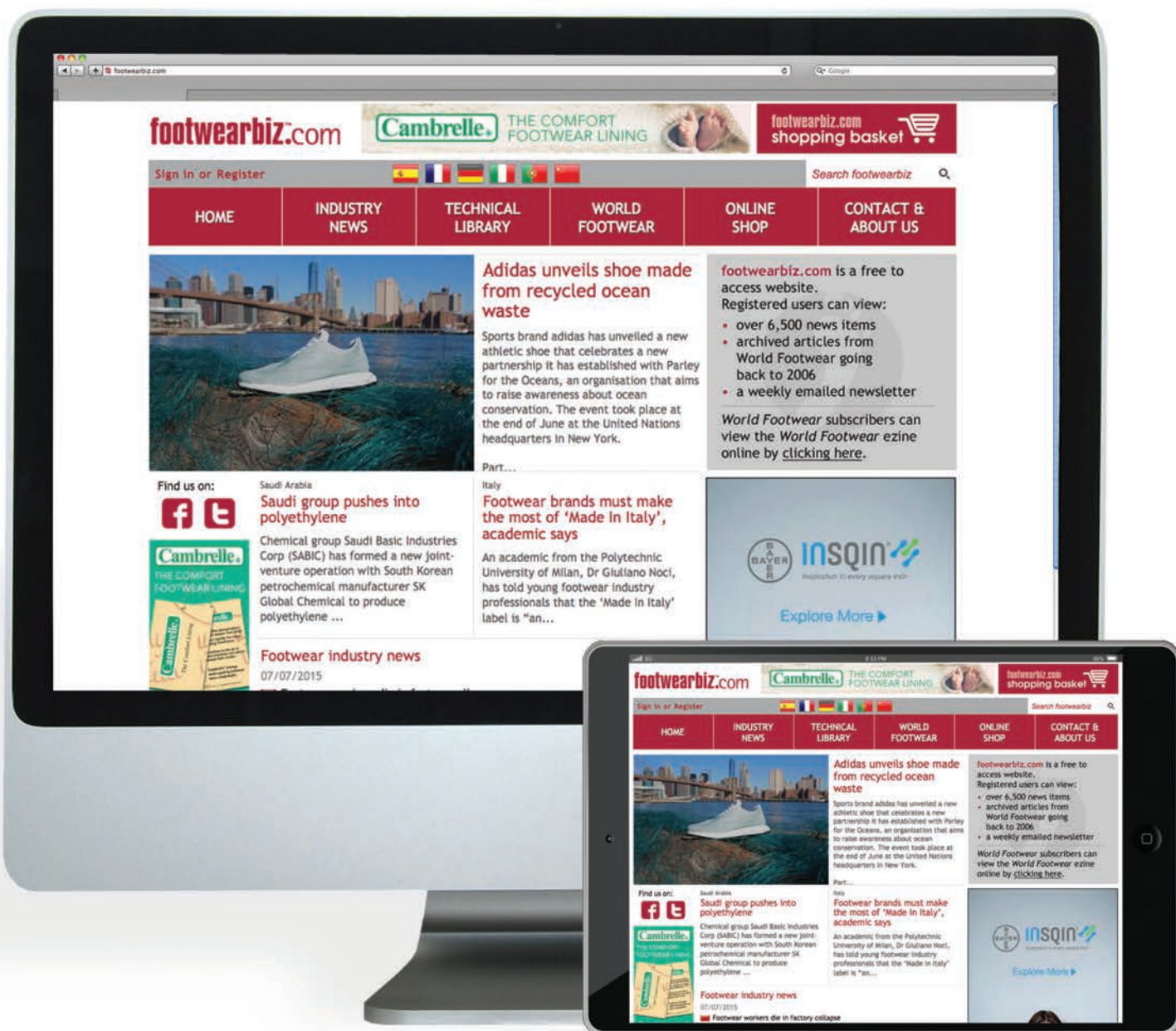
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Speedfactory will help the environment by cutting down on shipping emissions, says adidas.

CREDIT: ADIDAS

Sports brands accelerate factory turnarounds

The time when customising sports shoes becomes the norm is around the corner, according to sports brands such as adidas. The German group's first Speedfactory will be operational by the first half of this year, and will enable movement away from standardisation and into customisation. Based in Ansbach near its Bavarian headquarters, the factory will be minimally staffed, with machines making shoes with knitted uppers and Boost soles. Adidas describes it as the first step towards creating "the ultimate personalised product for every consumer".

German engineering group Manz has been enlisted to produce technology for the initiative. The design of custom-tailored shoe components, textiles and accessories will be transitioned into data which will enable them to be produced on a fully automated basis. Dieter Manz, CEO of Manz, said: "Our engineers in our 'innovation incubator' have done pioneering work in developing this technology. The automation of manufacturing and the integration of the end customer in the design of the customised final product open up completely new and innovative business models to our customers. The collaboration with adidas represents the kick-off for us in the field of additive manufacturing technologies."

The idea is that once the German factory is up and running, more factories will be established close to markets, essentially reshoring production which has all the advantages of shorter lead times and lower transportation costs – but also without the

Adidas' Speedfactory programme is gaining momentum and Nike has partnered an automotive expert to drive reshoring programmes.



Futurecraft Leather offers the opportunity for athletes to have bespoke footwear from leather of their choice.

CREDIT: ADIDAS

workforce. "Our vision is that we can bring production back to the market where the consumption is. This would mean we could produce in Germany for the European markets or in England for the English market, or in America for the American market, which obviously would give us a lot of advantages," added Mr Hainer. "This is the vision; will it be in three, four or five years? With Speedfactory, we are making the first attempts and we are working intensively on the premise that the faster it is, the better it will be."

Adidas's other partners in the project are Johnson Controls, robotic assembly expert KSL Keilmann, the Technical University of Munich's Fortiss Institute as well as the University of Aachen's ITA RWTH textile technology institute, coordinated by the German government, towards a 2020 deadline for automated production across all adidas production sites.

Futurecraft programme

Towards the end of last year, the company announced a further shift towards customisation with its Futurecraft initiative, the first product of which is a prototype shoe with a customisable 3D printed midsole, which it claims can offer "unprecedented individualised support and cushioning".

Futurecraft 3D is a prototype and a "statement of intent", launched in collaboration with 3D printed insole maker Materialise. Adidas says the idea is that consumers will run on a monitored treadmill and have their feet measured by scanners, and the insole will be printed in store.

However, limitations mean costs are prohibitively expensive, admits Mr Hainer, and the launch was merely to highlight the company's new direction. "This is such an important milestone for us in the area of 3D printing. Who would have imagined a year ago that we will be able to introduce to the sporting goods industry a 3D-printed functional midsole that will enable athletes to perform at their very best?" he said.

Futurecraft Leather, the second launch of the series, also moves towards bespoke products and limited human involvement: the shoe is made with a single piece of leather for the upper, rather than pieces that need stitching together.

Using a milling technique traditionally applied to metals in industrial manufacturing, Futurecraft Leather provides the potential to tailor leather more precisely to individual needs by creating a fit to the geometry of the foot. The digital milling process gently strips away at a single piece of leather, creating precision-engineered fit with reduced adhesive.

The third Futurecraft announcement, which it published details of in late January, is laceless football boots. The Ace 16+ Purecontrol's laces have been replaced with three "points of stability" to lock the foot into the boot. A TPU cage locks over the adidas three stripes to secure the mid foot, and is anchored by a knitted upper and an internal knitted techfit locking system.

The upper is an evolution of adidas' Primeknit technology, combining tight and loose premium knits across the boot, and the boot is "set to become one of the most iconic releases", according to adidas Football's vice-president of design, Sam Handy.

The company said it would reveal more "groundbreaking design innovations" in the coming six months.

New methods

Both adidas and Nike have been talking of "manufacturing revolutions" over the past few years, suggesting more knitted

designs will reduce reliance on Asian factories as they will need less labour – particularly important as wages rise in China, and reshoring benefits such as reducing time to market become more attractive.

Nike is targeting revenues of \$50 billion by the end of 2020, up from \$30 billion in 2015, and has partnered 'supply chain solutions' company Flextronics International "to bring advanced innovation to its supply chain".

Like adidas, it claims the project will enable footwear to reach consumers more quickly, with customised solutions and increased performance, and will bring manufacturing closer to major markets. It has been developing technologies to enhance its manufacturing business model for the past few years with investments in automation, modernisation, sustainability, and advanced methods of manufacturing such as its Flyknit.

Nike's chief operating officer, Eric Sprunk, said: "Flex's expertise in design, engineering and manufacturing in industries like automotive, medical and consumer electronics make them a perfect partner to help us revolutionise footwear manufacturing. The future of personalised, rapidly-delivered product that is made more efficiently and with less waste is well under way."

Nike is working with Flex at its California-based campus, testing automation techniques and "new ways of making shoes". Flex will be undertaking a product customisation programme near Nike's Memphis distribution centre.

Nike says a phased approach to testing, developing and creating new methods of production will enable it to develop "an eco-system of suppliers and vendors to support long-term, sustainable manufacturing closer to major markets".

CEO Mark Parker said: "Flex is already accelerating our manufacturing revolution efforts. It's in the early stages yet, but in one specific process they have combined automated material management with automated laser cutting, which can reduce waste by up to 50%."

"This is just one example of many that are in development. And what we learn from Flex, we expect to scale across our global source base. For the consumer, our partnership has the potential to expand their list of choices and accelerate delivery times from weeks to days." 🌀



Nike's latest American football boots use knitted technology to deliver a tight yet flexible fit that adapts to the foot's motion.

CREDIT: NIKE



L&Y Shoes from Guangdong province exhibiting at Expo Riva Schuh. If export markets are becoming tougher for producers in China, there is better news for those who focus more on the domestic arena.

