

WORLD FOOTWEAR

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THE MAGAZINE FOR THE GLOBAL SHOE INDUSTRY



Solidarity shoes: Pikolinos does it again
Full review of global safety footwear market
Pre-designed woven uppers
Low-cost airline launches 'tour-guide' shoes



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Contents

Front cover

One of the sandals in the new Pikolinos Solidarity collection, on which the Spanish footwear brand has worked hand in hand with adults with learning difficulties.

Image: Pikolinos

2. News map

Highlights from around the world of footwear. For news on footwear matters every day, go to footwearbiz.com, the best news website in the business.

4. Footprints

People making footprints in the industry, including designers, industry leaders and famous footwear lovers.

6. Products and services

Details of innovations from suppliers and service providers across the globe.



p10



8. Backtrack

Headline highlights from footwearbiz.com over recent weeks.

10. Long haul

Joseph Cheaney's rich manufacturing heritage is bearing important fruit for two members of the Church family, who acquired the brand in a management buy-out in 2009.

14. Where solidarity begins

Elche-based footwear brand Pikolinos has chosen to work with a local support and education centre for adults with learning difficulties for its latest social responsibility-inspired collection.



p14



18. Threads, needles and seams

Designers like using stitching as a means of making their shoes stand out. Steve Rose of SATRA argues here for the key components that make stitching flexibility possible to receive more attention.

23. Safety first

Consultant Stuart Cleaver shares key findings from his recent review of the global safety footwear market.

26. Waste not, want not

Footwear producers who use leather have a sustainability story to be proud of, and one they perhaps ought to tell more often.

30. Woven in

Advances in weaving techniques are making it possible for shoe companies to add special functionality or eye-catching design elements to their upper materials.

32. More to the point

Many manufacturers like to stick to needles of standard shapes and sizes, but many alternatives are available for companies that want to breathe new life into footwear seams.

34. The story behind the yarn

Sewing thread is a complex subject, with the type and twist of yarn determining performance.



p26

36. Shoes are like candy

Former Pussycat Dolls singer Ashley Roberts, who describes shoes as being "like candy" to her, is the latest entertainment star to launch her own footwear label.

38. Best foot forward

Low-cost airline easyJet has taken a keen interest in wearable technology that can turn shoes into tour-guides for passengers visiting new cities.

40. Essential reading



p38

Advertiser's Index

Company Name	Page
American Events	22
Auburn Leather	21
Desma	25
Emtex	17
Ethicaleather	35
Faytex	29
Footwearbiz	9
Milspeed	Cover 3
Rhenoflex	Cover 4
Texon	13

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News

CANADA Canadian outdoor brand Arc'teryx has introduced trail-running shoes to its collections for the first time. More typically of the Vancouver-based brand, it has said the shoes, the Norvan VT and Norvan VT GTX, deliver "climbing and scrambling performance with high durability on steep, technical landscapes".

● Specialist Toronto-based driving shoe brand Piloti has announced a new partnership with the 24 Hours of Le Mans race. Beginning in 2017, Piloti will offer special edition Le Mans driving shoes, designed for fans, driving enthusiasts and "lovers of the automotive culture epitomised by this iconic motorsports event".

SPAIN Footwear manufacturers in Spain exported 46.3 million pairs of shoes and boots in the first quarter of 2016, bringing in revenue of €843 million. These figures represent flat volumes, but a 3% decline in revenues compared to the same quarter in 2015.

● CTCR, the footwear technology centre in the Spanish region of La Rioja, helped local footwear brand Calzados Zels win the prize for best eco-design project in the 2016 design awards competition run by the Istituto Europeo di Design in Madrid. The winning entry was Zels' Fabiolas No Trace sandals.

UK Footwear brand Clarks posted a 65% drop in pre-tax profits for the year to January 31, 2016 on the back of changes in the retail sector, tough competition and more demanding customers. The company said the period was "one of the more challenging in recent history" as it released figures showing pre-tax profit fell from £98.8 million to £35 million.

SWEDEN Swedish footwear brand Italgente, which offers high-end Italian handmade men's shoes to consumers in its home country, won the right to supply formal footwear to Sweden's national football team for the 2016 European Championship.

ITALY Footwear was the biggest market segment for Italian leather last year, consuming 51.6 million square-metres, which was 41.7% of the total, according to figures just released by the main Italian tanning industry body, UNIC.

● According to reports in Italy, luxury handmade footwear company Pakerson is to close. Union representatives said the news had come out of the blue for the 64 employees at the company's manufacturing plant in Cerreto Guidi near Florence.

TUNISIA Observers at the inaugural exhibition called Medleather, which took place in Hammamet last month, have said it appeared to be an attempt on the part of the Tunisian footwear and leather sector to relaunch itself following the period of instability the North African country has experienced since the 2010 Jasmine Revolution.

GERMANY German online footwear retailer Zalando has reported revenue growth of 23.7% for the first quarter of 2016, reaching almost €800 million. Zalando said it expects online retail to keep growing in Europe and for sales revenues (for all online retailers) to grow by 9% in 2016.

PORTUGAL Exports of footwear from Portugal increased 3.2% during the first four months of 2016. Between January and April, the country exported 28 million pairs of shoes worth €607 million and is on course for the seventh consecutive year of growth to overseas markets.

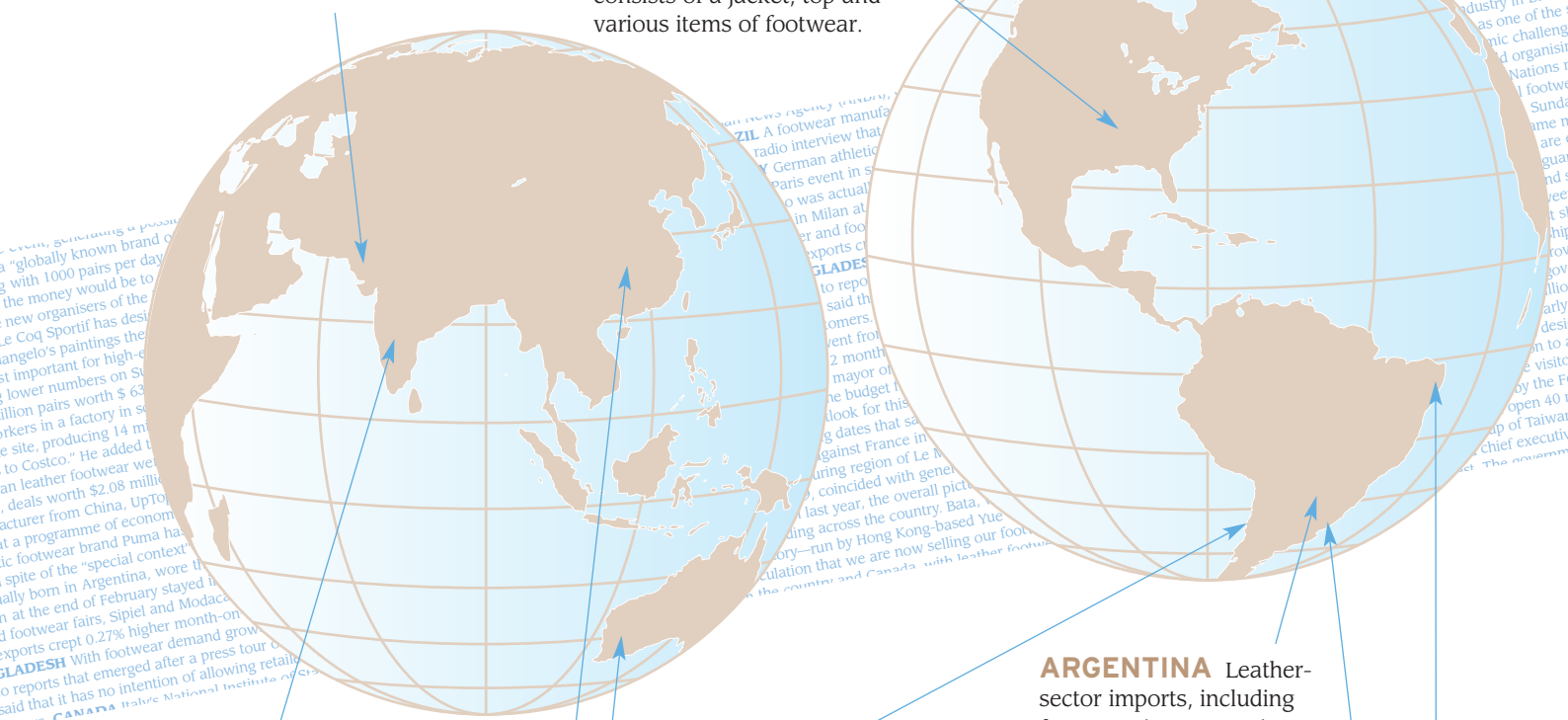
PAKISTAN Pakistan's Federal Bureau of Statistics has said exports by footwear companies in the first nine months of the current financial year have brought in earnings of almost \$80 million. Leather shoes contributed almost \$65 million towards this.

- The signing of a Memorandum of Understanding for the formation of a footwear/leather cluster in the Pakistani province of Punjab was the highlight of a three-day seminar organised by the Footwear Manufacturers Associations (PFMA).

US Sports footwear retailer Foot Locker posted net income of \$191 million in the first quarter of 2016, a 3.8% increase on the \$184 million achieved in the same period last year. Total first quarter sales for the company were up 3.7% to \$1.99 billion from the \$1.91 billion in the first quarter of 2015.

- Reissued or "heritage" shoes outstripped all other footwear categories last year in the US, according to a report from the *Wall Street Journal*. Sales of 'retro' shoes grew more than 50% in 2015 and made up 20% of the US athletic footwear market, which is worth \$17.2 billion.

- Sportswear manufacturer Nike are calling on the creativity of Balmain creative director Olivier Rousteing for the second part of the NikeLab Summer of Sport series. The Football Nouveau collection is inspired by the French fashion designer's childhood love of football and consists of a jacket, top and various items of footwear.



INDIA US footwear brand Skechers plans to double to 100 the number of stores it operates in India, according to the company's South Asia CEO, Rahul Vira. The company, which already sells footwear in the country, also intends to launch its apparel and accessories collection in the country next year.

CHINA Footwear and clothing sales for the month of March 2016 in the domestic market grew by 4% year on year. Analysts said this was lowest growth rate for shoe and apparel sales in recent years; the rate in January and February this year was 8%.

AUSTRALIA Sports brand Puma has opened its first Australian flagship store in the Forever Faster format in central Melbourne. The store occupies an area of 120 square-metres and stocks the brand's performance and sportstyle collections.

CHILE Consumers in Chile bought 103 million pairs of shoes in 2015, giving an average per capita consumption of 5.7 pairs. National footwear association Fedeccl has said these figures suggest Chileans are the biggest consumers of footwear in Latin America.

BRAZIL Eleven Brazilian machinery suppliers to the tanning and footwear sectors took part in a delegation, led by industry association Abrameq, to Mexico from May 23 to 27. The Brazilian machinery suppliers were present on an Abrameq stand at the ANPIC exhibition in León.

- Design na Pele, an initiative coordinated by the Centre for the Brazilian Tanning Industry (CICB) that draws on the inspiration from fashion and design to promote innovation in the leather sector, will exhibit at Shoes and Leather Vietnam this July.

ARGENTINA Leather-sector imports, including footwear, into Argentina showed a year-on-year increase of 8% in the first quarter of 2016, according to a report from business organisation CGERA.

URUGUAY The Uruguayan footwear industry has complained about a government procurement exercise that led to the country's interior ministry buying 32,000 pairs of boots and 1,800 pairs of shoes from Chinese manufacturers recently.



Footprints

FOOTWEAR INDUSTRY 'WILL BE COMPLETELY DIFFERENT IN FIVE YEARS'

The chief executive of Spanish footwear group Hergar, **Basilio García**, has said the footwear industry will look very different five years from now.

In a recent conversation with specialist media in Spain, Mr García, who is also a vice-president of industry association FICE, said that the main protagonists in the footwear supply chain used to be the retailers but are now the consumers and that this changes everything.

He explained that in the 1980s and 1990s, the 'kings' of footwear were the retailers, and that controlling distribution of the finished product then was even more important than controlling production. "Now the consumer is king," he said, "and the rest of us are at the service of consumers and have to bring our offerings to them." Increasingly, though, competitors all over the world are able to offer their collections to the same consumers, through multiple channels.

Basilio García said he believes the way forward is to take a leaf out of fast fashion's book and run a production set-up that allows companies to design, make and launch shoe collections, not by season, but at the time and in the quantities that the market demands.

