

FOOTWEAR TECHNOLOGY: FITSTATION BY HP

FitStation by HP, created with the help of several transatlantic tie-ups, has been touted as a game-changer for custom footwear and could enable shorter lead times and minimal returns.

One step closer to 'fit revolution'

by Clare Grainger

Technology has caught up with imagination when it comes to creating affordable customised shoes, according to the leading companies involved in the FitStation by HP project. The partnership between insole maker Superfeet, HP, Huntsman, machinery supplier Desma and RSScan has been unveiled at recent trade shows and is creating buzz among manufacturers and brands keen to see how the "manufacturing overhaul" can work for them.

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the project: a "game changer", an "individualised fit revolution", "one of the best examples of Industry 4.0"; all say it will offer consumers the most unique footwear on the market, based on the creation of a personalised insole and a customised midsole. This will almost eliminate the need for returns due to sizing problems, they say, but most importantly the shoes could be available within a short lead time and without restrictive costs to the consumer. For retailers, it will enable better stock control, as the goods are paid for before they are made.

The companies pooled their knowledge to create midsoles and insoles through the new program.

 A+A, Düsseldorf



Potential consumer, retail and manufacturing benefits

- Creation of customised shoes – perfect fit, extra comfort
- Improved consumer shopping experiences; better fit advice
- Unique size profiles – making new orders simple
- Faster to market times – ability to create prototypes and product locally
- Reduced waste and supply chain cost
- Reduced inventory and stock control advantages

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Amy Olive, consumer marketing manager of Superfeet Worldwide, which helped to bring the partners together, told *WSA*: “As we witnessed technologies evolving, particularly around customisation, we saw an opportunity to bring our expertise to create a highly customised platform that could dramatically increase the comfort, shape and support underfoot.”

Consumers walk into a participating store – there are 13 in the US but more than 100 more are signed up for this year – where they walk barefoot on a mat to measure their gait and have their feet scanned to create a 3D image. The measurements take into account weight, movement analysis of the person’s joints and their personal preferences, which are combined to create multiple tuned zones and a unique code. The resulting data can be used to create a customised insole by Superfeet and/or a custom midsole made on Desma machinery using a combination of polymers.

“Whether they buy an off-the-shelf shoe and add a custom 3D printed insole or order a fully customised shoe, they can get the optimal product for them,” Edward Ponomarev, global general manager for FitStation by HP, tells us. “This is beyond simply picking personalised colours – it’s about making a truly unique product individualised for the customer. No longer will customers buy size 10½ – they will buy shoes where both shoes, left and right, are their own size.”

Blended reality

In 2015, HP chief executive Dion Weisler announced the company’s intent to develop product categories under the umbrella term ‘blended reality’, the mixing of the physical and digital worlds.

For the HP team, the FitStation project grew out of that vision, bringing together technologies that capture the physical world, such as 3D scanning and biomechanical analysis from pressure data, and digital manufacturing processes.

“Footwear turns out to be an ideal vertical because it’s a very large market and also because the market is ripe for this kind of disruption,” says Mr Ponomarev. “Customers, especially millennials, are increasingly demanding individualised products and experiences. FitStation by HP helps retailers and brands meet that need. Also, footwear manufacturing involves a multitude of processes that can be digitised to deliver products tailored specifically for an individual.”

Ms Olive explains that as the partners gained the ability to design individualised products through FitStation, they faced a hurdle: there wasn’t a local facility capable of making the shoes. “We weren’t willing to let that stop us,” she says. “To keep up with our new technology offering, we are finishing a 43,000 square-foot manufacturing facility next to our headquarters in Ferndale, Washington state. Opening in early 2018, our new facility will offer design,



Desma’s MSI machinery allows for custom mixing of PU components in the chamber.

 Desma

development and build of custom footwear using our FitStation technology.”

It will also house prototyping materials, 3D printers for creating the insoles and machinery, creating a manufacturing capability that can create a single pair or thousands of pairs “with no sweat”, she adds. “As we continue growth and distribution of the FitStation platform we have plans to expand by offering our services to multiple brands.”