CREDIT: EXPO RIVA SCHUH

The big news on the financial markets has been the “disappointing” growth in the Chinese economy of “only” 6.9% last year. Lower growth than in recent years, but higher than in most other markets. One exception is India, where growth rates are almost 7.5%. This is good news for the footwear industry in both countries.

Domestic growth beyond dispute in China and India

Good news about the Chinese footwear industry has been difficult to find in recent months. In December, on reporting a 5% year-on-year decline in sales in the six-month period to August 2015, Belle International announced that it will close more than 400 own-brand stores in China in the course of 2016. It's a group that has 13 footwear brands of its own, including Belle, Joy & Peace and Mirabell, and a total (before the closures) of more than 1,900 stores. Its revenues for the half-year period reported were just under \$1.5 billion. Rival group Daphne reported the closure of more than 800 retail outlets in 2015.

Factories have closed, too, especially in well established

footwear manufacturing regions such as the provinces of Guangdong and Fujian. In some instances, the manufacturers have decided to rely less on these relatively expensive areas and more on more recently set up production facilities in China's interior, but in others they have moved production to other, lower cost countries, especially Vietnam.

The consternation appeared to be compounded when, at the start of January, China's Council for Leather Exports (CLE) announced a decline of just over 5% in the value of footwear exports in the first ten months of 2015. Between January and October 2015, Chinese footwear exporters brought in \$44.5 billion in export revenues. Year on year, this represents a fall of 5.1%.

Not all bad news

Nevertheless, it would be categorically untrue to suggest that the news from the Chinese footwear market at the moment is all bad. In spite of factory and shoe shop closures, the domestic market is the source of solace, mostly because China's domestic market is enormous and growing, and online sales to Chinese consumers are more than compensating for in-store sales.

In one of the most recent reports on a Chinese leather producer for the Tannery of the Year award programme, Haining-based Dazhong Leather said shoe upper is still its core business, accounting for 50% of its output from around 3,000 bovine hides a day. Company president Xu Jian Xin explains that there are still four main production regions for leather footwear in the country: the clusters in the provinces of Guangdong and Fujian, and those around the cities of Chengdu and Wenzhou. Chengdu manufacturers in particular have experienced a downturn of more than 40% in their output of finished shoes in the last year, he says, but its decline in exports, owing to a lack of demand from customers in Russia and other parts of eastern Europe, that takes the blame. But Mr Xu makes it clear that increasing consumption rates in the vast domestic market are making up for this.

Domestic consumption up

"Across China, women are now consuming between four and six pairs of shoes and boots each per year," Mr Xu says. "For men it's two pairs. These are national averages, not just for the urban population." The CIA World Factbook's figure for the population of China in July 2015 was 1.367 billion, with slightly more men than women (a ratio of 1.06:1). Mr Xu's figures, therefore, suggest there are roughly 705 million Chinese citizens buying two pairs of shoes a year each and 660 million buying five pairs. This puts domestic shoe consumption in China at the astonishing figure of over 4.7 billion pairs. The last time a tanner in China shared information on this subject in a Tannery of the Year report was in April 2011 and the figure for overall footwear consumption in the domestic market then was



William Wong, speaking in February at the 2016 UITIC Congress in Chennai.

CREDIT: WTP

3.1 billion pairs, which was a much higher figure than influential industry reports were offering at the time. In less than five years, the total for annual consumption in China has gone up by more than 1.6 billion pairs.

Most of those 4.7 billion pairs of shoes are made in China. In the first eight months of 2015, the total volume of imported leather shoes (the most likely to be imported because there is little point in trying to compete in the Chinese market with local producers of cheaper shoes) was only 24 million pairs, according to CLIA figures. This shows an increase in volume of 22% compared to the first eight months of the previous year but if, for the sake of argument, we annualise the figure to 36 million pairs, imported shoes' share of China's annual consumption would only be 0.7%.



The Council for Leather Exports chairman describes the market potential of India's domestic footwear market as "huge".

CREDIT: WTP



Licence to sell

A halfway house between importing the shoes of major-name brands into China and working to increase the popularity of local brands is the phenomenon of Chinese-based manufacturers making locally, under licence, international brands' shoes for the Chinese market. This has been something of a saving grace for Belle International. In contrast to the own-brand store closures mentioned above, the group also runs stores in China for seven international brands (Bata, Mephisto, CAT, Hush Puppies, Fitflop, Clarks and Merrell) and has said this part of its business recorded growth of more than 16% over the same half-year period. The group will add almost 100 new stores to the network it operates across China on behalf of these footwear brands this year.

Busy marketplace

In all, then, growth in the domestic market is good news for shoe manufacturers who are producing in China, although they will have to work hard to benefit. Vice-president of the Hong Kong Footwear Association, William Wong, has his own footwear manufacturing company in China and his views on the market there carry weight. He says it's often hard to interpret the figures, but confirms that there is good growth in the domestic market now. "It's worth noting that a large number of manufacturers seem to have decided to shift their focus to the domestic market all at the same time," he says. "That means it's busy and it's difficult to carve out a decent market share. In fact, China must be one of the most difficult markets in the world at the moment because of how much competition there is."

Ambitious target for Indian industry

On the other side of the Himalayas, a similar story has been developing in India. Strong growth in the domestic footwear market there may go some way towards helping the wider Indian leather sector meet an ambitious government target of expanding the industry's annual turnover from current levels of around \$12 billion to \$27 billion by 2020. And this at a time when official statistics show a 10% decline in India's leather sector exports in the first eight months of this financial year, April-November 2015. India's domestic economy, however, is currently growing at almost 7.5% per year and spending on shoes is likely to grow in step with this.

If women in India buy two extra pairs of shoes per year and men one extra pair, the domestic footwear market in India will double to more than four billion pairs per year.

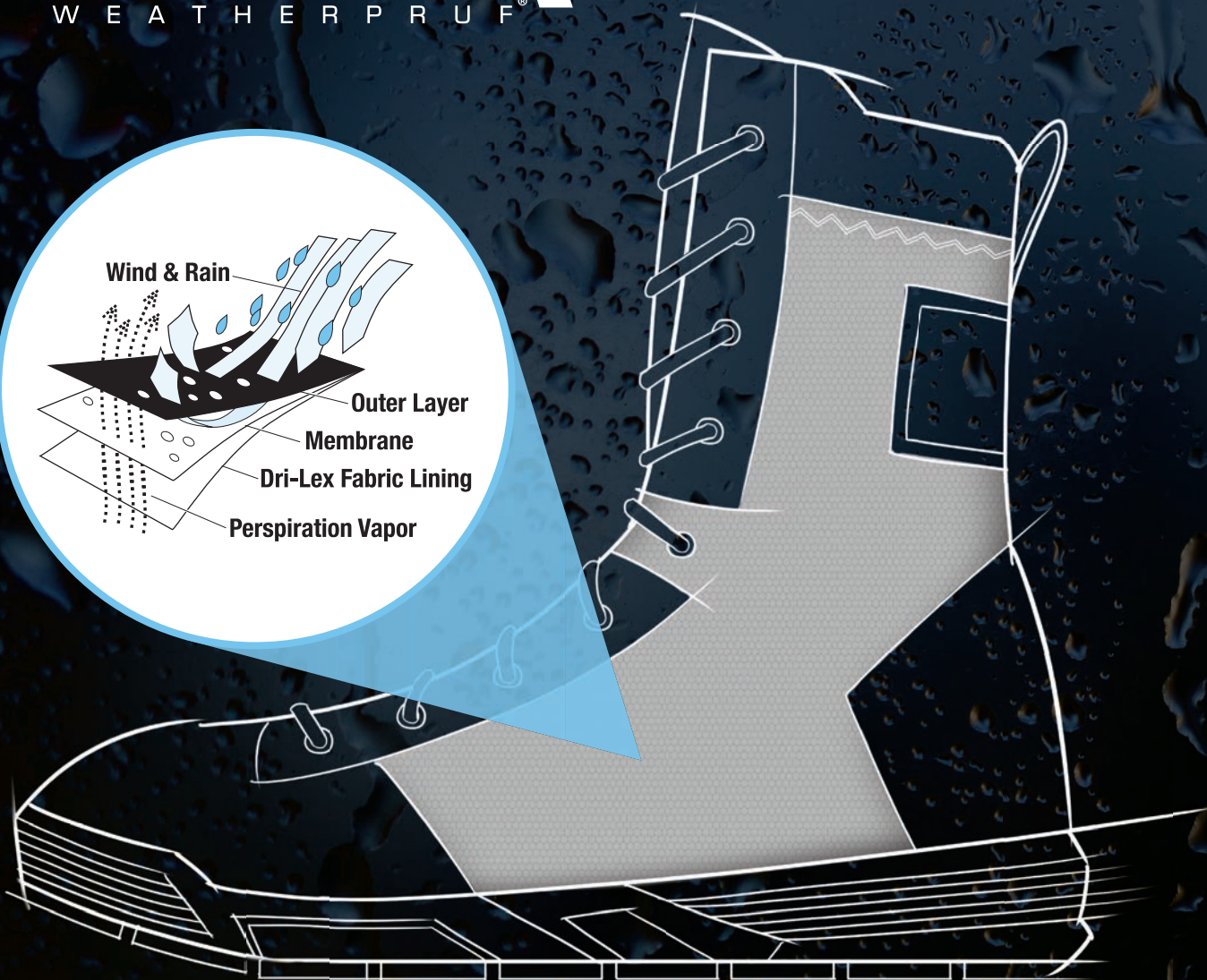
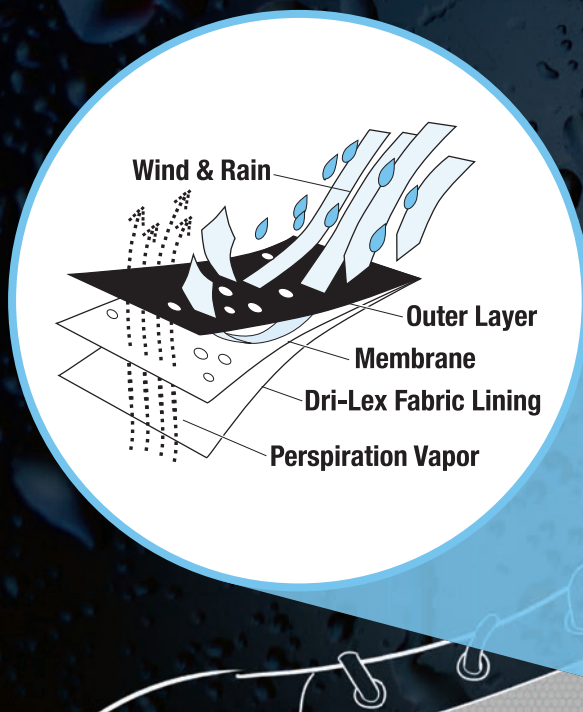
CREDIT: WTP