ALIBABA BOSS: FAKES ARE BETTER THAN REAL THING

The founder and chairman of Chinese online shopping site Alibaba, **Jack Ma**, has said that counterfeit goods are better than the genuine article, further fuelling industry concerns over the company's attitude towards the sale of fake goods.

"The problem is that the fake products today, they make better quality, better prices than the real names," he said during a speech in Hangzhou, China. He added that these counterfeit products were made in the same factories with the same materials, but that they were cheaper as they did not use the brand names.

Mr Ma insisted, however, that Alibaba



Credit: Mark Witter

LONDON STUDENT EARNS CORDWAINERS AWARD FOR 2016

Caroline Klemp, a footwear design student at the London College of Fashion, is the winner of the 2016 Cordwainers National Footwear Student of the Year competition. She took the top prize at a special ceremony in London in June for an entry entitled 'Maverick', which had watersports as its main inspiration.

Chair of the judging panel for the competition, **Katie Greenyer**, creative director for Pentland Brands, said Caroline Klemp's work had shown real breadth, with a collection comprising boots, sling-backs and sandals. "Her collection is humble, honest and bursting with ideas," Ms Greenyer said.

John Rubinstein, Master of the footwear industry's livery company in the City of London, The Worshipful Company of Cordwainers, presented Ms Klemp with a gold medal to mark her achievement.

would "do anything" to tackle counterfeit products and that he was "more and more confident than ever that we can solve the problem".

Alibaba was suspended in May from the International Anti-Counterfeiting Coalition (IACC) watchdog after luxury brands Gucci, Michael Kors and Tiffany quit the group over the Chinese company's inclusion.

Following the decision Alibaba said

that it would continue to collaborate with the industry on anti-counterfeiting efforts, "whether or not we are a member of the IACC".

UK FOOTWEAR INDUSTRY "STILL THRIVING"

The UK footwear industry increased its output by more than 30% between 2010 and 2015. Last year, the industry produced a total of just under six million pairs, around 50% of which went for export.

John Saunders, chief executive of industry body the British Footwear Association (BFA), quoted the figures during a speech at the 2016 Cordwainers National Footwear Student of the Year ceremony in London on June 9.

He pointed out that there are currently 145 BFA members, ranging from major global brands such as Clarks, Dr Martens and Pentland, to start-up firms. Of these, 29 companies still manufacture shoes in the UK. BFA members employ a combined total of 10,000 people, 20% of whom work in production.

UK footwear companies had combined revenues of £7.7 billion in 2015, a figure that is projected to rise to £8.9 billion by 2020.

"The industry is smaller than it was 30 years ago, perhaps, but it is competitive and it is thriving," Mr Saunders said.

NIKE DESIGNER RETURNS TO UNDER ARMOUR

Sports brand Under Armour has announced the return of former vice president of creative footwear and accessories, **Dave Dombrow**, to the company just three months after he left to join Nike. Mr Dombrow will take up the newly created role of chief design officer at the company, where he will be responsible for guiding the design process behind the brand's entire collection of footwear, apparel and accessories.

Under Armour founding partner, **Kip Fulks**, paid tribute to Mr Dombrow's "instrumental role in creating innovative and cutting-edge footwear"

during his previous period at the company. He added that his "unique abilities to challenge the status quo and to anticipate the needs of the future athlete" would help Under Armour to obtain further success in the future.

During his time at the company between 2010 and 2015, he helped create the US SpeedForm Apollo, a shoe that featured a full-length 4D foam sock liner to conform to the foot's exact shape, and played a key role in the Curry One, the first signature shoe from basketball star **Stephen Curry**.

MEXICAN INDUSTRY MOURNS 1930'S PIONEER

The leather and footwear industry in Mexico is mourning the loss of one of the pioneers of its modernisation and industrialisation, **Salvador Sánchez Negrete**, who has died in León at the age of 90.

Mr Sánchez Negrete founded children's footwear company Calzado Chavita in 1939 and then diversified production into safety boots and shoes with the brand Berrendo. He is accredited by many as one of the prime movers behind the transition of the footwear industry in and around León from a traditional, artisanal, craft-based sector into a modern industry.

Tanners and rival footwear manufacturers from all parts of Mexico have spoken of his commitment to the industry, to making quality products and, above all, to his family. Many of Salvador Sánchez Negrete's 11 children followed him into the business and still run the company today.

ENTREPRENEUR WINS THE ATTENTION OF PRESIDENT

Gastón Greco, a footwear entrepreneur from Chaco in north-eastern Argentina, has said he intends to use new-found fame he has achieved by sending a pair of his shoes to the country's president to save footwear skills, styles, jobs and factories in some of the most remote regions of the country.

New president, **Mauricio Macri**, took up his post at the end of November and has caused concern to Argentina's footwear sector by extolling free-trade and open-market policies. Shoe manufacturers in Argentina fear that this will favour brands and retailers that want to bring

in cheaper, lower quality footwear made in Asia and elsewhere to take market share away from local firms.

During the campaign for the 2015 presidential elections, **Gastón Greco** noticed that Mr Macri appeared on camera wearing the shoes of Italian and US brands, but not locally manufactured products. So he sent a hand-written letter saying he believed the president of Argentina ought to wear Argentinean shoes and with it he sent a pair of shoes from his brand, Posco.

More than four months went by without Mr Greco receiving any response but then one day Mr Macri, by now installed as president, appeared on the front page of newspaper *La Nación* proudly wearing his Posco shoes. This won lots of publicity for the brand, which Mr Greco is now working to turn into sales. However, no matter how famous his company becomes, he insists he will never compromise on the principles on which he set it up.

SPORTS DIRECT FOUNDER: ONLINE SHOPPING CAUSED WAREHOUSE PROBLEMS

The founder of a major sports retail group has said a shift to increased online shopping over the last decade means his business needs ten times more people than it did when it relied entirely on bricks-and-mortar stores.

Mike Ashley, the founder of Sports Direct, said his organisation's workforce had to grow steeply when consumers began to place large numbers of small-volume orders over the internet. In particular, the numbers of people working at the company's biggest distribution centre at Shirebrook, near Mansfield in England, increased quickly. The site now employs more than 3,000 people, all but 200 of them hired from employment agencies.

"No one could have predicted that internet growth; it came out of nowhere and it requires ten times the people that [traditional] retail does," he said.

NEW CREATIVE DIRECTOR FOR K-SWISS BRAND

K-Swiss Global Brands (KSGB) has appointed **Sean O'Shea** as creative director for the K-Swiss brand. He will oversee all aspects of product design and will report directly to K-Swiss president, **Barney Waters**.

"O'Shea is a respected veteran with a track record of design innovation and commercial success", said Waters. "Everyone knows K-Swiss' strength in heritage court style, and now Sean will lead us into the next phase of our brand development."

Mr O'Shea arrives at the US footwear company from Puma, where he was head of design for running and training.

CHURCH COMPETITION GENERATES FOUR WINNERS

Four footwear students from the University of Northampton will have the chance to have their own shoe designs made up into finished product after successfully winning sponsorship from Church & Co.

Heather Jenkinson, **Laura Pickering**, **Stacie Franks** and **Adele Jolley**, all students on the university's footwear programme, are working on their final year collections and applied to take part in the competition organised each year by Church.

Successful students receive support for their final footwear collections. This year, Church said the students' concepts were so strong, it would offer sponsorship to four winners.

MANAGEMENT CHANGES AT MICHAEL KORS

Leathergoods brand Michael Kors has reshuffled its management team with two internal promotions. **Philippa Newman** will take on the role of president of accessories and footwear and **Michele Chan** is to be the company's new president of women's ready-to-wear.

Ms Newman has been at the company since 2003 and is currently vice president of European sales and merchandising for accessories, footwear, women's ready-to-wear and menswear. She was previously director of sales for women's collections in the US and has held various roles at companies including Calvin Klein and Alexander McQueen during her career.

Ms Chan has been at Michael Kors since 2007 and is moving from her position as vice president of retail merchandising. Prior to 2007, she spent over a decade in merchandising positions at Lord & Taylor and Ann Taylor. 📍

Products & Services

USITC REPORT GOOD NEWS FOR US FOOTWEAR

The footwear industry would benefit from the passage of the Trans-Pacific Partnership, according to a report from the US International Trade Commission (USITC).

The report predicted that the US would see an increase in footwear imports from TPP nations of \$1.6 billion (23.4%). Vietnam would be the primary source of this increase, which would come at the expense of China which would see US footwear imports fall by more than \$400 million (1.3%) as a result of TPP.

"We are excited that the USITC released the report on the likely economic impact of the Trans-Pacific Partnership. The report reaffirms the significant positive impact that this historic free trade agreement will have on the US footwear industry and the US economy - while not negatively affecting U.S. footwear production," said Footwear Distributors and Retailers of America president Matt Priest.

The report indicated that US-manufactured footwear would not be negatively impacted by the increase of imports. The USITC estimated that US-made footwear would grow by 0.5%, partly due to a reduction in Japanese tariffs and access to new markets.

"TPP is a once-in-a-generation opportunity for footwear companies and consumers, generating \$500 million in savings for the industry in the first year of implementation alone and \$6 billion over the first decade," Mr Priest added.

FIRST BATCH OF RECYCLED PLASTIC SHOE AVAILABLE

The adidas x Parley running shoe, made from recycled plastic waste and fishing nets retrieved from the ocean, is to be made available in a limited edition run of 50 pairs. The low quantity is due to the difficulty in spinning plastic ocean waste into high-performance fibres.

The shoe, the prototype of which was launched in July 2015, is the result of the German manufacturer's collaboration with ocean conservation organisation Parley for the Oceans and the launch



NIKE UNVEILS GOLF SHOE WITH TRACTION TECHNOLOGY

Sportswear manufacturer Nike has presented the FlyKnit Elite, a golf shoe that features technology designed to keep the foot in place and give the wearer a more stable base for their swing.

The "articulated integrated traction" technology was developed through research and athlete testing and, according to Nike, "decouples the medial heel and lateral forefoot area to help propel the athlete through the swing".

The channels on the sole of the shoe give better balance and a shark-tooth TPU tread design gives continuous traction and replaces traditional spikes. This is paired with a full-length Lunarlon midsole for cushioning and a lightweight and breathable upper made from Nike's Flyknit material. A collar helps prevent grass and other debris entering the shoe and a TPU skin is added to the upper's edge to protect against dew.

Nike vice president of golf footwear, Gentry Humphrey, said that the company had "factored in foot performance through every aspect of the swing". He added that designers had also considered the different surfaces and angles that golfers have to contend with during a round.

was timed to coincide with World Oceans Day on June 8.

The shoe's upper is made entirely from recycled plastic. Each upper contains approximately 16.5 old bottles and 13g of plastic from gill nets. The shoe uses two kinds of recycled materials: PET from the water bottles and nylon from the nets. The only virgin material in the footwear is the thermoplastic polyurethane in the foam sole.

NEW INJECTION SYSTEM 'SOLVES OUTSOLE QUALITY PROBLEMS'

Footwear technology provider Main Group has told *World Footwear* that five shoe manufacturers around the world are now using its Polyurethane Injection system.

Main Group began putting the system

into footwear factories 18 months ago, initially in an "experimental phase" and, for a year now, in full production, with Main's research and development department working closely with technical teams at customer sites during the transition.

According to the Italian technology provider, this system can solve long-standing problems concerning outsole quality in direct injection production environments, with no bubbles or flaws in the outsole design pattern.

Nothing changes in machine configuration; instead, the Polyurethane Proportional Injection system consists of newly developed software and injection control. It is able to inject the same quantity of material in each dose and spread it evenly over the outsole surface, while keeping the material-

colour ratio unchanged.

The group has said three more customers will begin using the system before the end of 2016; those on board already are in Europe, Asia and Central America and are using the technology to make casual shoes in 90% of cases and safety or industrial shoes in the other 10%. The technology provider has said it now intends to put the Polyurethane Proportional Injection system into all new polyurethane machines as standard.

FOOTWEAR ORGANISATIONS UNITE TO PUSH TTIP

The presidents of the American Apparel & Footwear Association (AAFA), the European Confederation of the Footwear Industry (CEC), and Footwear Distributors and Retailers of America (FDRA) have issued a joint statement urging the US and the European Union (EU) to eliminate footwear trade barriers in the Trans-Atlantic Trade and Investment Partnership (TTIP).

The statement also called for standardisation of labelling, product safety, testing regulations and prohibited substances for the footwear industry, flexibility in the determination of the rules of origin for footwear products and mutual recognition of regulations and standards.

WOLVERINE WELCOMES DEFENCE POLICY

Footwear group Wolverine Worldwide has commended politicians in its home state, Michigan, for supporting defence-related purchasing programmes for the US government in the coming fiscal year.

Defence spending on athletic footwear will comply with the Berry Amendment and provide 100% US-made athletic footwear to service members upon their entry into the armed forces. There were proposals to strike this provision from government policy.