Double up

Naresh Bhasin, chairman for the western region of the country's Council for Leather Exports (CLE) and founder of Mumbai-based footwear producer RAM, says footwear consumption in India is "relatively low", estimating it to be 1.2 pairs per year for men and 2.3 pairs per year for women. This would give a national consumption volume of just over two billion pairs per year. The organisation's national chairman, Rafeeqe Ahmed, says the country's footwear industry has "huge market potential". Owner of one of the country's biggest leather and footwear manufacturers (and exporters), Farida Group, Mr Ahmed says India puts the domestic market size at 2.2 billion pairs at the moment with an annual value of around \$5 billion. But he says per capita consumption will increase to more than three pairs per person by 2020, taking the market size above four billion pairs.

Make in India

Mr Bhasin also believes the domestic footwear market in India can double in size quite quickly. "All we need is for men to buy an extra pair per year each and women and extra two pairs and we will have nearly doubled the total," he says. RAM, too, is a well established exporter of shoes but its founder says it is now experiencing stronger growth domestically than internationally. As in China, holding the licence to distribute shoes bearing a big brand's name is an area of particular growth and RAM is now an outsource manufacturing partner to a number of these licence holders. "Orders are going through the roof," Mr Bhasin says. "We are receiving orders for 70,000, even 90,000 pairs of shoes at a time for some big western brands for the Indian market." He also has word of a major North American footwear retail group that has plans to increase its network of stores in India from 40 to 300. He says the retail group is currently stocking its 40 Indian stores with product imported from other parts of Asia. "With 300 stores, the company knows that it will make much more sense to make the shoes here," he concludes. 📍



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A Bianca shoe designed for British dancer Hanna Cresswell-Melstrom.

CREDIT: INTERNATIONAL DANCE SHOES

Dancing shoes back in the swing

Creating a size 17 dance shoe for heavyweight boxer Audley Harrison is all in a day's work for UK-based footwear manufacturer International Dance Shoes, which has been involved with the hit TV programme *Strictly Come Dancing* since it started 11 years ago. It credits the show with boosting demand across the UK, as social dance schools report an increase in attendance when the series airs. "The numbers of competitive dancers appear to have dropped recently within certain age groups, however they're growing within other age groups so it's difficult to gauge things overall," explains IDS head of e-commerce Justin Patel. The company is among a select few UK-based manufacturers in the sector which are credited among the best in the world.

The south of England is home to a number of the world's most successful dance shoe manufacturers, including *Strictly Come Dancing* supplier International Dance Shoes and world-renowned pointe shoe maker Freed of London.

UK production

In its heyday in the 1960s, the UK produced 198 million pairs of shoes annually. By 2000, this had fallen to 13 million pairs and by 2010, to 4.2 million. However, 5.7 million pairs worth £560 million rolled off production lines in 2014 and exports from the UK have grown from 12% to 45%.

At IDS, exports make up 80% of sales and, since its launch in 1980, the family-run company has outgrown two facilities. Now based in Milton Keynes, 70km north of London, it employs around 30 in a factory and office. Its styles run the gamut of the dance spectrum, among them ballroom, tango, Latin American, smooth and brogues. Leathers come from Italy and Spain, and many of the other materials and components are sourced from other family run businesses around central England.

"A dance shoe differs from a fashion product as it's got to be lightweight but, at the same time, really supportive," explains Mr Patel. "In many designs, the shoe has to be very flexible yet well balanced. Because of this, we build our own insoles, where we use a mix of materials to create something that is going to give the dancer the ability to fully extend the foot and give them a level of support that means they have comfort and confidence in their shoes as soon as they put them on. Also, dance shoes feature a suede sole, something not found on a typical fashion shoe."

Overseas competition

Mr Patel cites UK production as huge plus for the company. While many competitors moved production to Asia in 2000s, IDS made the decision to remain in the UK and realised it could be a differentiating factor. "Firstly, we've got such a talented group of people working in our factory it did not cross our mind to lose that. Secondly, dancers learned that goods made overseas were not offering the same quality as British made goods due to the materials used. We've had so many people come to us saying that they'd bought a Chinese made shoe for £20 and either the heel broke, a strap came out, the buckle

The Bianca ballroom shoe is part of IDS's crystal collection, with Swarovski crystals. Each rhinestone is applied by hand.

CREDIT: INTERNATIONAL DANCE SHOES



Richard Lifshitz and Korina Travis, a British couple sponsored by IDS, who promote the shoes at tournaments around the world.

CREDIT: INTERNATIONAL DANCE SHOES

busted or the shoes got very smelly! Some dance teachers would say that a dancer in a cheap and low quality shoe would buy five pairs of shoes while a high quality shoe such as ours would last way beyond that. We have some customers coming back to us asking if they could repeat their order from 10 years ago as they finally think they need a new pair!"

Because of the set-up, bespoke is a big part of the offering. Dancers can select different materials of heel sizes, and have been known to send in dress fabric so the colour can be matched. "It's also a big strength in terms of service because we can turn an order into a finished product really quickly. So when an importing competitor has run out of stock and there's a two-week wait, we'll just make it within a day or two if need be."

Endorsements

Sponsoring couples is an important way to grow the brand profile as well as develop the shoes. Many of the top dancers have huge social media followings and this helps to increase awareness of the brand offers greater credibility. "Their feedback really helps us maintain our reputation. Using their feedback we've added many new features to our shoes that make them look better, feel better and last longer."

Design-wise, inspiration can be drawn from anywhere – the high street, fashion shows and television. "Working with Strictly Come Dancing has also meant that we've forged friendships with many of the professional couples, which is put to good use on Twitter and other social media platforms, especially during the series," adds Mr Patel.



Mr and Mrs Freed
outside St Martins
Lane, London, store.
CREDIT: FREED OF LONDON

Freed of London

At the other end of the spectrum and also formerly a supplier to Strictly is Freed of London, one of the world's best-known ballet shoe manufacturers. Its pointe shoes have been made in the UK capital since 1929 and were worn by actress Moira Shearer in the classic 1940s film *The Red Shoes*.

Founder Frederick Freed appealed to the dance community by offering various widths; before that, they only varied in length. His wife, Dora, formerly a milliner, altered the way they were cut and bound for greater precision, and her system is still in use today.

Outgrowing its central London premises, Freed moved to in Hackney in the 1970s and this remains the main production centre and home to 30 highly skilled 'makers'. Here, 1,000 pointes are produced each day, which equates to 75,000 standard and 175,000 bespoke shoes annually. It supplies to 90% of professional ballet companies as well as a growing number of fledgling outfits, and exports to 50 countries.

"Everything in our shoes is biodegradable, there's nothing plastic or man-made, so when the dancer heats up, the shoes do, too, and that's what makes them mobile and our shoes silent," explains senior fitter Sophie Simpson.

With a strong focus on the bespoke side of the business, many professional dancers request a certain maker for their whole career; each has an individual style and uses a unique stamp on the sole. It is not uncommon for dancers to visit the factory to meet 'their maker', who can tailor the fit by altering the amount of material or the sole to suit the dancers' needs.

Misa Kuranaga, a principal dancer at Boston Ballet, who some months uses up to 25 pairs of shoes, has a real affinity to the company. "What if I could no longer wear this brand? My world would be turned upside down!" she says. "That is how much I

rely on Freed of London in my career."

As they are on their feet for up to eight hours a day and change for each performance and most rehearsals, professional dancers use a surprising number: the equivalent of one shoe per day. According to the shoe supervisor at New York City Ballet, the company spends around \$500,000 per year on shoes. Similarly, the UK-based Royal Ballet uses about 11,000 pointe shoes each year and 2,000 men's flats, costing a total £250,000.

"Today, dancers are far more athletic so we have to make sure the shoes will work with every type of choreography," adds Ms Simpson. "You want to make sure that the shoe and the foot work as one. We see it as the only tool that the dancer has."

Diversifying

Like many other footwear companies, Freed has diversified to bring in extra revenue streams. It expanded into Latin, ballroom, jazz and tap shoes, which are made in smaller factories in Norfolk and Leicester. They are designed in-house with input from sponsored dancers, and have featured in a number of West End and Broadway productions as well as in the *Harry Potter* and *Pirates of the Caribbean* films.

The company also now offers branded dance apparel, having been bought by Japan-based Onward Holdings, an apparel sector-focused conglomerate that also owns dancewear maker Japanese Dancewear.

Both the ballet and non-ballet segments have been boosted in recent years by the number of adults using ballroom or ballet as an alternative for keeping fit, said a spokesperson. Gym chains including Virgin Active are offering Barrecore classes to increase flexibility and strength, with a growing army of celebrity

fans that reportedly includes Sarah Jessica Parker and Kylie.

In the last few years, the company has also begun to produce mainstream collections of bridal and vintage shoes, as well as ballet flats; a "natural progression", according to sales director Sharon Redhead. "We have listened to customers and are expanding to meet what has been a very high demand," she explains.