Wolverine said Michigan politicians Bill Huizenga, Gary Peters, Debbie Stabenow and John Moolenaar had strongly supported the provision. "Their hard work and leadership has ensured that military recruits will have access to high quality, US-made athletic footwear for training. Their support and dedication to this effort has also aided the expansion of manufacturing opportunities in Michigan," the company said.

TIMBERLAND TO USE RECYCLED FABRIC

Outdoor brand Timberland has partnered with Thread, a manufacturer that creates fabric from plastic bottles collected in Haiti and Honduras, on a collection of footwear and bags that will launch in Spring 2017.

The Thread Ground to Good fabric has up to 50% recycled PET from plastic bottles found in streets, canals and neighbourhoods in the two countries. The Thread initiative also provides jobs for nearly 3,600 people in the developing world as well as training and micro-loan programmes.

"We are beyond excited about partnering with Thread. From the moment we met them, we knew this had the potential to be far more than a supplier relationship," said Colleen Vien, director of sustainability for Timberland.

"Any time we find an opportunity to create both environmental and social value, that's a big win. And Thread does just that," she added.

MIZUNO TO USE MICHELIN TECHNICAL SOLES

Sports footwear brand Mizuno has become the latest brand to turn to Michelin's technical sole technology, announcing that it will feature in its Wave Daichi and Wave Mujin ranges.

Michelin announced a joint-venture with Chinese textile manufacturer Jihua at the end of 2014 to make high-performance soles for the technical footwear market. Since then, several brands have signed up to use the technology including Italian outdoor footwear specialists Salewa.

Mizuno said it decided to partner with Michelin to offers its customers a product equipped to deal with the varied and challenging terrain that comes with trail running. It added that the specially-developed Michelin sole will help Mizuno shoes better adapt to irregular terrain and help trail runners to avoid potentially dangerous situations.

ADIDAS SPEEDFACTORY TO BEGIN PRODUCTION IN 2017

Sportswear manufacturer adidas has announced that its Speedfactory in Germany will begin large scale production in 2017, bringing to an end 20 years of the company not producing shoes in its home country.

The shoes will be manufactured by

robots in a move away from the company's production methods in Asia where most of the work is carried out by hand. Adidas said that "the first pairs of high-performance footwear to come out of the adidas Speedfactory will be revealed later this year".

"The Speedfactory initiative heralds a new era in footwear creation. This flexible model challenges the idea of centralised production and makes product close to where the consumer is. It opens doors to creation of product completely unique to the fit and functional needs of consumers, through a combination of the craft of shoe making and cutting-edge technology," said adidas CEO Herbert Hainer.

NIKE SIGNS DEAL WITH HP

Sportswear manufacturer Nike has continued its attempts to scale up 3D printing technology in order to deliver innovative products faster by signing a deal with information technology company HP.

Nike has spent over three years developing 3D printing and selective laser sintering (SLS) applications that allow it to make and modify prototypes in hours rather than months. This has fast-tracked creations such as the Zoom Superfly Flyknit track spike.

"We've been using 3D printing to create new performance innovations for footwear for the past several years. Now we are excited to partner with HP to accelerate and scale our existing capabilities as we continue to explore new ways to manufacture performance products to help athletes reach their full potential," said Tom Clarke, president of Nike Innovation.

DSW INVESTS IN CUSTOMISED SHOES STARTUP

US footwear retailer DSW has signed a deal with Feetz, a startup that makes customised shoes using 3D printing technology. DSW joins existing investors Khosla Ventures and The Jump Fund following a recent round of fundraising.

"DSW is excited at the possibility of bringing Feetz's innovative technology to our customers," said Simon Nankervis, chief commercial officer of DSW.

"DSW's impressive reach and customer centricity makes them the perfect partner for Feetz," said Lucy Beard, who founded the company in 2013 and now acts as its CEO. 🍷



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.

30/06/16

Under Armour opens new manufacturing and design centre

29/06/16

Aquazzura suing Steve Madden for design infringement

28/06/16

Skechers opens new UK base
Cuba on course for two new footwear factories

27/06/16

Paraguay: local producers of leather shoes are losing out
GDS workshop to discuss sustainable footwear

22/06/16

Spain's footwear workers secure pay rise and shorter week

21/06/16

Growth for Portuguese shoes in Japan
Gucci stepping up customisation initiative

20/06/16

Elche footwear and leather events to co-locate

16/06/16

BASF publishes new materials selection guide

14/06/16

Gola goes for flat-knit upper

10/06/16

WTO says Colombia's footwear tariffs are too high

08/06/16

DSW searching for new CFO
Converse uses Nike Hyperfuse technology in updated offering

03/06/16

Vans launches Nintendo-inspired footwear collection

02/06/16

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01/06/16

Online sales can work for smaller companies too, Bells Shoes says
South Africa sees opportunities in exotic leather market

31/05/16

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27/05/16

Genesco earnings rise
Colombian industry body prepares new antidumping request

26/05/16

Sendra senses big demand for artisan shoes

25/05/16

Vietnamese firm to launch new athletic shoe brand for domestic market

20/05/16

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19/05/16

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18/05/16

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12/05/16

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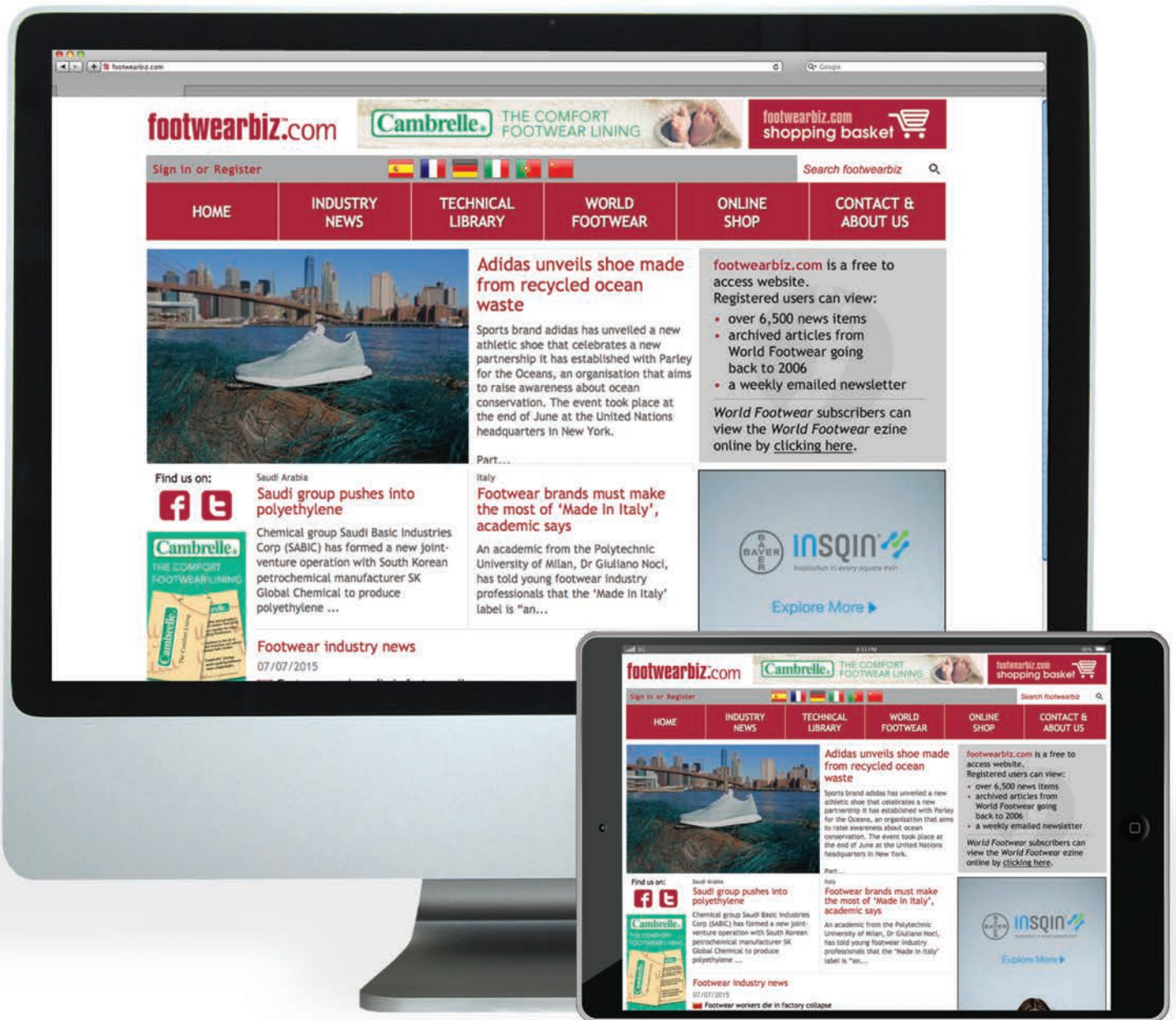
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Jonathan (left) and William Church in the Cheaney flagship store.

ALL CREDITS: JOSEPH CHEANEY



The complicated intertwining of the stories of Northampton footwear brands Cheaney and Church's began in the late nineteenth century. Now two Church cousins own and run Cheaney. By the early part of 2016 they had grown the workforce by 80%, doubled turnover and won a prestigious export award.

Cheaney twists and turns produce success

English footwear-brand Joseph Cheaney has been awarded the Queen's Award for Enterprise, a business award conferred on UK companies with a high level of performance in international trade. It is the third time in Cheaney's history that it has won this accolade.

Joseph Cheaney has been making traditional English shoes in Northamptonshire since 1886. Eighty years later, the Cheaney company was acquired by another famous Northampton men's footwear firm, Church's. In 1999, luxury group Prada acquired Church's, with Cheaney transferring too, to become part of Prada's new English subsidiary. Four years later, Prada decided to sell a 55% of Church's to a private equity group, but bought that stake back in 2006. Statements at the time talked of Prada's commitment to continuing Church's "rigorous dedication to craftsmanship and the label's quintessential English identity", but footwear industry observers will recall that there was plenty of confusion at the time, exacerbated by the start of the global economic downturn a couple of years later.

Shortly after that, in 2009, two representatives of the fifth generation of the Church family to be involved in the business, cousins Jonathan and William Church, came up with a plan for a return to simpler times. Buying Church's back from Prada would have been difficult. The two cousins have never spoken in public of a desire to do that, and Prada has continued to hold Church's up as a brand it is proud of as a successful component of the Italian luxury group. In any case, they might have found it difficult to talk their bank managers into a purchase of Church's; the 2006 deal to reacquire the 55% stake Prada had sold, valued Church's at almost seventeen times the amount it had paid the family seven years before - £108 million.

Instead, they decided to focus on Cheaney and convinced Prada to allow them to carry out a management buy-out of the Cheaney brand. They now own and run Joseph Cheaney & Sons.

While always highly regarded among shoe aficionados, at the time of the buy-out Cheaney was best known in the trade as a contract manufacturer. The Church cousins have long believed they can build the Cheaney brand up and give it a new lease



The Tweed boot: a tribute to tradition and craftsmanship.



of life. William Church says: "It had all the right ingredients, a strong heritage, its own UK factory and a skilled local workforce. Being independent gave us the opportunity to raise the profile of Cheaney, as a brand in its own right, both in the UK and internationally."

The company justly describes itself as having "a rich manufacturing heritage". It has been handcrafting its shoes, cutting out the leather, stitching and final polishing in the same factory in Desborough, 30 kilometres north of Northampton, since 1886. It takes eight weeks and up to 200 different hand operations to make a pair of the brand's Goodyear-welted shoes.

Since the buyout in 2009, Cheaney's turnover has more than doubled (from £4m to £9.6m), while exports have tripled and now account for nearly one-third of the company's turnover. Around 80% of export sales come from Europe and Asia, with Italy being Cheaney's biggest market in Europe, and Japan its largest export market overall.

"The Japanese have a huge respect for well made tailored goods, and for the 'Made in England brand,'" Jonathan Church says. "The market has been challenging, but we have managed to grow our share and we still see great potential in the Japanese market."

In addition, Cheaney has a growing presence in Germany, Belgium, France, the US, Canada, Scandinavia and the Middle East. The company has also taken part in trade missions with the UK department of trade and industry. Exercises of this kind have taken place recently to South Korea, Russia, Malaysia and Taiwan, with local embassies carrying out market research and arranging relevant customer contacts and appointments.

Cheaney's workforce has grown from 90 (when the Churches bought the company) to over 160 skilled craftsmen and women now, some of whom are fifth-generation employees themselves. The company says it places importance on training and passing on these skills to the next generation by employing apprentices "to continue the craft in Northamptonshire". 🍷

CHEANEY TIMELINE

- **1886** – Joseph Cheaney starts his own shoemaking business in Desborough, Northamptonshire.
- **1896** – The company moves to a new factory, which is where production still takes place today.
- **1930** – Joseph H Cheaney, the founder's grandson, joined the company and stayed in the business until his retirement in 1981. It was he who pioneered expanding the business into export markets.
- **1966** – The company achieved export accolade the Queen's Award for the first time.
- **1966** – Cheaney was acquired by Church's.
- **1971** – Cheaney wins the Queen's Award for a second time.
- **1999** – Church's (and Cheaney with it) was acquired by Prada.
- **2002** – The first flagship Cheaney store opened in London.
- **2003** – Prada sells a 55% stake in Church's to a private equity group.
- **2006** – Prada buys the 55% stake back.
- **2009** – Cousins William and Jonathan Church effect a management buy-out of Cheaney.
- **2016** – Cheaney wins the Queen's Award for the third time, 130 years after it was founded.

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Simeon Stoyanov has hopes of earning enough money from footwear production to live on his own and travel to other parts of Spain in his spare time.

ALL CREDITS: PIKOLINOS

Spanish footwear group Pikolinos, famous for projects that have empowered women in Maasai communities in Kenya and Tanzania, has launched a new social responsibility-inspired collection of sandals and accessories. This time, though, its focus is much closer to home.

Community action close to home

Footwear group Pikolinos has launched a new collection that emphasises its commitment to corporate social responsibility.

In 2014, the Elche-based company launched a collection of sandals and bags with strong links to Africa. Part of an initiative called the Maasai Project, it involved shipping cut pieces of leather from Spain to Kenya and Tanzania and employing more than 1,000 Maasai women to decorate the material with beads using traditional artisan skills. Pikolinos shipped the decorated pieces back to Spain to make up the finished products. Eight sandal styles and one bag made up the collection.

Its new social responsibility-inspired collection is the fruit of a project Pikolinos was able to undertake without going so far from home. Called Pikolinos Solidarity, this latest venture comprises two styles of each of the brand's Alcludia and Madeira sandals and one style of its Wha handbag. What sets them apart is that these products are the work of artisans from Defora, a specialist footwear and leathersgoods project founded in Elche, Pikolinos's home town, by a local shoemaker, María de los Ángeles Brotons.

The people who work at Defora are men and women with learning difficulties. Defora began teaching them to make shoes and accessories in January 2015 but Ms Brotons says the idea first came to light about four years ago. "It came from a need that we had in my own family," she explains, "because we have children with learning difficulties who are now adults. We moved heaven and earth trying to find something for them, wondering all the time what would become of them in the future. We looked and looked, but there were really very few options out there that would allow them to have a full life, look after themselves and face up to their disabilities and be part of society, just like other people."

Like many people in and around Elche, Ángeles Brotons has worked in the shoe production industry and knows how to make shoes. She says it's all she knows. So she had the idea of teaching her own sons and a group of adults they spent time with at a day centre how to make shoes too. "The first year and a bit has gone really well," the founder says. "Once they realise they are capable of doing this, you can see that their self-esteem receives a big boost. And, of course, the best way for

The new Pikolinos Solidarity collection.





Decorated sandal parts, put together by workers at Defora.

them to have a full life is for them to earn a salary."

The Defora centre also had a garden and aims to help the people on the project to grow and prepare their own fruit and vegetables. They learn other life-skills, too, such as washing and ironing.

Production manager, Juan Manuel Senen, explains that the founders of Defora knew all about Pikolinos's social projects and made an approach to ask if their idea might also win some backing. The answer was positive and Pikolinos has supported the work of the Defora group from day one. Following the project's success in helping the young adults involved learn to carry out the work well, the footwear group is now turning this into a commercial operation with the launch of its Solidarity collection. "Pikolinos has been one of the pillars of this project," Mr Senen says. "The company was enthusiastic about Defora from the start and we are delighted to have its support."

One of the Defora workers, Simeon Stoyanov, says a variety of tasks is involved. In keeping with the Maasai project, Pikolinos supplies cut parts of its products for the Defora group to work on, for example, by making perforations in strips of leather and threading tassels through them to make a decorative sandal component. "With time and with patience, you can learn to do all these things," Mr Stoyanov says. "Some things have been more difficult to learn, but you can learn to do all of them if you have patience and enthusiasm." He says he dreams of being able to earn enough money to live in a home of his own and be more independent. He also wants to travel and visit different parts of Spain.

Juan Manuel Senen says the products in the Pikolinos Solidarity collection are stylish and well made and would have been a success anyway. But he says the fact they were made by people with learning difficulties adds value to the collection. "They're not just products that consumers will like," he explains. "In buying them, the consumer will also be helping the people at Defora become more integrated into society." For its part, Pikolinos said at the time of the launch that it regards

its support of Defora's work with this special collection as "an example of sustainable fashion in its purest form".

With regard to the future of Defora, Ángeles Brotons says she views it positively. "Pikolinos has backed us and has backed these young adults. It's a special team we have here making these products and I am confident that, with what we on the one hand and Pikolinos on the other are giving, we can continue to build on what they have achieved so far. I am full of hope for what Defora can become." 🍀



Young adults with learning difficulties at the Defora centre in Elche have worked with Pikolinos to produce a new Solidarity collection.



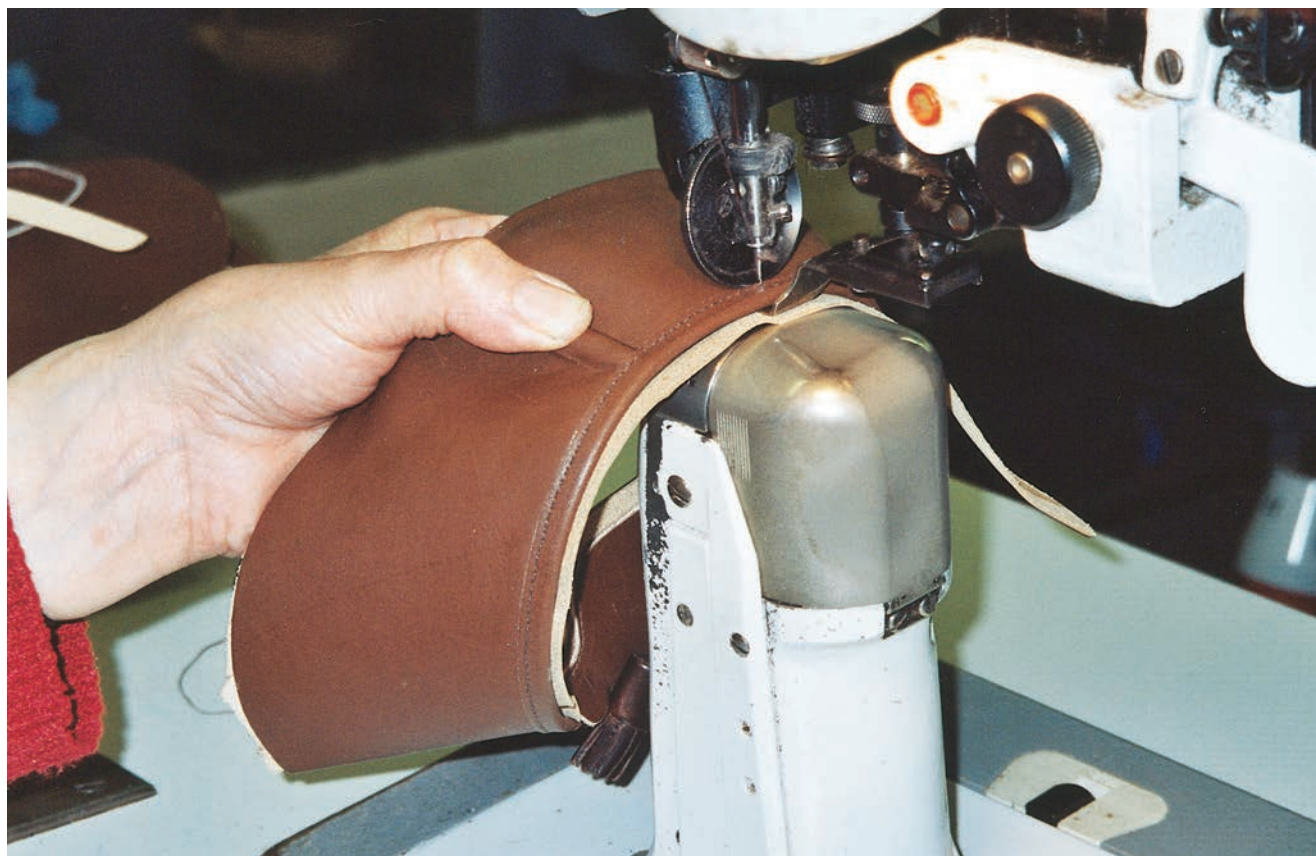
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CREDIT: WTP

Threads, needles and seams

STEVE ROSE, SATRA

Sitching forms a vital part of the construction of most footwear and threads are therefore a key component. Seam strength, however, does not just depend on the sewing thread used but a combination of a number of factors. Sewing threads are nevertheless critical to producing a strong and durable seam, and it is not just the size of thread which needs to be considered. Other factors are the yarn type and the actual thread construction. The three most common types of upper closing threads in use today are nylon, polyester and polyester/cotton cospun. This applies only to functional, load-bearing seams, not decorative or embroidery stitching, where other types may be used.

Nylon threads are commonly twisted two- or three-ply (depending on their size) continuous filament nylon 6.6.

These are usually bonded or lubricated. Twisted monocord threads have been used in bobbins for some time and their use as needle threads has recently become more prevalent.

Polyester threads are normally supplied as lubricated, continuous filament (CF), twisted or, for heavier applications, plaited or braided types. Bonded CF polyester threads are also

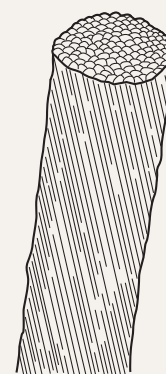
THREAD TYPES



Continuous
filament
(bonded)



Cospun



Monocord

THREAD TWISTS

Left or Z-twist



Right or S-twist



available, although less common than nylon. Staple (or spun) polyester fibre threads, which are produced using short lengths of yarn rather than continuous filaments, are little used in the footwear industry due to their inferior strength.

Corespun threads comprise a continuous filament core, usually polyester, with a staple cotton sheath. Although some types have a staple polyester fibre sheath, these are not common in the footwear industry. Corespun threads benefit from the heat resistance and 'natural' look of the cotton sheath while still retaining good strength properties due to the polyester CF core.

Whatever the fibre type, most footwear threads are produced by twisting together two or three separate cords. Control over the degree of twist used is essential as threads with too little twist will be prone to fraying, breakage and poor control during sewing. Those with too much twist will have a tendency to knot and twist (this is sometimes referred to as 'twist liveliness') especially around the machine thread guides.

A further factor which needs consideration is the direction of twist. Threads can be twisted in a 'left-handed' direction (known as Z-twist) or 'right-handed' (S-twist). Z-twist threads are most common in lockstitch machines, while S-twist threads are designed for specialist applications such as twin-needle machines where opposite twists are required to balance the direction of loop formation during stitching.

THREAD SIZE

Although the strength of the thread is directly proportional to its size (or weight), this is not the only critical

factor in producing stronger seams, as will be discussed later. However, for a given seam, if the thread is below a minimum size then the seam will never perform satisfactorily, whatever the other factors involved.

The most straightforward system for sizing threads is the tex system. This is based on linear density and tex value is defined as the weight in grams of 1,000 metres (1 kilometre) of thread. This is easily understood and can apply to any thread. For synthetic fibre threads, however, most thread manufacturers and footwear manufacturers refer to the 'metric ticket number' (Nm) system. This is based on the tex of a thread and assigns ticket numbers to specific ranges of tex values. However, as it is calculated by dividing a length over a weight, this means that the lighter the thread, the higher the ticket number and the heavier the thread, the lower the ticket number. The most common ticket numbers used as upper closing threads are as follows.

Nylon	Polyester & corespun
20	18
40	36
60	50

Nylon threads are usually slightly stronger than equivalent-size polyesters, but this difference is not significant. Although corespun threads are of the order of 20% weaker in the unsewn state, there is evidence that they suffer less weakening due to frictional heat effects during the sewing operation and may therefore end up with similar strengths as CF threads once seamed.

NEEDLE TYPE

Needles play a critical part in determining both the appearance and the performance of the finished seam. The type of needle must first be chosen to achieve the desired appearance. There are two main classes of needles: round point, also known as cloth or ball point, and cutting point, also known as leather point.