Right direction

John Saunders, CEO of the British Footwear Association, is encouraged by the recent growth in UK production, with the footwear sector as a whole making £7.6 billion in 2014 (2015 totals are not yet available). "It's a long way to go to get back to the 1960s figures, but at least it's going in the right direction," he says. "Overseas, our industry is seen as going through a renaissance, and there is more and more interest and demand for British made and designed footwear."

He points to the need for better succession planning, as the workforce is skilled but getting older, so companies need to think about attracting and training new talent. "We also need to embrace new marketing opportunities to market direct to consumers, through social media for instance, and we need to increase skills, the use of technology and to grow productivity with the use of new machinery and techniques such as 3D, CAD and CAM."

Changes to duties and removal of fiscal barriers can be taken advantage of to drive sales and encourage reshoring.

"There's a massive opportunity for us to do more here," he concludes. "Other new markets lack the skills, the heritage, the technology to make premium shoes, but we can do that." 🍷

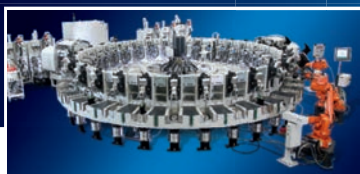


Pointe shoes are built to withstand an immense amount of pressure.

CREDIT: FREED OF LONDON

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Ergonomic fit is a prerequisite in outdoor boots.

CREDIT: KEEN

Impressions from ISPO

By Penny Leese

The once-a-year ISPO Munich sports fair is not just a trade fair, it is a meeting place, a place to have fun with physical activities and, of course, after-work parties.

Outdoor and winter sports are the main focus of ISPO, but the words 'hybrid' and 'sustainable' were key terms at the fair. Pure winter sports like snowboarding and skiing are losing no popularity, but the realisation has come that urban use can actually be much tougher. There is dirt and mud, and the items are used every day rather than just for a few weeks a year. Sports brands are widening their offer to cover this market.

Heritage

Brands with a past, especially sports shoe brands, often launch or relaunch styles from their archive. But what they choose to launch also moves with the times. A few years ago it was sneakers; now it's updated versions of simple, thick leather walking and hiking boots – but not as hard and stiff as the originals so that the boots will not need months of wearing in. These boots appeal to the urban and fashion customer, who is looking for style and quality. Lundhag's Heritage

collection consists of five modern boots with inspiration taken from the old boots in the archives in Sweden. The lasts have been updated, however, to improve comfort; the design is snuggler. The bevelled Commando outsole is slightly different from that of the original boots, too, as it is slightly thinner and more flexible, making the boots more suitable for all-day urban wear. They are made from fine-quality leather from the German tannery Heinen. The leather is all from Heinen's eco-line Terracare. Kavat, which is an old Swedish leather shoe company, was in the lifestyle fashion area with classic European-made ecological leather shoes on crepe rubber soles which are also European-made. The company's historical strength is in children's shoes, and the same styles are made in all size ranges from kids' to men's.

Ergonomic

Good ergonomic fit is expected by users. But not all users want to advertise this. Keen created a niche with its highly ergonomic shoes and sandals with their characteristic aggressive toe bumper. The company is now also making



Lundhags Heritage 2020

CREDIT: LUNDHAGS



Kavat boots

CREDIT: KAVAT

shoes on more moderate lasts, to increase its appeal to the European market. The Korean design Treksta winter collection for kids does very well in Scandinavia for two reasons. There is the Hyper Grip outsole that is non-slip rubber, and Treksta's own design. But additionally they use a special last called the "Nest" last, which is based on a real foot, with a natural shaped heel part and even toes. This gives excellent fit on small feet and means that even with a relatively smooth lining laminated to a membrane, the kids' feet do not slip up and down at the heel inside the boots.

Woolly linings

Warm woolly linings add a cosy look. Cow hair or "pony" has all year round appeal, Scarpa's shoes come in bright yellow with black Vibram soles. Even snow brands such as Fusalp had suede sneakers with white outsoles but with a cosy warm lamb lining. This is a perfect example of the hybrid looks that were all over the winter sports fair.

Vibram's Japanese concept manager Masaya Hashimoto has designed a winter version of his wrap around shoes. These had super soft thin Vibram soles in the summer, while the winter version uses a MegaGrip Vibram sole with much more tread, and a thicker insock. The PU upper has a warm pile lining, so is guaranteed to appeal to vegans, and those who want to be a bit different.

Environmental and sustainable

Greenpeace, with impeccable timing, used the fair to come out with another damning report on waterproofing and the chemicals used in sports goods. The items tested were chosen by public vote. Clothing, tents, backpacks, sleeping bags and shoes were all tested for perfluorinated compounds (PFCs).

They were found in all seven of the shoes tested. And in most shoe samples, volatile PFCs were found in higher concentration than in other product types, Greenpeace said. The Columbia sample had high levels, while two footwear samples by Mammut and Haglöfs showed a wide range of



Vibram's Japanese concept manager Masaya Hashimoto shows off their Furoshiki wrap around boots.

CREDIT: VIBRAM

PFCs. The Haglöfs sample had the highest perfluorooctanoic acid (PFOA) concentration by square-metre.

This is a difficult subject because consumers now expect their boots to be totally waterproof and breathable. Footwear of course gets the harshest treatment by users so it is clear that companies specialising in this area have a challenge. There are several different treatments to keep out the water, from coatings to laminates, to membranes. Greenpeace focused on durable water repellent (DWR) treatment or fluorocarbon polymer membranes. Footwear companies are now much more aware of the environmental effect they make, and the publicity too.

Sympatex launched its all-season laminate at the fair, with a lightweight hardwearing knitted upper where the Sympatex membrane is bonded directly to the upper, which is seamless.

Plasmaguard technology is a nano-coating that combines water repellency with "outstanding breathability". It uses fewer chemicals, and claims that one kilo of Plasmaguard replaces five kilos of DWR coating materials, more than 115 litres of wastewater, more than 80 kilos of CO₂-equivalent and the use of other crosslinking agents, chlorides, formaldehydes and other toxic wet chemicals. Plasmaguard technology is used by sporting companies such as Asics and O'Neill. The application is used in sports clothing where waterproofness is paramount. Waterproof technologies where environmental damage is reduced as much as possible is the direction that many high-tech companies are going in.

Recycling and remaking your shoes is a theme that Vibram has been running for a while. The company has a tour bus where boots and shoes can be resoled with a Vibram sole to create a totally new look, and to help the environment too. The bus travels round to the various shows like ISPO and Lineapelle to promote Vibram's soles, and the fact that the company is helping the general public recycle and reuse their old footwear. Even the stands at the fair considered the environment. The look generally was untreated wood, rusty metal and clean lines. The Vaude stand for example had no carpeting, avoiding 2,200 square-metres per year. The wood the stand is made of is FSC-certified untreated ash. All metal components had a solvent-free surface. Daylight lamps save 80% energy.



Icebug's award-winning BUGweb RB9x multi-functional trainer.

CREDIT: VIBRAM

Winter safety

Soles that do not slip on ice have been around for a while, in different technologies. Now the trend is becoming mainstream as it has been taken up by major shoe companies. Vibram's Arctic Grip sole is being heavily advertised in the trade press worldwide for winter 2016, in collaboration with Merrell on its ICE+ series. Since the sole is rubber and has no abrasive material or sharp objects it is not going to damage soft wooden floors (as can happen with studs or glass particles): the outsole also has a thermo-chromatic plug that changes colour from white to blue when the temperature reaches freezing point. The technology is exclusive to Wolverine through winter 2017.

Icebug of Sweden's designers won an award for a newer version of their non-slip sole system, the BUGweb. Their hybrid suede chukka boot on a sporty sole has a clean look, ideal for all seasons but can be converted into an "ice fighter" with the addition of placing a stretchy (removable) soft rubber web around the sole so that the boots are safe on ice. Since the web wraps round, it also protects the toe and heel area as well. It is interesting that the more urban boot won an award at ISPO, since the company had expected greater interest in the pure outdoor running shoe. This just demonstrates that the line between sports and casual is blurring more at ISPO.

Of course, some of the more classic brands still use the claw system, where there is a metal grip in the heel that can be opened or turned over to show studs or claws, and be closed again on smooth surfaces or indoors. It is not just ice that can be difficult in winter time, but snow too. Meindl's hiking boots use their own designed Vibram IceTrek PRO sole with pyramid construction lugs for grip in soft snow and concave exterior lugs for better side grip.

Being seen in poor light is vital in winter. Both reflective and luminous effects are used on jackets and footwear. The theme now is not just to have placement strips of 3M. The designs are integrated into the footwear. Northland won an award for its luminous trail running shoe. The Vibram sole gives traction in rain or mud. The upper is made of highly reflective mesh, and has the added advantage that the luminous outsole increases visibility in poor light. Viking's new Boa Technology boots might look like a regular black boot, but the upper incorporates reflective material, so the boots are safe without being garish.



Reflective footwear by Northland.

CREDIT: NORTHLAND

Slimmer and lighter

Shell boots are getting lighter, with lightweight rubber or EVA shells. Rubber boots weigh less too. Viking has launched rubber boots for kids with soft and light neoprene shafts. The idea of the neoprene shaft is not just that it is waterproof, but the fact that it insulates too.

UGG boots and moon boots are both having a revival, but in the shorter versions. Original moon boots were double sized and had no difference between left and right. The sports fashion from EA by Armani has sequin moon boots with more fashionable left and right foot lasts and feminine oval toes. Generally the look is moving away from heavy and bulky boots especially for women. Slim lace-up boots below the knee and a slimmer almost jogging shoe last are perfect for after ski and city streets. Versions were offered by Merrell, Helly Hansen and Viking, to name just a few.

Trendy kids

Rather than colourful cross trainers for everyday wear, many kids prefer simpler shoes like Nike Free and adidas Yeezy. They are wearing Vans and Converse even in winter. This has led to companies like Viking, Kamik and Reima broadening their kids' ranges by including winter boots on a sneaker-inspired sole with a good tread, waterproofness, and warm linings.