Round point needles are best suited to fabrics as they are designed to push aside yarns and fibres rather than to cut through them and are therefore less likely to damage the weave or knit structure. However, if used on denser materials such as leather, the high friction generated as they puncture the material can cause significant thread damage. Their use in leather products is therefore restricted to thin, lightweight leathers only. Round point needles can also be used on coated fabrics, although the plastic coating used can also lead to friction problems. The puncture hole in thin coatings can also be unsightly in the finished seam.

Cutting points have blade-like tips which can more efficiently cut through thicker leathers with minimum friction. As they cut the fibres in the materials being stitched, the most common type used is known as the 'narrow-wedge' type, which produces a cut perpendicular to the direction of stitching. This means that there is minimum damage to the fibres lying across the seam, maximising the strength of the finished seam. The narrow wedge needle gives distinctive 'off-set' or 'slanted' stitches.

Triangular tip needles are sometimes used where a straight stitch line is required. However, these cause more damage to the fibres across the seam and they need to be used with caution. A variation of this type of needle is the 'tri-R' type which is essentially a round point needle with a small triangular tip. This can significantly reduce the friction of the initial puncture yet cause less damage to the fibre structure than full a triangular tip. This type is therefore well suited to coated fabrics and light leathers. Common manufacturers' codes for these needles are as follows.

Narrow wedge	Coded NW or P
Round	Coded R
Triangular	Coded D or TRI
Tri-R	Coded SD

NEEDLE SIZE

It is essential that the size of the needle matches the thread being used, the size of which must first be chosen to suit the seam. A needle's size is usually marked on its shank. This is the widest part at the end of the needle which is used to clamp it in the stitching machine. Two main needle sizing systems are in use, metric and the Singer system, with metric the most commonly used today.

With both of these systems, the higher the number, the larger the diameter of the needle. The metric size is a direct measure (in hundredths of a millimetre) of the diameter of the 'blade', which is the main stem of the needle above the eye before it thickens into the shank. A needle with a blade diameter of 1mm is therefore designated as size 100. The Singer size is based on an arbitrary coding system which has no direct correlation to any needle dimension. Recommended needle sizes for the common thread sizes are as follows.

Thread ticket number	Needle size (metric)	Needle size (Singer)
20/18	110-120	18-20
40/36	100-110	16-18
60/50	90-100	14-16

SEAM CONSTRUCTIONS

First of all, there are two principal types of stitching: lockstitch and chainstitch. In upper closing, the most important is lockstitch, where the needle and bobbin threads are 'locked' together within the material. This produces the strongest and most stable

seams. Chainstitch is not to be recommended for functional seams in uppers as it is less strong and prone to unravelling if one end becomes damaged or undone. This type is usually confined to linings where durability is less important.

With lockstitch machines, the tensions in both the needle and bobbin threads are critical to effective locking of the threads in each stitch. Incorrect tensioning of one thread will draw the lock point towards one surface of the material. The closer the lock point to the material surface, the more easily can the thread be pulled from the seam and therefore the less stable it will be.

With respect to seam types, three basic seams are used in footwear uppers: lapped, closed and butt. The one most commonly used is the lapped seam, where one upper component is laid over the other. This usually means that the raw edge of the upper material is visible in the finished shoe. This may be undesirable particularly if the material is susceptible to fraying, as in fabric uppers.

The closed seam is where the upper components to be joined are laid face-to-face and a seam applied along one edge. When the two components are opened out after sewing the raw edges of the upper material are then hidden. After opening out, the raw edges are usually rubbed down (flattened) to avoid discomfort in wear.

The butt seam is where two components are laid edge-to-edge (abutted). As this type of seam is neither strong nor attractive, it tends to be used where the join is to be reinforced or covered by a third component. Common applications include backseams that are to be covered by a back strap or counter and in linings, where their relative flatness helps to minimise the risk of the seam rubbing on the foot. A zig-zag type of lockstitch is used to produce them.

SEAM DESIGN

Once the type of thread, needle and seam construction is agreed, there are still many parameters to be decided which will critically affect the strength and durability of the finished seam.

The distance of the stitching from the edge of the component (i.e. the edge

STITCH TENSION

Correct



Lock buried in material

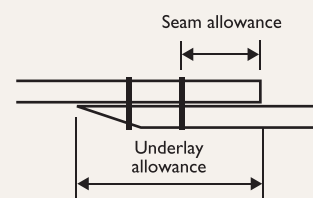
Incorrect



Lock showing on underside of material

SEAM TYPES

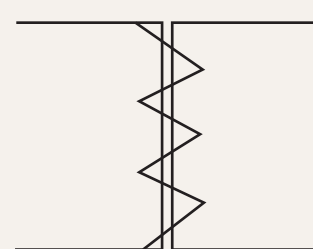
Lapped seam



Closed seam

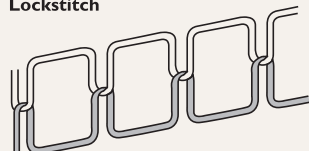


Butt seam

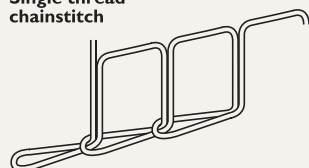


STITCHING TYPES

Lockstitch



Single thread chainstitch



distance or seam allowance) is critical to both the appearance and the performance of the finished seam, although this is less so with butt seams. Too narrow an edge distance can lead to material failure, while too wide an allowance can cause the upper to rub on the foot in wear. The precise allowance should be chosen according to the type and thickness of the upper material being sewn. Where one of both

of the materials are relatively thick, reducing their edge thicknesses by skiving may be necessary. Where materials are thin or weak, a reinforcement of one or both must be considered. This may take the form of overall reinforcement or local reinforcement at and in the vicinity of the seam.

After size and strength of the thread, perhaps the next most important contributor to final seam strength is the number of stitches per unit length of seam, known as the 'stitch density'. The more stitches there are in a given length of seam, the stronger it will be. Doubling the stitch density will effectively double the seam strength. However, there is a maximum density above which the stitch holes are so close together they merge and the material tears easily (known as the postage stamp effect). This maximum level will depend on the thread and needle sizes chosen. Another method of increasing seam strength is to add additional stitch rows as two identical seams will double the overall strength.

STITCHING QUALITY

There are two equally important factors in determining quality of stitching: the machine and the operative. Both require careful attention. The speed settings and the thread tensioning mechanisms of the machine must be correctly set for the types of stitching required. The positions of the controls are also important for ease and comfort of operation.

The operative's training will clearly be a factor in the quality of the work but this should not be confined only to the actual stitching operation. How the operative is seated in relation to the machine controls and the work piece is equally important as uncomfortable or fatigued workers will stitch neither well nor efficiently.

Operative training must also include the importance of regular needle changes as many materials will cause wear of the needle points which can quickly become blunted. These will then produce poor quality stitching and also cause more friction and heat damage to threads, producing weaker seams.

QUALITY CONTROL

Whatever the stitching operation, process monitoring in the factory is essential to ensure that all work is being progressed exactly as specified with respect to all the factors described in this article.

The final step in any quality control programme is testing the final product. As seam failure is consistently one of the most common causes of customer returns, testing the final seams is critical to ensuring ongoing quality and consistency.

There are many tests which can be conducted on threads and seams and the best combination will depend upon the footwear being manufactured and the type and position of the seam in the upper.

SATRA has developed comprehensive recommendations for threads, needles and seam constructions for use in various parts of all types of footwear types and is able to advise on the tests best suited to the materials, constructions and final products involved. 



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CREDIT: SHUTTERSTOCK/NENOV BROTHERS

Global safety footwear review

STUART CLEAVER

Safety footwear is one of the very few types of footwear which has to meet fairly demanding requirements in terms of national and/or international standards. There has to be a commitment on the part of the producer and supplier to have the products tested and certified by a recognised body. In the past until quite recently, relatively speaking, it was possible for some countries to protect local manufacturers with national standards and factory inspections, with Europe being a good example. There was also some disagreement as to which levels of protection were appropriate and which categories of footwear needed to be covered.

For example, the German approach at one time favoured a relatively high 'catch all' level of protection for most

categories of safety and work footwear. The UK and others' approach tended to apply varying levels of acceptance according to the type of use. For example, high risk, heavy work situations could/should be differentiated from low risk/lighter work situations. The cost of factory visits was, perhaps, another step too far for would be exporters to Europe.

Another factor determining the demand for safety footwear was the shift in both production and consumption. Footwear manufacture has, in general, migrated to lower wage cost countries in the Far East, above all, China. Consumption of safety footwear has been affected by a similar shift in heavy industry to lower cost countries, with the added factor that the use of standards may be less

there. Exports to Europe or North America and other developed countries will nevertheless still require compliance.

With the trend to economic trading blocs and free trade areas, the take up of international standards has gathered momentum and this has probably led to the classic economic choice for manufacturers of safety footwear. Either meet the basic international standard requirements as a producer/supplier and compete on price or meet the requirements and add value through service, delivery or additional features.

The international standards which have to be met include the European initiated EN ISO 20344 and 20345 (plus 12568-covering toe caps), the USA ANSI F2412 (Test Methods for Foot

Protection) and F2413 (Specification for performance requirements for protective footwear) and the Canadian Z 19502- Protective Footwear.

THE GLOBAL MARKET

To quantify the safety footwear market on a global basis is not easy due to factors such as the collection, verification and differentiation of production figures in many countries. Even developed countries do not always carry out the collection of production statistics on a scale which was carried out in the past.

The global market for industrial protective footwear has been estimated by Research & Markets at \$2.37 billion in 2012, rising from 2013 at an annual CAGR (compound annual growth rate) of 8.5% to \$4.3 billion in 2019. Transparency Market Research indicates that the market in 2013 was worth \$6.32 billion and could reach \$9.46 billion by 2020 with a CAGR 2014-2020 of 6%. Another source estimates a market of \$3.72 billion in 2014. These differing statistics are partly due to the scope of the footwear covered.

In North America in 2013 the construction industry was the leading user of protective footwear, spending \$668.3 million with stable growth expected for the next five years. Oil & Gas was the fastest growing sector at \$158.4m. Europe was the largest overall market in 2013 with leather footwear the leading type with sales of \$1,890 million and further steady growth forecast. Synthetic footwear was expected to grow most strongly with a CAGR of 7% until 2020.

In 2015 the volume of safety footwear production increased globally by 7.8%, with China up by 6.9% and Asia, as a whole, by 10.2%. This meant that Asia was responsible for 53% of world production. It is predicted that by 2018, total output will be approaching 400 million pairs of which Asia will be producing 58%.

NEW COMPANIES HAVE APPEARED

In Europe and the USA, legislation and standards have driven the supply of protective and safety footwear, although the amount of low cost footwear dampens the value of sales. Furthermore, automation in manu-

Regional share (%)

	2014	2015
Far East	52.3	53.5
Middle East	2.4	2.4
Eastern Europe	9.6	9.3
Western Europe	9.0	8.3
South America	10.5	10.4
North & Central America	10.0	10.0
Africa	6.0	5.9
Oceania	0.2	0.2

facturing and other industries has reduced the workforce and need to protect them. Women's safety footwear has risen, particularly in the USA, as has the supply to niche markets.

There has also been some movement in the leading safety footwear companies which had become market leaders in their own sectors and subsequently found difficulties with the rising competition from the Far Eastern safety footwear companies. Totectors based in the UK was a well known name in the sector but the production facility had to be sold. The name lives on, however, as Totectors UK which bought the brand in 2014.

Jallatte was also a leading manufacturer and name in the industry. The eventual formation of the JAL Group incorporating French, Italian, German and Tunisian interests, expertise and labour meant that it became one of the largest safety footwear producers in Europe if not the world. Again, this could not be maintained and the Group collapsed with the loss of much of its labour force, particularly in Tunisia. U Power of Italy took over some of the assets and Jallatte has continued at a reduced level in France.

With a 'vacuum' at the top, other groups have come to the fore, mainly based on Far Eastern manufacturing strengths. Golden Chang was one of the first Far Eastern companies to take a step forward as a leading safety footwear manufacturer and as possibly the leading producer of Goodyear Welted footwear. It is now part of the Oftenrich Group which consequently is also amongst the leading safety footwear manufacturers vying for market leadership in terms of volume

supplied. Other groups which have emerged in developing countries includes BSB Group of Brazil, Saina of China and Rahman of India.

Some traditional safety footwear companies have also still managed to keep a strong presence although this may be a case of concentrating more on niche markets or higher quality footwear. Bata Industrials, Wolverine Group and the newly formed BBF group in South Africa are based on a strong heritage.

DRIVERS FOR FURTHER EXPANSION

The present expansion in the use of safety footwear has been due in large part to the growth in inexpensive footwear. In the future there may also well be an increased emphasis on adding value. The potential in China should continue, albeit at a slightly lower rate in the shorter term. Other BRICS countries may see a varied pattern of demand. India should show strong growth, whilst Brazil and Russia have shorter term problems to overcome. The demand for women's safety footwear should grow further and new niche markets will become evident. Automation and the use of robots is present in the sector and will expand and give further impetus for faster and less expensive production which in turn should help expand consumption. 

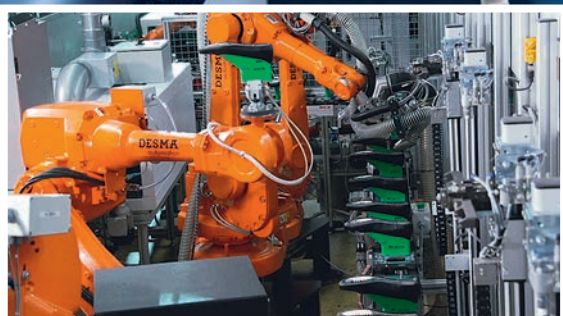
This article is based on extracts from the author's recently produced World Safety Footwear Review which gives further information on the sector including data on 600 manufacturers and suppliers and information on over 80 countries.

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ALL CREDITS: SLEM

Edible, growable, infinitely reusable

YASSINE SALIHINE, SLEM

Leather has been the prime shoemaking material for a very long time. However, in a world with a rapidly growing population and dwindling resources, it is time to rethink what our footwear should be made of. Modern technology can help us to use our resources wisely and differently. This was the central theme of the Future Footwear Materials Conference organised by SLEM at Waalwijk, the Netherlands, in partnership with Jakajima, the matchmaker for innovators in high tech industry, this April. It brought together some 70 professionals from all over the world who came to listen to international experts in the fields of footwear, sustainability and design.

Each year a staggering 24 billion pairs of shoes are produced. An average shoe is made up of 40 different materials and a large proportion of these materials

also have more or less the same density. This makes recycling very difficult as most separation methods are density based. In addition, there are metal parts that add 50% to the total cost of recycling. Professor Shahin Rahimifard, professor of Sustainable Engineering at Loughborough University in the UK and founder and director of the Centre for Sustainable Manufacturing and Recycling Technologies (SMART), presented the challenges for the footwear industry in no uncertain terms.

This was exactly the point of the Future Footwear Materials Sleminar, to address those challenges and to look for alternative ways of creating footwear. As SLEM's founder and creative director Nicoline van Enter put it in her welcome speech: "At SLEM we don't do innovation, just for the innovation, it has to have a purpose. Or meaningful

innovation as we call it." Pushing the boundaries of innovation is something that the speakers at the 'Sleminar' all had in common. Professor Rahimifard's team has had great success with recycling shoes and reclaiming materials with, in some cases, 90% purity. But as far as he is concerned, the reactive approach is but a small part of the solution.

To really change the process, it is necessary to move from a reactive to a pro-active approach. This means it is no longer only about end of life scenarios in which shoes are recycled, but also a life-cycle assessment that concerns material preparation, product development and use. Creating a circular economy, striving for sustainability in a business sense, that is his aim. This is only possible if footwear companies come together to create working groups to share knowledge in



Belgium shoe designer Kristel Peters has experimented with Mycelium fungi for making shoes.

the same manner in which the leather industry already does.

This all revolves around acknowledging that no one operates in a vacuum. Sanne van den Dungen, Independent Consultant at Meshworks, RTB and FBBasics, strongly emphasised the take-make-waste principle that the world is dealing with at this very moment is a dead end street. A large number of resources are depleted to the extent that there is already a scarcity in many countries and this leads to geo-political issues as well.

What does a country do when it no longer has the necessary resources itself? There has to be a transition from an obsession with efficiency which aims to reduce negative impact to promoting one which optimises effectiveness. The focus should be on abundance and not scarcity. Footwear used to be made with the materials that were available locally. The Industrial Revolution changed that paradigm forever and ushered in an era of standardisation and efficiency. The tooling dictated the design and the speed of production created consumers instead of users always longing for the new thing even though the old thing is still usable.

Many of the speakers focused on the aspects of local, grown and waste materials. Looking indeed at what is abundant and manipulating that with modern technology into usable materials. Take for example fungi such

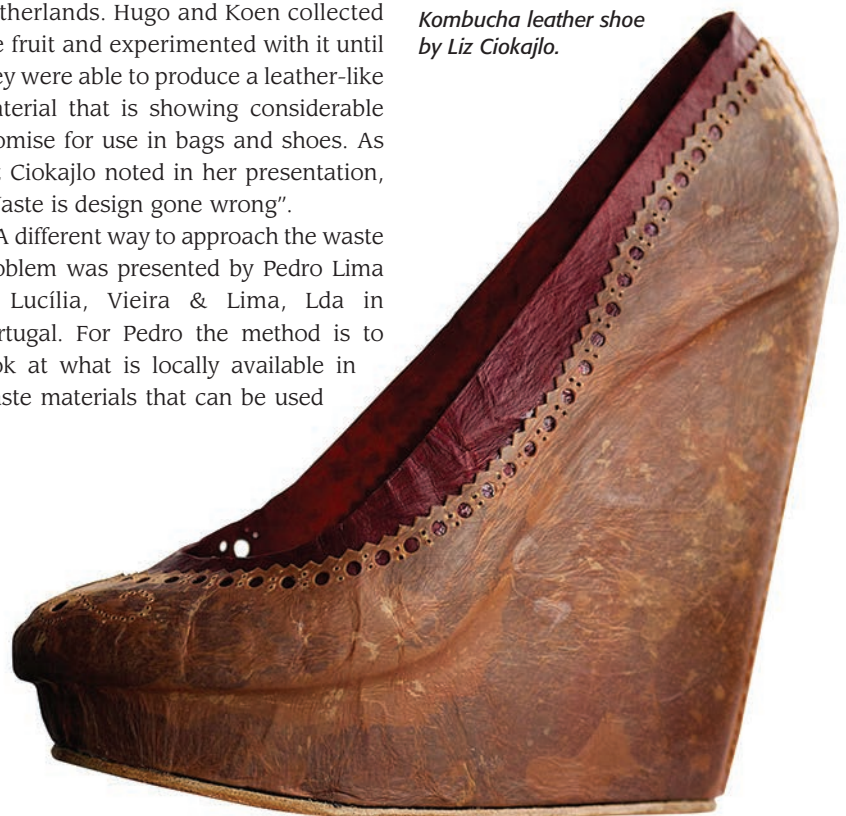
as Mycelium that has been used by Belgian shoe designer Kristel Peters. This is part of a growing movement exploring the potential of materials made from cultured organisms such as Kombucha leather by Liz Ciokajlo.

An excellent example of using waste is the Fruitleather project by Hugo de Boon and Koen Meerkerk. A staggering 3,500kg of fruit is thrown away each working day at the Rotterdam market in the The Netherlands. Hugo and Koen collected the fruit and experimented with it until they were able to produce a leather-like material that is showing considerable promise for use in bags and shoes. As Liz Ciokajlo noted in her presentation, "Waste is design gone wrong".

A different way to approach the waste problem was presented by Pedro Lima of Lucília, Vieira & Lima, Lda in Portugal. For Pedro the method is to look at what is locally available in waste materials that can be used

in industrial processes. This resulted in shoes with a 90% recycled material content and consisting of a wide array of materials including truck tyre inner tubes, waste leather from car seat cutting, PET bottles, recycled rubber soles, etc. All are sourced close to the factory and, with only slight modification, usable with standard tooling. This could be an important step

Kombucha leather shoe by Liz Ciokajlo.





Bag made from fruit leather produced by Hugo de Boon and Koen Meerkerk.

in reducing the negative effects of footwear production.

While radical methods of shoe manufacture are emerging, as for example, 3-D printing and Biofabrication, it is important not to overlook current production methods because even a small change there can have a big impact due to the massive scale. That is why it is important to look at the supply chain as well. Simplifying it or making it more transparent would be a considerable help. Mike Tomkin, the retired Director of Sustainability at chemical producer Stahl is one of the proponents of this. The leather industry is perceived by many people as being a dirty business. Much progress has been made, however, due to stricter regulations, cooperation and joint research into sustainability by various leather tanneries and chemical companies in the Leather Working Group.

A great deal can also be gained by changing perceptions about leather with manufacturers and consumers. The trend towards using leather that is totally blemish free and is indistinguishable from a synthetic due to heavy processing is wasteful and untenable in the long run. It hinges on the idea that perfection is luxury. This leads to hides where large parts are either thrown away or are heavily chemically processed. A mindshift has

to be initiated towards framing the natural as luxury, by emphasising the craftsmanship of naturally tanned leather and recoding the blemishes as the marks of a healthy active life.

Materials will become the driver of design and include a more scientific approach to material development with engineered functional features and a pre-programmed end of life script. While we have seen a glimpse of this in the design of performance footwear, this method will cross over to casual and comfort footwear.

Ms van Enter also pointed out the importance that interactivity will play in future materials by talking about and

showing examples of chemically interactive, biologically interactive and digitally interactive materials under development. This will create a world in which every surface can be turned into an interface. These interfaces mediate between the need of the user and the capability of an object to accommodate that need. An example that was shown was a suit by New Balance that has bacteria in the fibres that react to sweat and make the suit open up tiny vents that cool down the body.

The use of biotechnology in material design will only increase in the near future as was shown by Sasha Igdari, a Molecular Biologist from the US attending the SLEM Master of Footwear Innovation programme. She is developing laboratory grown leather with engineered functional features for use in footwear. Lab grown skin has already been used by cosmetics companies to replace animal testing and in the medical world to treat burn victims. The advantages are that only the material that is needed is produced and that the entire shoe could be grown into the desired shape.

What the conference made abundantly clear is that there are multiple roads to be taken. What road to take depends on the individual situation of each individual company. Working together with other companies that have chosen the same road is nevertheless the only way to travel. It ensures that you can travel further than you could have done alone, because you will certainly encounter obstacles along the way and it is easier to overcome them when you have help. 

SLEM

SLEM is an international innovation and education institute for footwear. It provides a unique full-time Masters programme for footwear innovators and a wide range of short courses and workshops for both students and professionals. Programmes are all based on the synergy of four main pillars: forecasting, design, technology and business. The forecasting and business programmes are also suitable for other industries such as leather goods, fashion and industrial design.

SLEM's Innovation Research lab is at the heart of all its activities and the continuous research and analysis carried out assures programmes offer the very latest information, presented by visionary experts in the field. SLEM also provides trend information and consulting to customers around the world, through custom-made projects and SLEMinars, which are major conferences showcasing the highlights on innovation for the footwear industry of tomorrow.

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Using the Jacquard method of weaving, an almost unlimited range of patterns, textures and colours can be incorporated in each upper design.

ALL CREDITS: LENZI EGISTO

Precision weaving

Lenzi Egisto has been weaving textiles for over one hundred years and during that time has created a totally integrated design and manufacturing system that is capable of producing extremely advanced and complex woven materials. The key factor in the company's ability to do this has been a large and sophisticated R&D department, combined with a manufacturing capability that includes advanced weaving and bonding techniques. The result has been a range of highly successful safety materials for many industries and end uses.

A good example of this is a material developed for hunters and the military to resist snakebite. Snakes' fangs are extremely sharp and capable of penetrating all conventional woven materials. Two years of research produced the answer which, although a complex material, was one that did provide effective protection against both snakebite and also knife wounds.

It comprises a woven Kevlar fabric coated with a layer of polyurethane and carborundum. An extra layer of carborundum platelets is then applied to the top surface in a formation similar to the scales of a snake's own skin.