The Reima sole has a "happy face" on the bottom. The parents can measure their kids' feet on the sole and there is a curve in another colour in the toe area, showing where the child's toes should stop, to allow room for growth when they buy the shoes.

Innovations

Innovations at ISPO are not always restricted to winter sports. The Ballop Aqualander from Korea showed innovation with its aquasocks that were combined with a forefoot paddle – rather like a duck's toe on the top of the foot.

The next ISPO is held in Munich in January 2017. 



Reima kids boot with sneaker inspired outsole.

CREDIT: REIMA

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More than one choice

Opec, the oil producers' cartel, recently claimed that its battle with North American oil producers is going in its favour. Its policy of flooding the market with oil in order to drive out shale oil producers has sent the price of crude to below \$30 per barrel, a level at which most American fracking operations are no longer viable. Opec has also said that 2016 will be a supply-driven market and one when a rebalancing process will begin. "After seven straight years of phenomenal non-Opec growth, 2016 is set to see output decline as the effects of deep capital expenditure cuts start to feed through."

A study by UK business analyst Wood Mackenzie has calculated that 68 'mega projects' representing \$380 billion of investment have been either deferred or abandoned. It has nevertheless been more of a struggle than Opec anticipated as, although the number of US on-shore oil rigs has fallen by around 65% from its 2014 peak, improved efficiency has meant that output has remained relatively stable. However, output from shale wells tends to fall by up to two thirds during the second year of operation and, with investment so sharply reduced, there will not be enough new ones to compensate. So where does all this leave the footwear industry?

LEATHER ON THE BACK FOOT

The demand for leather in general is substantially lower than it has been for quite some time. The reasons are many and include a slowdown in the consumer market in China, financial problems in countries such as Brazil, sanctions against Russia and the consequences for many of their main trading partners. However, there are around 8 billion people around the globe whose spending power is increasing and, while they may not be buying products made from leather, they are buying them made from alternatives.



CREDIT: PHILIP LANGE/SHUTTERSTOCK

Most leather demand is dominated by mainstream fashion and a small number of retailers selling essentially the same style, just changing the brand and the label. Leather is now in competition with alternative products that are more competitive and only the high-end segment can escape this. The main reason that these alternatives have become so much more commonplace is due to the exaggerated price levels that previously existed in the leather market up to early 2015. The dramatic reduction in the price of oil over the past twelve months has only served to make synthetic alternatives ever more attractive in spite of a substantial drop in the cost of leather during the same period.

Fashion has not helped either. There have been plenty of leather 'look-alike' products, but not made from leather and no one seems unduly concerned about that any more. There no longer appears to be an image problem. Nobody looks down on someone for wearing a leather substitute and although most of the alternatives are oil-based materials, not even the environmental factor is mentioned. The most recent further falls in oil prices are only serving to exacerbate an already tough position for leather as a shoemaking material.

POSSIBLE CHOICES - SYNTHETICS

2016 promises to be a difficult year in many ways; it has certainly opened with great uncertainty on so many fronts. As far as footwear is concerned, people will nevertheless still require shoes as they have always done and, regardless of fashion, most will want them to be as cheap as possible. Nothing changes in this respect. To meet this demand, manufacturers have two options, the first of which is to ride the tide of cheap oil while it lasts and use alternatives. Using synthetic upper materials can be seductive as in many ways they are easier to use than leather. They have uniform known properties, require less skill in cutting and lend themselves perfectly to all forms of automation.

However, if used for any length of time, they can lead to a de-skilling of operatives such that it can create difficulties should it become necessary to revert to using leather for whatever reason. One instance would be if the

price of oil returns to a level where leather was once more competitive. Some forecasters are already predicting that the price of oil could bounce back to \$100 per barrel in the not too distant future on the back of a reduction in output. The main reason it is so low in the first place is due to deliberate overproduction by Opec and the resulting loss of revenue has hit many members without the huge cash reserves of Saudi Arabia. When the price of oil starts to rise – and it could well be sudden and dramatic – the cost of leather alternatives will rise quickly.

ANOTHER OPTION

The second option is to consider using 'split' leather. The split market has been in a weak state for a long time with some prices down two thirds from levels a year ago and, even at that price, demand is not getting any better. Indeed, it has been said that there are far more splits leaving the splitting machine than are sold. One must therefore assume that there is either a huge global inventory or that because splits are taken at the early liming stage in the tanning process, much of this material is going into biodigesters to produce energy which is neither an economic or worthwhile usage of a product that could have so much more potential value.

Split prices should now be so attractive, even when compared to many alternative synthetics, that they are a serious proposition as a means of achieving a lower price point while still producing shoes with leather uppers. Indeed, the enormous inventory of unfinished split leather that exists

globally coupled to its low price would seem to be an opportunity not to be missed, especially as this low price level is likely to remain for some time to come. Splits can be coated with attractive polyurethane finishes that are both hard wearing, easy to clean and, to some degree, breathable.

One area where splits really score, however, is in producing suede leather, something that is difficult to do using synthetics. Whilst a very good nubuck effect can be produced using micro fibre, a sueded finish cannot be achieved using synthetics as they lack any surface fibres that can be raised.

Splits, on the other hand, have had the top grain layer of the skin removed leaving the fibres of the corium exposed. It is then a simple matter to raise the topmost fibres by roughing the surface to produce a suede leather. Naturally, the better the quality of the hide from which the split has been taken and tightness of the fibre structure, the better the quality of the final finish and the actual strength of the material itself.

The fashion industry could of course play an important role here if it really pushed suede as a major fashion trend. Consumers will generally adopt a fashion if it is sufficiently well promoted and especially so if given prominence by popular celebrities. There have been hopeful signs during the past year in the form of suede skirts and tops, plus a few boots. A really concerted push for suede footwear during 2016 would not only bring a major new look to fashion footwear but also help solve a major problem for the leather industry and all at a good price point. 📌



More suede shoes would mean less wasted splits.

CREDIT: THE MICAM



Split leather

- some basic facts

Animals are three dimensional so when their hide is removed it is not completely flat. Neither is it uniform in regard to substance or texture in every part. Not only is the hide fully contoured to the shape of the living animal, some parts such as the belly area need to stretch far more than along the back as the animal moves around. The former is therefore more elastic, while the latter is thicker, denser and has less extension.

Hides are also uneven with regard to substance. The areas around the belly and into the legs (shanks) are much thinner than those of the back and neck. Raw cattle hides can in fact vary between 3mm to 8mm from belly to butt on those taken from cows and as much as 4mm to 12mm on the much larger steers. If material of this thickness and irregularity was turned into leather, it would be of very little use for most applications including

shoemaking. Excess material is therefore removed from the flesh side to leave a uniform substance hide ready to be further processed into leather for whatever end use is intended. The material that has been removed can also be finished into what is referred to as 'split leather'.

BASIC TANNING

The first stage in the tanning process is that of liming to remove any hair. This also causes swelling and an opening and separation of the fibre structure which, in turn, encourages the hide to become flatter. It is followed by fleshing to remove unwanted membrane-like tissue from the flesh side of the hide which restricts movement, especially in the extremities such as bellies, shanks and the neck. The next stage is to split down to a set overall substance (*Figures 1 & 2*). This is followed by deliming to remove residual components from the

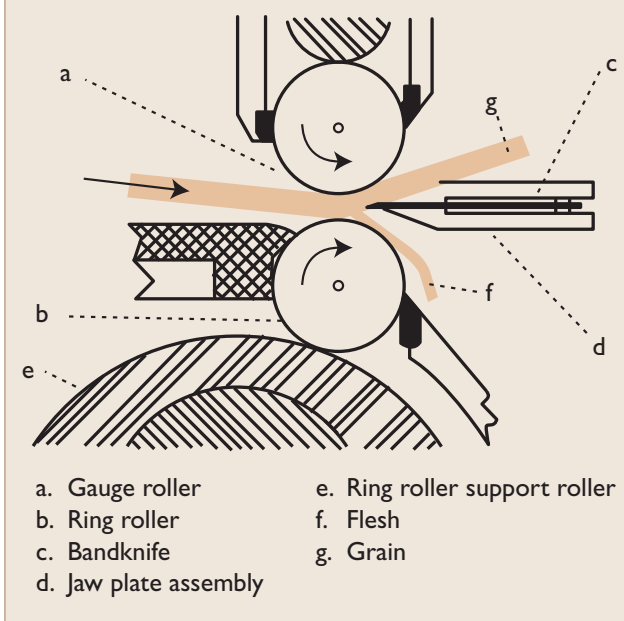
liming process.

If we compare the total hide substances previously referred to and those normal for the finished leathers used in shoemaking of say 1.2mm to 1.8mm or even 2.0mm, it becomes obvious that the amount of material that has been removed can be quite extensive.

Hides are bought in terms of weight whereas finished leather is sold by area, so tanners must convert as much of the total hide into saleable material as possible. This surplus material has long been further treated to produce 'split leather' which can be used for various consumer products including footwear, particularly when it has been given a sueded finish.

The main drawback with finished splits is that they have less physical strength than the actual upper leather which has retained the dense outer grain surface, but also part of the

Figure 1 – Splitting the hide to substance.



use of a suitable backer to add a degree of reinforcement. As far as tensile strength is concerned, the better the quality of the original hide in terms of its fibre structure, the better the split that is taken from it will be, particularly in terms of tensile strength.

Substance has a similar effect and, generally, it is advisable to use as thick a split as practically possible. In the case of suede splits, this also helps to give the material a 'rounder' feel. In the case of splits that have an imitation grain applied – usually by laminating on a pre-finished polyurethane skin – some extra strength can also be provided. Suede splits can also have some stiffening added to the underside at the tannery; this used to be called 'moss or mossed suede' from the earlier use of a paste made from Irish moss to stiffen items of leathergoods.