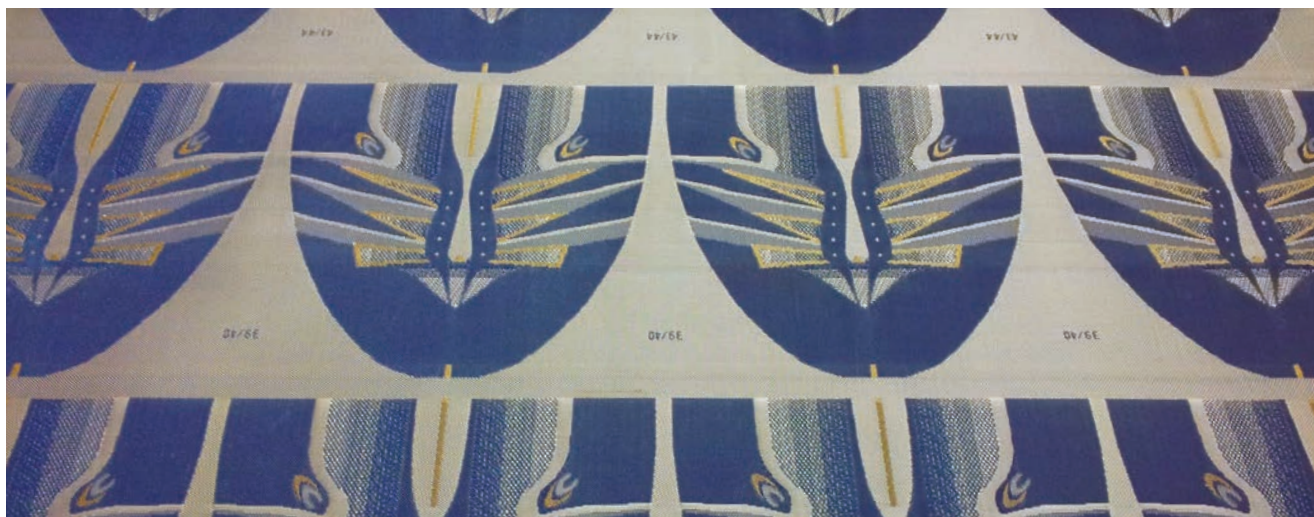
A further example is the L-Protection woven insole material introduced in 2002 which has had a major impact on safety footwear. This replaced conventional steel protective insole plates with six layers of tight weave fabrics, three of 100% Kevlar and three of polyester HT. These six layers were coated with PU resin enriched with a ceramic (Silicon Carbide - SiC) and then laminated together. The resulting material was lighter, more flexible and offered better protection in that it could be cut to the precise shape needed to match the shoe bottom so that there were no gaps where a sharp object might penetrate. The product has since been modified into a more economical – though still high performing – 100% polyester insert. It

is this ability to come up with novel solutions to difficult problems that is Lenzi's great strength.

PERSPAIR

The latest innovation is Perspair, a unique concept whereby the design for an upper is incorporated into a woven material and only needs cutting out and seaming at the back. It again takes full advantage of various technologies developed at Lenzi to give special high tech features suitable for use in climbing boots and safety footwear or, from an aesthetic design aspect, even the humble sneaker.

The method of manufacture used here is based on Combo Technology, a resin-free method developed by the company which bonds fibres together. This system, originally developed for mountain boots, produces maximum breathability, high abrasion resistance and great durability. Independent tests have shown excellent mechanical performance, with tear strength in



Perspair is supplied in roll form with the upper design woven in rows.

excess of 300N in the warp direction and 200N in the weft, against recommendations for high demanding footwear of 60N in the warp direction and 40N in the weft. Abrasion resistance was similarly shown to be extremely good.

CUSTOMER DESIGNS

The Jacquard method of weaving used enables customer designs to be produced using pdf or dxf formats. These are woven in up to four groups, each of which will cover three shoe sizes. The customer can choose from a selection of weaving structures, indicating their preferred texture and colour for each individual area of the design. The material is woven either exactly, or as closely as is technically possible to these instructions.

The finished material is supplied in roll form with the uppers running lengthwise (warp) and for sizes EU 37 and over four across (weft). Smaller sizes will have more rows depending on actual upper size. The upper and tongue can be placed either together or separately; the latter makes final die-cutting easier. It is also essential if its laminated structure is different from that of the upper.

Some of the special fibres used by Lenzi, such as 3M retro reflective threads for visibility, Kevlar or Dyneema for reinforced areas and Hypertek ultra abrasion resistant thread for built-in toe protection, can be incorporated in custom-made vamp designs. Thanks to seamless technology, a membrane can be laminated directly to the reverse side of the vamp for water resistance

JACQUARD PROCESS

The Jacquard process developed in the early 19th century made it possible to automatically produce unlimited varieties of woven patterns. The term 'Jacquard' refers to the control mechanism that is added to a weaving loom that automates the way it creates the individual pattern. The machines operate using a continuous roll of punched cards where the location of the holes determined the final woven pattern. They were usually small and relatively slow to operate due to the downtime involved in changing card rolls between different designs.

The advent of electronic control in 1983 has increased Jacquard machine output capacity significantly as there are no card chains to change, just a quick switch from one design file to another. CAD design has also allowed almost infinite versatility in terms of pattern, type of thread and colour combinations. This modern digital technology has also made Jacquard weaving more flexible in terms of batch size and made the Perspair woven upper system a practical reality.

or, alternatively, Lenzi's own L-System interlining for bacterial protection in the finished shoe.

While Perspair will not be suitable for many types of footwear, it certainly offers some real possibilities for specialist footwear producers aiming at the extreme sports and certain

sections of the safety markets. Bearing in mind the minimal cutting and stitching involved, plus the possibility to use a sewn-in-sock construction combined with direct bottoming using PU, would make the automated production of such footwear in higher cost economies a viable proposition. 



Minimal cutting and stitching combined with a sewn-in-sock construction makes Perspair well suited to automated manufacturing systems.

More to the point

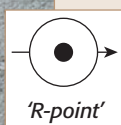
The possible combinations of point shape, angle and size of sewing needles is in fact immense and selecting the best option depends on the materials to be sewn, their thickness and the nature of the finished product. For this reason, many manufacturers understandably prefer things to remain simple and so tend to keep to basic

shapes and sizes. However, by looking at alternatives they might, in some instances, obtain improved seam quality and appearance by using alternatives.

When using a needle with a standard cloth point such as R-point, the appearance of the stitch will differ. The degree to which this happens depends on the sewing direction and the

properties of the leather. For a constant seam appearance in all directions, it is necessary to use a needle with a cutting point. Where a perfectly straight stitch formation is required in all directions, S-, LL-, D- or DH-points are best. When a seam with an offset stitch formation is called for, the best choice is either Lr-, Vr- or P-point.

Seam with R-point needle.



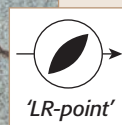
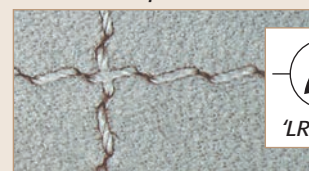
'R-point'

Seam with LL-point needle.



'LL-point'

Seam with LR-point needle.



'LR-point'

CUTTING POINTS

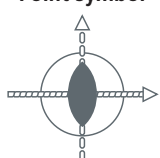


Seam appearance



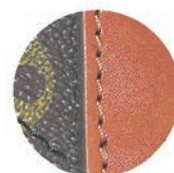
Narrow cross point »S« or »NCR«

Point symbol



Direction of seam

Narrow cross point – lens-shaped cross section. Incision follows seam direction to produce a very straight seam. Suitable for all upper leathers.

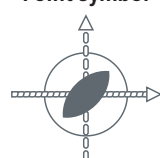


Seam appearance



Reverse twist point »LR« or »RTW«

Point symbol



Direction of seam

Reverse twist point – lens-shaped cross section. Incision at 45° to seam direction produces a decorative seam slightly inclined to the left. The best needle for decorative seams and also suitable for all upper leathers.

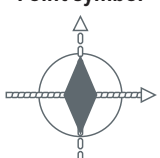


Seam appearance



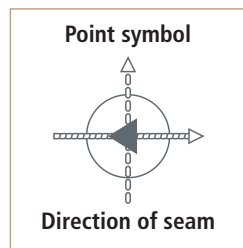
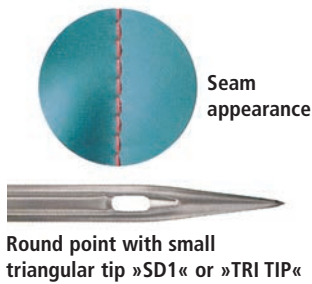
Diamond point »DI« or »DIA«

Point symbol

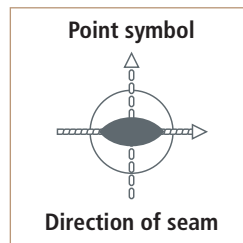
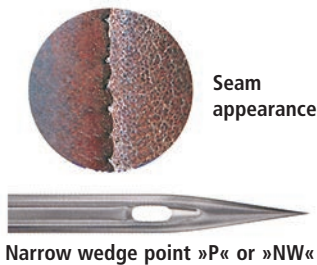


Direction of seam

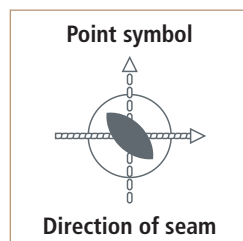
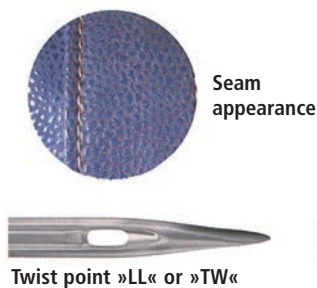
Diamond point – rhombic cross section. Centred incision in seam direction produces a similar seam to an S point. The four cutting edges pierce hard materials more easily resulting in a very straight recessed seam. Suitable for tougher materials, it also produces a precise and tidy seam with no needle deflection.



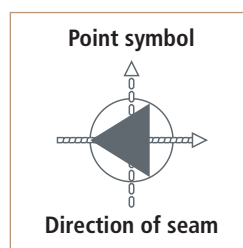
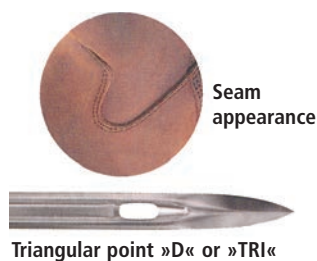
Round point with small triangular tip – triangular tip cuts 10% of the stitch hole and the rest is displaced by the conical R point. Ideal for multi-directional stitching on computer stitchers as the stitch looks the same regardless of direction.



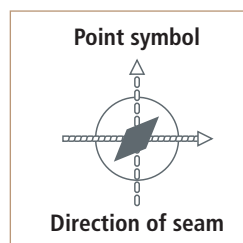
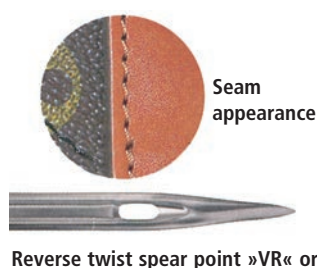
Narrow wedge point – lens-shaped cross section. Incision at 90° to seam direction produces a very strong seam and is again suitable for all upper leathers. The twist ensures that when the needle emerges from the material, the thread is held in the twist groove and not drawn over the edge of the groove, needle eye or cutting edge and is thus not damaged. CL has a left twist groove below the eye for hooks turning clockwise; CR has a right twist groove for hooks turning anticlockwise and is ideal as the left hand needle on twin lockstitch machines.



Twist points – lens-shaped cross section. Incision at 135° to seam direction produces a slightly recessed straight seam and is again suitable for all upper leathers. LL is particularly useful for shoe repairs. LLCR gives the same appearance on hooks turning anti-clockwise as LR on those turning clockwise.



Triangular point – triangular cross section produces a straight seam. The best cutting effect of all points, it is most suitable for heavy boots in hard, dry leathers.



Reverse twist spear point – rhombic cross section. Incision at 45° to seam direction produces a seam inclined slightly towards the left. Better cutting than a comparable reverse twist LR point, it is also suitable for hard dry upper leathers. The four cutting edges give a good stitch appearance with no needle deflection.

CHOOSING THE RIGHT POINT

There are a few basic facts that are important to remember:

- The correct point is determined by stitching technique and desired seam appearance
- Needle size is dictated by stitching technique, choice and thread thickness, and required seam appearance
- The harder and thicker the material, the thicker the needle must be.

To be absolutely sure the correct combination of needle to thread and intended application is made, it is best to seek advice from the technical staff of both suppliers. Strong, attractive and well-formed seams are essential for a sound and well finished shoe.



CREDIT: SHUTTERSTOCK

Sewing yarn numbers

A sewing thread is built up from yarn twists that consist of at least one or, more usually, two or more yarns. How this has been done determines its final properties which are specified by several factors. Its construction defines the individual thread type, its twist which defines its sewing performance and its ply which identifies the number of single yarns it contains and how they are combined. Specific codes are used to identify these yarn counts.

METRIC (NM)

This indicates metres of yarn per gramme – eg: Nm 120/1 = 120 m/gram. The number to the right of the diagonal stroke denotes number of individual yarns (folding number) in a ply-yarn – eg:

- Nm 80/2 = two yarns each of 80mt total weight 2g
- Nm 120/3 = three yarns each of 120mt total weight 3g

Both have the same cross-section but individual yarns of different length and both weigh 25g/1000.

**The same length and weight give the same cross-section.*

LABEL (NO.)