REINFORCEMENT

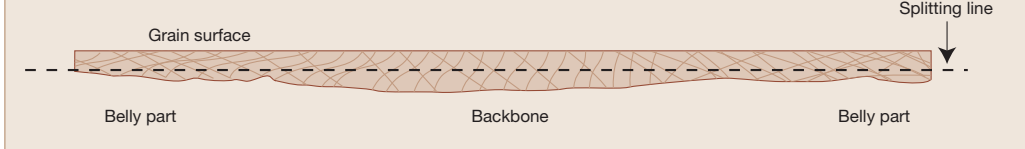
Tensile strength as well as controlling stretch and assisting shape retention can also be increased by using a more substantial reinforcement backer, that gives the right balance of properties. Swansdown woven cotton has long

been the traditional choice where the fine raised pile provided strength with a relatively soft feel. Nowadays, better options are jersey knit cottons (particularly on boots when pre-

shaping is called for) or non-wovens where polyester, polypropylene and nylon are used in a variety of formats depending on the final result required.

Toplines should also be well reinforced either by using an edge binding or by incorporating a topline tape on folded edges. Topline tapes fall into two distinct types; the narrow nylon or polyester braids inserted during thermo topline folding, which are very easy to use, or the wider adhesive coated cut tapes which are applied before folding and can be pre-tensioned to counteract stretch on the folding machine. 🔴

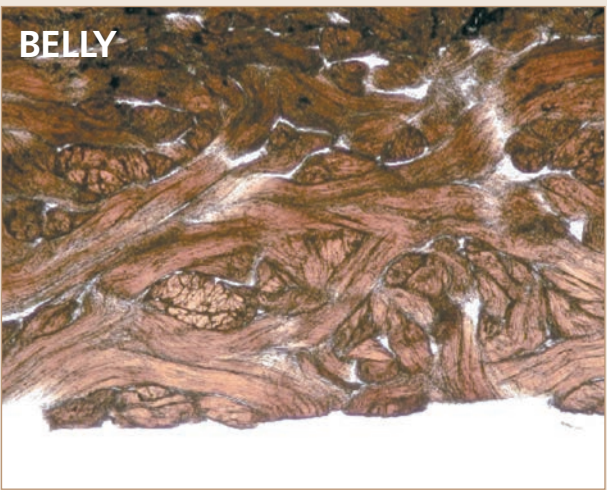
Figure 2 – Effects of splitting to substance.



stronger fibre structure that lies directly under it. It is also the case that the belly and shank parts of the total fibre structure of the original hide is also at its weakest or most stretchy (Figure 3). Splits must therefore be extensively trimmed to remove all such material to leave only the best material lying across the back. When further split to a final substance they are referred to as 'butt splits'.

Splits do have some plus points however in that they are easy and economical to cut, and also very easy to last provided they are not overstretched in the process. This can be avoided by carefully controlling machine settings and the

Figure 3 – Comparative fibre structures. Those in the butt area are clearly tighter and more dense those in the belly.



Dr Gunter Pauli.

CREDIT: BLUESIGN TECHNOLOGIES



The blue economy - an alternative strategy

A change is beginning to take place not just in business thinking but also in business models. One of the pioneers of this is serial environmental entrepreneur Dr Gunter Pauli, founder of Zero Emissions Research and Initiatives and author of 'The Blue Economy' in 2009 (revised as 'The New Blue Economy' in 2015) highlighting 100 innovations he believed could generate 100 million jobs in ten years. 'Blue' because he considers 'green' does not go far enough.

Concerned about the high unemployment he feels globalisation has caused, his main aim is to find ingenious entrepreneurial ideas that use, in the most sustainable way possible, resources we already have around us, put these ideas into practice, add value and create millions of jobs.

He says he has fallen short of his original plan, having generated from the first round of ideas 'only' 3 million jobs (and \$4 billion in investments) from

200 projects. Underpinning all of them is the idea of using as fully as possible, but always in the most sustainable way, the materials and resources we have to hand; as for example the leather and footwear industries.

For as long as people on earth want to eat meat, the leather and footwear industries will have a strong claim to be a fine example of how the Blue Economy can work, taking another industry's waste material and adding high levels of value to it, while creating employment for thousands of people around the world.

Dr Pauli's inventiveness has been evident ever since he left university. His first big breakthrough was at Ecover, now a global brand with a wide range of 'green' detergents, which he helped to rescue from financial difficulties in the 1980s and for which he left an eye-catching environmental legacy. Green thinking was, however, never really enough and in 1994 he set up Zero Emissions

Research and Initiatives, a diverse group of thinkers and doers. ZERI is a network of researchers, searching constantly for what the founder calls 'very pragmatic solutions to things that we know can be solved now'.

BRAINWASHING

In December 1997, following the third United Nations Climate Change Conference (COP3), he was given the task of drawing up a business model that would be in keeping with the Kyoto Protocol, the treaty that came out of COP3 committing governments to reducing greenhouse gas emissions. "When I made my presentation, there were four people in the room, me included," he says now. "No one was interested in changing the business model. You can change technologies and processes, but what is really required is a change in the business model.

"We're brainwashing all these MBAs to think in exactly the same way. Core

business with core competence, lower marginal costs, high productivity, low labour costs, just-in-time and economies of scale and, of course, great supply chain management. That's what we've all been doing for 30 or 40 years and the result is that we have massive youth unemployment and communities that are dying because everything is globalised."

JOB GENERATION

He estimates that during the course of the next 20 years, there are only ten countries that will generate net jobs. "That means the other 206 countries in the world will be losing them. Welcome to the world of globalisation." He reiterates that what is required is not a different way of conducting business in the same old way, but a new logic. Companies have not just to come up with ideas, but to do things to add value; so much value that they will out-compete everyone, but not on cost. His latest book 'The New Blue Economy' highlights 200 blue economy projects that have already been implemented. He insists, however, that this is only scratching the surface of what is possible.

He feels a truly green economy that is 'good for the world and good for



Key to the Blue Economy is using resources we already have around us to add value.

CREDIT: CONSORZIO VERA PELE ITALIANA CONCIATE AT VEGETALE

business' has struggled to break through in more established economic environments because green products are too expensive. "What's good for us should be cheap or free. What kind of economy is it if what's good for us is

expensive and what's bad for us is cheap? This is madness, but is also why business schools never invite me to give talks to their students, and they're right not to because I exist to upset their way of doing things."

Thistles—the cheapest raw material in the world.

CREDIT: A LESIK/SHUTTERSTOCK





CHEAPEST RAW MATERIAL

One of the projects he is currently involved in is Novamont in northern Italy. Its mission is to develop materials and bio-chemicals through the integration of chemistry and agriculture, by starting up state-of-the-art biorefineries in agricultural communities. It wants farmers to be able to make the most efficient use possible of all their resources throughout the entire life cycle, generating social, economic and environmental benefits.

Novamont refers to its biorefineries as 'third generation', meaning they are dedicated to the generation of high-added-value products such as bioplastics from biomass. One of these facilities is in the north of Sardinia on the site of a former petrochemical plant that was processing two million tonnes of petroleum per year to produce 700,000 tonnes of chemicals which Novamont says was not resource-efficient. It decided to use thistles instead.

"There are 360,000 tonnes of thistles in Sardinia alone because the EU has been paying farmers not to farm and what you get when you don't farm is weeds, including thistles. The thistle is the cheapest raw material in the world as you don't have to plant it, or use

Tanners in Tuscany preparing hides for tanning. Dr Pauli wants to see a regeneration of artisan industries that use natural materials.

CREDIT: CONSORZIO VERA PELLE ITALIANA CONCIATE AT VEGETALE

pesticides; the only thing you have to do is harvest it. Shale gas will never compete while petroleum is a joke."

Novamont's thistles are yielding lubricants, natural herbicides with commercial value and, also, polymers. Waste from the thistle-refining operations is 20% of volume, but, unlike waste output from most chemical plants, it can be used in animal feed. The company has now taken over six former petrochemical plants in Italy and is raising the investment needed to transform them all into third-generation biorefineries that will bring benefits to all, while employing people at unionised European chemicals industry rates. Its costs are a tenth of those of other industrial biotechnology companies.

ROCK, PAPER, VALUE

Another venture is stone-paper or paper made from 80% stone and 20% polymers that Dr Pauli is also seeking to make from thistles. As Europe showed no interest in the idea, a factory in China will make one million tonnes of it, a figure he wants to reach 25 million tonnes a year eventually. This would

offer substantial savings in water compared to conventional paper production, which he says requires 60 tonnes of water for every tonne of paper produced. The new process uses no trees or water and the paper is recyclable for ever. "People say this is fantasy and simply don't believe it's possible; that's how stuck we are in the business models of today."

Using coffee waste to farm mushrooms is yet another off-the-wall concept. ZERI has helped set up 3,000 farms producing mushrooms in coffee waste. The network's founder says he thinks this is a failure. "We should have 500,000 farms, Nestlé produces millions of tonnes of waste from its instant coffee production. That would make millions of tonnes of mushrooms and Nestlé could generate 600,000 jobs." The global market for mushrooms is anticipated to exceed \$50 billion by the end of the decade.

Singtex, a Taiwanese technical textiles manufacturer launched S-Café in 2009, a yarn that includes recycled coffee grounds, which it says imbues textiles spun from the yarn with odour-

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control, quick-drying and UV protection properties. ZERI projects that S.Café has inspired include coffee-enhanced nylon 6 for carpets to make rooms odour-free, polyurethane in refrigerators so that they absorb odours and paint that scatters UV. Dr Pauli says that adidas, Puma and Patagonia have all seen the possibilities of putting coffee-enhanced yarns into their clothing and possibly footwear. Chemicals from thistles, paper from stone and food from coffee waste are all examples of what can happen in a circular economy.