This was developed from Nm but does not indicate folding number from the quantity of individual threads in the ply-yarn. Used to describe the thickness of a thread without providing technical details, it is based on the cross-section of a three-ply ply-yarn even when it involves a different folding number – eg:

- No. 120 may be Nm 80/2 or Nm 120/3
- No. 100 may be Nm 65/2 or Nm 100/3
- No. 75 may be Nm 50/2 or Nm 75/3

**The lower the number, the coarser the yarn.*

ENGLISH COTTON (NEB)

This is used to classify cotton yarns and shows how many 840yd (768.08m) hanks weigh one pound (451.59g) – eg:

- NeB = number of 840yd hanks
1lb

(NeB 60 indicates 60 hanks of 840yd)

A label number is based on the cross-section of a three-ply yarn even when there is a different folding number. A three-ply yarn can also be

shown as NeB 40/3, so the system is still often used for synthetic yarns, regardless of their raw material. Because synthetic yarn is usually two-folded, NeB 40 is the usual way to express NeB 40/2 as against a two-folded cotton yarn which will always have the full mark NeB 40/2. It is normally used in Asia for polyester threads manufactured by the cotton or three cylinder spinning technique.

TEX (TEX)

This represents an effort to concentrate the various classifications of yarns and ply-yarns. Based on the SI units system, it shows how many grammes 1,000 metres of a single yarn weighs, so one tex is the size at which a one kilometre strand or yarn weighs one gramme (1 tex = 1g/km) – eg:

- One yarn is Nm 40 (40m = 1g), so 1,000m is 25 tex (1,000 ÷ 40 = 25g).

**The higher the tex the coarser or stronger the yarn; the lower it is, the finer it is.*

Sewing thread is a surprisingly complex subject, so it is wise to seek expert advice. 🧵



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Ashley Roberts made her name as a member of US girl group The Pussycat Dolls. She has loved performing from a young age and now she is putting her energy into something that she is even more passionate about - shoes. She spoke to *World Footwear* about what her first collection means to her.

In her shoes

The Pussycat Dolls achieved mainstream recognition during the 2000s with two best-selling albums, sold-out world tours and a series of catchy hits. Alas, all good things come to an end and in 2010 the members of the band went their separate ways. Since then, Ashley Roberts has acted in a Hollywood film, released a solo album and made herself at home on UK television screens. Conquering the footwear industry is the next target in her sights with a range of shoes bearing her middle name, Allyn.

"I've always had a huge passion for shoes so starting this as a venture seemed like the logical next step," she says. Now a familiar face for fans of popular, peak-time Saturday evening television shows in the UK, she has chosen to branch out into footwear. "I launched the collection now as I wanted to have something I owned and created myself. The timing just seemed right," she explains.

A self-professed shoe addict, she admits to losing count of exactly how many pairs she owns, estimating that her collection, split between wardrobes in London and Los Angeles, runs into the hundreds. "Shoes are like candy to me, I get excited and love finding a shoe that adds to the collection and can open up my wardrobe," she enthuses.

Allyn will be a premium brand with prices starting from £160. Although targeted primarily at 25-40 year-olds, she insists that "there are designs and shoes to suit all types of women". Ms Roberts sees beautiful footwear as a means for women to increase their confidence and, in her own words, help them "to kick ass".

Her experience of the scrutiny that comes with being in the public eye has given her a better understanding of the stereotypes women are sometimes asked to adhere to. "It's really important for me that Allyn can be worn by every kind of girl," she says. Her designs will incorporate the mix of personas that make up her own identity and with an unusual combination of features that "embody femininity and a hint of cowboy-western".

A passion for shoes is the key motivation behind the project but she was also inspired by her family's musical background. Her father was a drummer for 1960s folk rock group the Mamas & the Papas and her mother was a pilates instructor. Music and performing have always been a part of her life and these influences will feature heavily in Allyn.

She intends to take the knowledge garnered from working in the entertainment business and apply it to this new venture. She won't hesitate to use her connections within the industry to drive the brand's success but understands that she will need to seek out advice along the way as she embarks on an adventure that is "all new" for her.

"I'm very excited to have somethings that's mine," she



The Pussycat Dolls at the 2008 MTV Movie Awards. The band went their separate ways in 2010.

CREDIT: S BUKLEY / SHUTTERSTOCK.COM

effuses, describing the project as her "baby". She will be involved in "every step of the design process" and is proud to be able to call the collection her own.

"Using the best quality materials was always key to the project" because she wanted to establish a premium brand. All of the shoes will be manufactured using high quality Italian leather at the Oxmox Italy factory near the city of Naples, who will be sourcing fabrics, materials and accessories from all over the country. The "shoes will be made up of materials from all over Italy which embody passion and quality".

Oxmox Italy, founded in 1965, is a family-run business that specialises in footwear and is based in Nola, a town in the Campania region. It produces women's shoes that are made exclusively from leather and exported all over the world. Three generations of the same family work there and this struck a chord with Ms Roberts due to her own strong family values. She is impressed by the company's work, revealing that the "experience and passion in creating beautiful footwear is really incredible".

Ashley Roberts – performer, actress, TV presenter and now shoe designer. She is excited to watch her designs take shape over the coming months with the range due to hit shelves in time for Christmas 2016. 📌

Ashley Roberts is channelling a passion for shoes into her first footwear range.

CREDIT: ASHLEY ROBERTS



*The shoes are leather made,
orange suede on the outside.*

ALL CREDITS: EASYJET



Best foot forward

Travelling to a new city is a great way to spend the weekend and the arrival of budget carriers only increased the options for aspiring globetrotters. When you arrive at a new destination you are faced with the daunting prospect of navigating your way around without forgetting to enjoy yourself, which is the point after all. In your haste to visit all the monuments and museums on your 'must see' list, it is too easy to forget to enjoy the sights and sounds along the way.

Modern sightseers may have less use for printed maps than previous generations but the digital version, available on a smartphone for example, still results in tourists spending more time looking down at their map than up at their interesting and exciting new surroundings. EasyJet's new venture may make that a thing of the past with the creation of a smart shoe that helps you navigate without the need to look at a map in any form. As the UK airline puts it: "Travelling is not just about the destination, it's about enjoying the journey."

Sneakairs, the smart shoes developed by easyJet, are the result of a collaboration with technology expert D6, who specialises in the rapid development of prototypes. Those who have grown up in the age of social media, always on the lookout for the picture-perfect shot, can be safe in the knowledge that no aspect of their trip will be left undocumented and that there will be ample evidence of their adventures on their Instagram or Facebook accounts.

"We have developed this navigation solution because we have seen too many gaps in the market for a product," says Nuria Martínez, digital area director at D6. "It's also a great fit for an airline such as easyJet who fly so many people to new, perhaps unfamiliar destinations."

Peter Duffy, easyJet's marketing director, adds that the shoes are designed for "passengers who want to relax visiting a new

Low-cost airline easyJet has developed a prototype vibrating smart shoe that could help tourists find their way around cities more easily. The company is urging travellers to "forget your mobile and map, and get on with enjoying the city".

place without the need of a map and enjoy every moment while they explore a new city."

The smart shoes are equipped with a "low energy Bluetooth monitor" that is inserted beneath the insole and connects to a dedicated smartphone app. EasyJet's "pedestrian navigator" uses Google Maps technology and the app pinpoints the phone's GPS location to detect the proximity to an intersection. It is designed to run in the background so once the device has been synchronised with and the destination selected, the smartphone can be placed in a pocket or a bag and the jet-setter can focus on soaking up the sights.

Good vibrations

The wearer's GPS location is determined in relation to the desired destination and a small integrated vibration motor, similar to those used in smartphones, activates to tell the wearer which way to go. One vibration on the left shoe indicates that the wearer should take the next turn in that direction and the same applies for right turns. If a wrong turn is made both shoes will vibrate twice. Once the wearer turns back on to the correct course, single vibrations will continue to guide

them. Three vibrations indicates that the pre-programmed destination has been reached.

The electronics within the device are protected by a tailored plastic housing created using a 3D printer. EasyJet says it "helps maximise the contact area and distribute the vibration throughout the shoe".

The Sneakairs were unveiled in May last year at the Barcelona Street Project, an event organised by easyJet where the prototype also underwent its first test. Testers wearing the shoes were asked to walk to well-known landmarks around the city without a map to see if they were guided correctly. Reports from easyJet were that the trial was successful but as yet no further plans to test the Sneakairs have been announced.

EasyJet hopes that the product "could be developed for its passengers to purchase on-board in the future" although it isn't yet clear if they are comfortable enough for prolonged use or how much they might cost. Nor has any information been released concerning the waterproofing of the prototype and its built-in technology or how long they could function without the need for charging.

The airline says that the Sneakairs "combine low power consumption with optimum range and resistance to interference" and D6 insists that "throughout this project we had to factor in that it should be low in energy consumption" but poor battery life is likely to be the main barrier to any mainstream success.

As it stands, the Sneakairs are just an exercise in innovation. The website of The Barcelona Street Project gives visitors the chance to say if they 'like' the idea so that easyJet can gauge the interest from the public before deciding on the next step in development. The company says that the feedback received about the project so far has been "really positive" and that it will continue to work with its technology partner to make the Sneakairs a reality. Crowdfunding has not been publically discussed by the company but it is becoming increasingly common and potentially lucrative, so that it is a possible route forward in the future.

An easyJet spokesperson described the Sneakairs as "a versatile product built with components that can be used in almost any kind of footwear". The airline plans to continue its development of the technology and try to develop a smaller device that can be inserted into any shoes.

All about sole

This idea has already been explored by two companies who have trialled similar products based on vibrating sensors.

Anirudh Sharma, a researcher in Bangalore, India and his business partner Krispian Lawrence founded Ducere Technologies in 2011 with the aim of creating innovative examples of wearable technology. Together they created Lechal, a range of footwear initially designed to help visually-impaired people. In 2014 it launched a commercial version targeted at all people, although money from the sale of each pair was still donated to charities that help the blind.

The Lechal concept, which is Hindi for "take me along", was powered by a compact pod that can be snapped on to the company's specially designed shoe. In a similar way to the Sneakairs, it used Bluetooth to connect to a smartphone app and a motor within the stainless steel pod gave the wearer haptic or vibratory feedback to guide them to their destination. As well as a proximity sensor at the front of the shoe to detect

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The Sneakairs are not easyJet's first foray into wearable technology. To celebrate its 20th birthday in November 2015 the airline unveiled a series of prototype designs for cabin crew and ground staff that incorporate wearable technology.

The proposed cabin crew uniforms feature LEDs on the shoulders and illuminated hems to provide extra lighting in case of an emergency. Similar panels on jacket lapels would display important information like flight numbers and destinations and the designs feature built-in microphones to improve communication between the crew, pilots and passengers.

The ground staff uniforms have LEDs in the jacket cuffs to make aircraft movement on the ground safer. LEDs in the jacket hoods of engineers on the ground will allow them to work with both hands when carrying out aircraft inspections and maintenance. The uniforms also have reflective panels to make staff more visible when out on the air field, in-built cameras to allow quick diagnosis of technical issues remotely and microphones for instant communication with their base.

obstacles, vibration motors across the sole of the shoe would tell the wearer whether to carry on going straight, make a turn or go back.

The company further expanded the concept with a polyurethane insole that could be placed inside non-Lechal shoes. The insole had a compartment for the pod that was located underneath the most sensitive part of the foot to maximise the effect of the vibrations.

Dhairya Dand, a researcher at the Massachusetts Institute of Technology, developed a similar insole concept that he called SuperShoes. Rather than vibrate, the insole had three vibrotactile devices near the toes that tickled the foot when the wearer needed to change direction. Among the interesting features was an option to let the accompanying smartphone app plan a route depending on your schedule. It had the ability to check your calendar and plan a more scenic route if it was empty or a quicker route if you had an upcoming meeting or commitment.

No company has yet managed to establish a mainstream product of this type. The Apple Watch makes use of haptic signals on the wrist, but with easyJet's Sneakairs already at the prototype stage, perhaps it won't be long until a vibrating smart shoe offers stress-free navigation and changes the way we travel forever. 

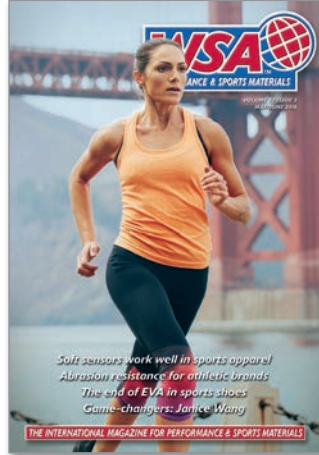
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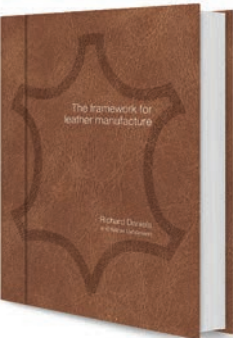


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