CHANGING THE WORLD

Dr Pauli admires natural things. For instance, he regards leather bags as being humankind's greatest ever invention. Not because bags now constitute an industry worth billions, but because having bags fashioned from animal hides in which to store food enabled our early ancestors to collect and transport (hands free) 15 times more food than it's possible to eat in one day.

He also likes silk and wants to push global production to one million tonnes per year from current levels that are closer, he claims, to 100,000 tonnes (up-to-date figures are hard to come by but during the United Nations Year of Natural Fibres in 2009, it was said that global production had been 100,000 tonnes in 2000 rising to 150,000 in 2006). He admires its renewability and natural antimicrobial properties and bemoans its substitution by synthetic materials derived from petrochemicals.

"We need artisans," he says. "Sometimes people say there is no demand any more for what artisans can do, but let's generate demand. It is just a question of communicating. Let's regenerate a culture of artisans using natural materials. Consumers can be transformed into agents for change."

He wants consumers to get behind a new initiative he supports in Peniche in southern Portugal, using ultrasound on specially equipped fishing boats to pick out from every catch any female fish carrying eggs and returning them to the sea. The boats produce air bubbles that make fish in the vicinity float towards the surface, where they are pulled into the hold by suction.

The boats are energy-saving and employ twice as many people as before and make three times as much money,

DANDELION RUBBER

Many others are also seeking alternative raw material sources that tap into hitherto unused natural resources. Alongside some of the world's biggest tyre makers, US-based rubber developer Yulex is also looking into using latex from the roots of the Russian dandelion and its domestication is under development at its US facility.

The over reliance on the South East Asian countries for natural rubber means the crop is susceptible to disease. Hevea in Brazil, its native country, is prone to South American leaf blight meaning the country now only produces 1% of the world's rubber. Early results suggest dandelion rubber could be on a par with hevea rubber in terms of performance but it is likely to take several years of development before it is fully commercialised and appears in footwear.

he says. Extra jobs have come from carrying out filleting, quick-freeze processing and extraction of most value-add products on board. Saving skins for making fish leather is not part of this yet, but could be one day. "Fish skins make great leather of course. However, the key is to save all females with eggs."

He insists that the fishermen of Peniche will only ever be at sea for 12 hours at a time and will always sleep in their own beds. "We need fishermen, but we can't consign people to a life that feels like slavery." The EC refused to give this proposal the time of day, saying that all it wants is to put in place quota policies that work. The Moroccan government on the other hand has

apparently shown substantial interest.

Dr Pauli claims that while the blue economy has ethics at its heart, it nevertheless points towards better productivity, cash flow, jobs growth and innovation. "It's got everything. When people carry out projects of this kind, they feel good. We need the transformation. We cannot have an economy in which 40% of the people on earth have to subsist on \$3.50 per day or less. We are fooling ourselves if we think that's enough. We need a re-industrialisation. We need to rethink industry. We need industries that have the capacity to create value with what we already have around us. We don't create value by hedging foreign exchange risk, even if there are people who can make \$10 million in a split-second by doing so; it does nothing to circulate money in local economies, which is what we need if we are to change the world."

Dr Pauli makes some cogent observations and it is clear that some of his ideas and ZERI's projects while sounding somewhat far fetched, do in fact work. His main problem however is that of every other prophet throughout history; convincing sceptical and risk averse people to change their way of thinking. Faced with the global problems that now exist in so many areas, it is indeed perhaps high time there was a change of direction – however challenging that might be to the vast majority of current thinking. 🌀

Fish leather sneakers from Mors Footwear. Skins are one of the potential value-add products from the Peniche fishing project.

CREDIT: MORS FOOTWEAR





UITIC's Footwear Congress was held in Chennai, India
CREDIT: WTP

19th UITIC Congress

The 19th International Technical Footwear Congress of UITIC (International Union of Shoe Industry Technicians) was held in Chennai, India at the end of February and attended by some 170 international delegates from 28 countries. Organised by UITIC in conjunction with the Council for Leather Exports (CLE) India, the theme for this Congress was the Future Footwear Factory.

The general introduction for this conference was made jointly by Jayne Esteve Cure of Jayne Fashion Agency, Paris, and Sergio Dulio, head of research and innovation at ATOM Group. Between them, they demonstrated just how demanding consumers are becoming and the effect this will have on footwear manufacture in the future.

The modern fashion consumer increasingly expects to encounter a personalised and seamless purchasing process whatever the retail channel. He or she loves fashion and particularly shoes they buy increasingly online. They are however, also drawn to physical stores that provide both an interactive and fluid process that optimises the in-store customer experience.

Jayne Esteve Cure says, "Brands therefore need strategies that aim to achieve a 360° customer relationship and experience. In this context, brands are challenged by the need to redefine the contours of the type of relationship they

want to build with their customers and develop means and actions that will enable them to enrich their commercial performances."

They will need to place consumers at the heart of a multi-channel strategy to establish a more direct relationship with them. Both physical stores and digital channels will putting them at the heart of the strategy. Success in the store will come through adopting a 'personal shopper' approach so trained sales teams become the best possible ambassadors for their brand and capable of optimising customer experience to the full.

If dealing with new consumer habits and trends and new purchase attitudes will pose major challenges to fashion and shoe brands in the future, they will also have an equal effect on manufacturing as we know it today and on the way shoe factories will look in the future. Such a change will create an 'on demand challenge' where consumers with fast changing desires and a growing sustainability push will call for a capability to produce only what is really needed, with limited waste and low energy consumption. Factories will need to be transparent places where consumers can see the value of what they buy.

They will also have to be attractive places in which to work; healthy and safe, where workers are offered rewarding jobs with repetitive and alienating ones

left to machines. . These will become common sights in the "glass factories" of the future.

And finally, additive manufacturing and 3D printing have the power to revolutionise manufacturing in its entirety by enabling consumers to create their own products such that they become a new breed of worker who is, at the same time, an informed and aware consumer. Barriers fade away in a continuum that will have profound effects on companies and factories.

Originally established in 1972, UITIC is active in 27 countries. Its membership is composed of experts and technicians from associations, research centres and private companies covering all aspects of the industry. Its aim is to develop technical knowledge within the industry by organising international conferences and facilitating the exchange of information on new ideas and technical innovations between members.

UITIC's conferences are recognised as being of great benefit to the industry and feature serious and thought provoking papers for further discussion and development. As only a limited number of people from the industry are able to attend and hear them at first hand, World Footwear has selected two, with the generous assistance of the authors, as the basis for articles in this issue.

More will hopefully be published in future issues. 📌

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This article is based on a paper prepared for the 19th UITIC Congress by SATRA's John Hubbard which outlines some benefits in terms of sustainability that can be gained in footwear manufacturing by the adoption of some of its specialised management systems.

Sustainability benefits

Many retailers are now in the process of 'greening' their supply chain and are looking at using suppliers who not only meet their quality and time scale requirements, but can also have a positive story to tell when it comes to tackling all aspects of the sustainability agenda. However, there is no single model of what a sustainable footwear supply business looks like. No two organisations are the same and each faces different challenges with regard to material sourcing, waste management, the external environment, logistics and

labour supply. Therefore, organisations have to develop their own sustainability narratives.

The concept enshrined in ISO14001 of continuous improvement is beneficial because it carries with it an acceptance that the organisation not only has a set of procedures in place to protect the environment, but also sees this as a journey, albeit one that makes progress year on year. It is important to be able to highlight all the successes that the organisation has had with regard to sustainability criteria. This may include reducing waste or the amount of

deliveries to the facility (thereby reducing emissions from transport sources) or bringing down the power consumption of manufacturing machinery or ensuring that the quality is always maintained and rejected work kept to a minimum. In all of these areas the use of SATRA management systems can have an impact.

When a decision is being made to select a management system the primary question is what savings or productivity benefits will accrue to the business from the use of such a system? It is SATRA's approach to always carry

ALL CREDITS: SATRA



SATRASumm identifies useable areas of the leather.

out a feasibility study on any factory to ensure that existing systems are set up in a way in which they can each be effectively utilised and savings can genuinely be made. However, if the saving can be seen not only in terms of the material costs but as part of a sustainable balance sheet then the case will be more persuasive.

As with any tool, it can only be effective if there is a clear vision of the outcome and that input has been sought from the whole production team including designers, buyers, operatives and management. This will allow the savings to begin at the design stage and travel throughout the production process.

SATRASumm

The key aspects of the SATRASumm leather cutting system are a leather grading system to identify useable areas of leather and to match the leather to the particular components keeping the best for the most visible areas of the shoe. The patterns are then matched to the leather and the cutting allowance calculated to minimise the amount wasted. Installing the system involves not only the software but also intensive training on leather grading and of the cutters themselves to ensure they are capable of achieving the materials savings.

By utilising this leather cutting system, materials savings of up to 8%

can be achieved. This is not only a considerable amount of saving purely in terms of material cost but, in addition, there is the consideration of 8% fewer leather deliveries and 8% less material going to whichever disposal route is employed at the facility. This can reduce the carbon footprint of the finished product especially if transport emissions and processing of the raw material are taken into account as part of the CO₂ calculation.

SATRA VisionStitch

Although stitching is only a very small part of the footwear in terms of the weight of the product, it is estimated that up to 40% of the work in the production of footwear is carried out in the stitching room. Stitching is vital to the integrity of the finished upper and mistakes made at this stage can render useless the valuable upper material.

The VisionStitch system monitors the performance of the sewing machines and, before it starts operating, these are adjusted so that the operative sits in the most comfortable position. This limits fatigue which, in turn, improves accuracy. After this, machine motors are adjusted to increase the control the operatives have over them. The result of the training and exercise patterns is to give the operative more confidence and control in order to process the work more efficiently. Although it might mean that the machine is running at a

slower rate, it would be a more consistent operation with no stop-start.

The application of this system alongside operator training can result in an increase in productivity in the stitching room of up to 30%, as well as increasing the accuracy of the work and reducing the amount of rejected uppers. It has also been shown that the smoother operation of the sewing machine uses less power which reduces electricity costs and thereby saves carbon emissions.

SATRA Timeline

Although these systems stand-alone they can also be integrated with the line balancing Timeline software which identifies potential bottlenecks in production lines and matches resources, whether material, machinery or people, to maximise the throughput of product.

By increasing throughput and minimising restrictions, it allows the production line to keep less stock in progress, thereby diminishing the potential for accidental damage. Production can also respond more speedily to the needs of the customer and keep employees fully utilised and motivated. Typical increases in productivity that can be achieved following an analysis of production with the Timeline system and implementation of the results, can be in the order of 18%. For a manufacturer producing 3,500 pairs a day, this could result in an annual increase in production of 164,000 pairs of shoes, in addition to the reduction in lost work, material in progress and worker fatigue.

CONCLUSIONS

Although the decision to install a management system will be primarily based on the cost saving that can be made, it is also worth remembering that these cost savings result from a fundamentally more efficient use of resources and power. By ensuring that operatives are appropriately trained, the quality of the final product should be improved, resulting in shoes that are fit for purpose and right first time. These are also benefits that are part of the sustainable narrative which will be part of the discussions you would have with your customers in meeting the sustainability challenge that faces the whole industry. 🍷

Managing director of footwear machinery and robotic systems provider Desma, Klaus Freese, spoke at the 2016 UITIC Congress on the subject of shoes produced by 'smart' robots.

Robot-human teamwork is the future

Footwear factories around the world have never been under as much pressure to change the way they work as they are today, according to Klaus Freese, managing director of footwear automation, machinery and mould provider Desma. So much so that he believes it is only a matter of time before the industry will begin concentrating on interlinked and "intelligent" factories rather than simply on the speed with which manufacturing facilities can produce and distribute shoes. "Intelligent" factories will be able to produce "intelligent" shoes, he

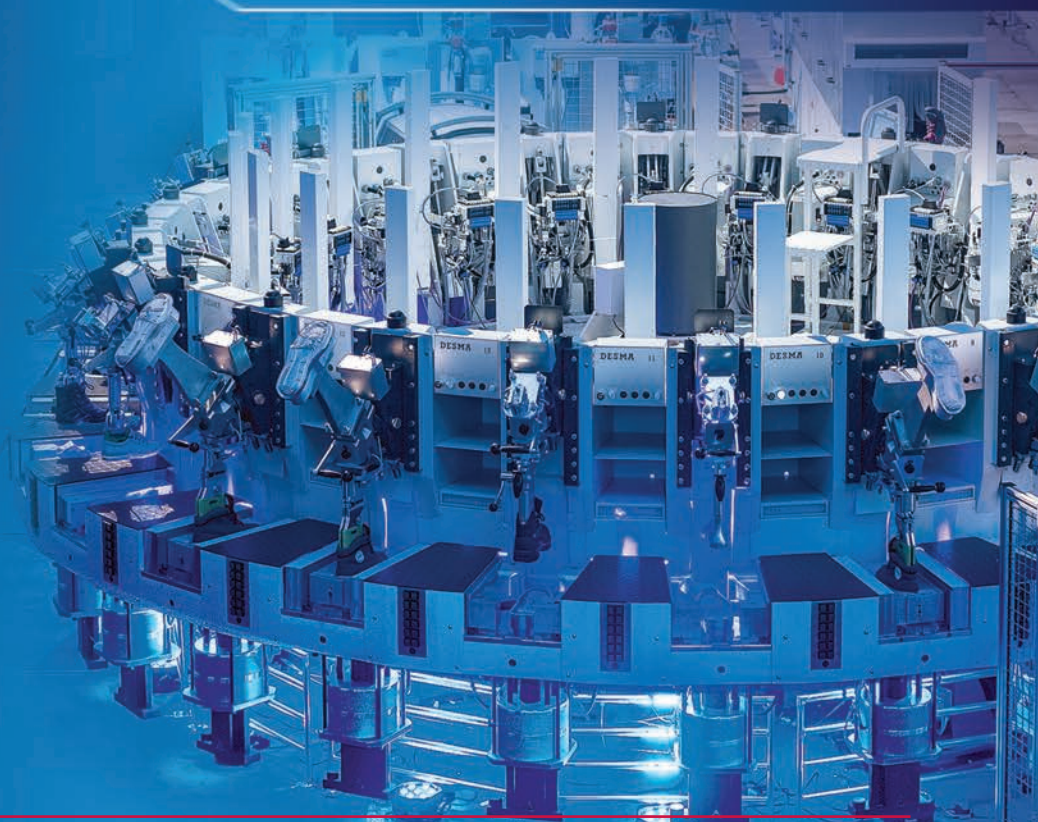
contends, but he predicts that this will make limited runs of (almost) singular shoes available for the same cost as mass production, something for which market demand appears to be strong.

FOUR MAIN ADVANTAGES

As you might expect, the managing director of Desma can offer plenty of reasons for using automation in a shoe factory and, speaking at the 2016 UITIC Congress in Chennai, for which the International Union of Shoe Industry Technicians chose 'the footwear factory of the future' as the main theme, he said he could sum this up in a list of four

main advantages that automation can bring. "It's not just that labour costs are becoming more and more expensive while robots become cheaper and cheaper," he says. "The quality of the shoes you make will be better too because a robot can work with great consistency and precision."

The second advantage he names is an overall reduction in production costs because material costs as well as labour costs will reduce. The third is that productivity will be higher because "robots can work 24 hours a day, seven days a week, and they are not in a union", and the fourth is that robots



Human-machine-interface (HMI) technology is becoming easier to use.

CREDIT: DESMA



Desma chief executive, Klaus Freese, speaking at the nineteenth UITIC Congress in Chennai in February 2016. CREDIT: WTP

are, he claims, more environmentally and socially friendly because they mean women and men do not need to be exposed to any hazardous substances or a dangerous environment inside the factory and will only use the materials they need.

PASS IT ON

In many cases, Mr Freese continues, automation starts with direct injection processes (DIP) and this removes the need to have pre-assembled soles; there is no need to apply cement to the sole or the upper. Instead, a soling material of, for example thermoplastic polyurethane is injected directly onto the upper. DIP is used mainly on rotary table machines with integrated robots, but the most up-to-date versions also link to conveyor lines, a system Desma calls AMIR (automated material flow with integrated robots).

One of the keys to this system working well is that each shoe has to 'pass on' information about what it, the shoe, must end up looking like to the robot. So far, successful projects around the world have used radio frequency identification (RFID) chips to do this; Mr Freese says there are other chips that can do the same job. One interesting application of this, he feels, would be to use this technology to transfer details an individual customer has specified for a particular shoe, making genuine customisation part of the normal production flow. The latest developments in DIP make it possible for consumers to have options on previously inconceivable aspects such as customising the softness of the sole. Desma technology now can combine

four different materials, each with different functions when injecting the sole of a shoe. Different combinations will give different sole softness.

SIDE BY SIDE

However, not every part of the process can be completed by electronic tags and robots. The Desma chief executive believes a big consideration for the future of automation in the shoe factory will be humans and robots working together. "We can see that robots and humans work side by side already," he explains, "but today it's with barriers between them, for safety reasons. In the future, robots and human beings will work much more closely together."

There are examples in the industry already of the shape of thing to come. He likes the way robots and humans interact while putting precisely sized and positioned holes into the soles of adidas Copa Mundial football boots. A thread goes into each hole and a stud goes into each thread. "It looks like quite simple work, but it's complicated," Mr Freese states. "And yet this whole bottoming process can be done by one person only." Good communication between this person and the roboticised system is essential, of course, but the Desma chief executive says human-machine-interface (HMI) technology is becoming easier to use. "It is like a giant iPad," he says.

Robots always follow what he calls "the optimum line" and it is here that footwear manufacturers can achieve savings by reducing waste. In one

example, of robots rather than humans applying a release agent (to stop unwanted bonding between components and surfaces), he says the manufacturer's use of robots has reduced its consumption of release agent by 90%. He also likes the idea of using robots in 'laser' roughing leather because robots can open up the structure of the leather in a consistently effective way, no more and no less than necessary, better than people can, making adhesion between upper and sole, and therefore the overall quality of the shoe, better. "These are applications that are in daily use now," he says. "They are successful; there are almost no limitations on what can be done by robots today."

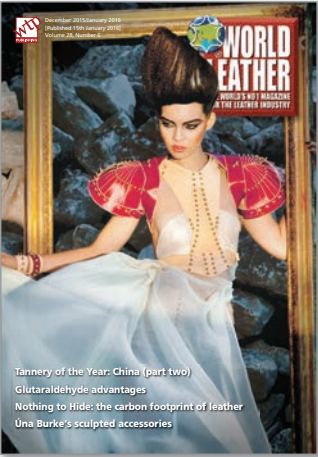
TOWARDS SMART FACTORIES

Klaus Freese regards it as "unfortunate" that less than 10% of all the shoes currently being produced worldwide are produced using robots or DIP. "The demanding part of shoe production is still the cementing process," he explains. "You have a prepared sole and an upper and you have to get good adhesion. The use of robots in cementing is quite new, but the first lines are already in production." He believes firmly that instances of this will increase and that people will work more closely with robots in the future. "Automation is the future and robots and human beings will work side by side, without any barriers. All of this will guide us towards smart factories and smart shoes," he says. 📌

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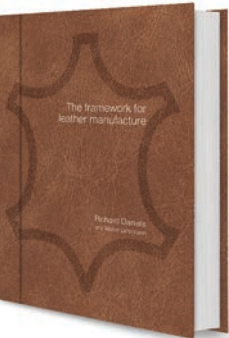
leatherbiz weekly executive summary highlights in this issue of leatherbiz weekly include:

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