The first brands to take part in the project are Germany-based safety shoemaker Steiz Secura and US sports shoe company Brooks. The Brooks collaboration was announced in time for The Running Event trade show in Austin in December, where its CEO, Jim Weber, described the development as “a game changer”. The shoes will be made in Superfeet’s facility and will be available by June this year. “We believe that with strong partners on board, we will deliver the best and most comprehensive solution for a personalised running experience,” says Brooks PR manager Danielle Pepperl.

Machinery and chemicals

Desma joined the project in February 2016, and provides the Multi-Section Injection (MSI) machinery, which allows for polyurethane midsoles with individualised characteristics, including variations along that midsole. This is achieved through a customised mixing of PU’s major components – polyol, isocyanate and additives – along the mixing head, with each chamber adaptable shot by shot. Using the right mix makes it possible to achieve varying degrees of hardness, density and elasticity across different parts of the shoe. “There will be multiple milestones in the footwear business in 2018 and this will be one of the most advanced,” says Desma’s managing director, Christian Decker.

This part of the project involved close collaboration with Desma’s longtime partner Huntsman, which produces the PU components and is also a supplier to Steiz Secura.

Hugo Verbeke, global development manager for PU Elastomers at Huntsman, tells WSA the production process is different from traditional footwear manufacturing methods.

“The chemistry must be dismantled and then put back together at the time of injection,” he says. “The scan of the foot is translated into process parameters and the product is composed in the machine, tailored to the consumer’s feet. The perfect cooperation between scan, machine and product is essential. This innovative process is a first step in local-for-local shoe production, which will eventually lead to fully automated shoe production.”

He explains that the material and machinery package also responds to the continued push for automation and the growth of the ‘internet of things’, which enables connected devices to communicate with one another via the web. He also believes it could change the way that consumers purchase shoes.

“One particularly interesting thing about this project is that it fits perfectly with many of the different trends driving the footwear industry today,” he adds. “Increasing automation, customisation and new production techniques are all helping to increase productivity in the sector, while reducing costs. By sharing our knowledge with innovative partners we can solve complex problems and come up with the right solutions for our customers.”

Overcoming limitations

A compelling limitation to customised footwear has always been how much extra the consumer would have to pay and the time to



Brooks says it hopes to expand the offering to “as many runners as possible” and will update the market before the June 2018 public launch.

 Brooks Running

manufacture, but the companies say these factors are no longer an issue. HP says the shoes should be available at a “relatively small premium” and scanning in store only takes about 15 minutes. Superfeet confirms production time is “fairly quick”; at The Running Event, the team scanned and produced shoes in less than an hour.

“Currently, delivery might take a week or more from the time the product is ordered [in the US], because the manufacturing is still centralised,” says HP’s Ponomarev. “However, as FitStation becomes more prevalent, products will be made locally for local consumption, and delivery can be in a day or while you wait.”

All partners say FitStation answers a growing expectation from consumers. “This is the beginning of a major shift in how consumers will experience shape and fit,” says Ms Olive, citing a survey by consultancy Accenture that suggests 80% of companies are prioritising ‘individualised customer experience’. “As mass customisation continues to become more accessible to retailers from a supply chain standpoint, it is also quickly becoming a consumer expectation,” she adds. “Our long-term vision is to provide retailers a way to connect more deeply with shoppers, so they can best support their needs, and to give people access to individualised products from as many of their favourite brands as possible.”

Desma confirms its contacts – manufacturers of work boots, trekking, military, casual, kids and athletic shoes – are “excited” about the development. “Some are already prepared with the required equipment and are in the final stage of product development,” says a Desma spokesperson.

Beyond shoes

For HP, the scope of the project goes beyond footwear – the group envisages custom apparel based on a digital customer profile. “We are starting with the feet, but eventually customers will be able to use their full body digital profile to order custom footwear, clothing, eyewear and more,” says Mr Ponomarev. “No longer will customers order products of several sizes and return those that don’t fit. Customers will order right-size products made specifically for them.”

All partners report positive feedback from manufacturers, brands and the public. Superfeet says that since launching in the 13 pilot locations in the US last autumn, more than 5,000 people have had their feet scanned.

Ponomarev, who has been in the footwear business 25 years, says he always believed in the idea of providing truly individualised footwear at mass market prices, but the technology simply didn’t exist. “Now, with FitStation, we can finally deliver on that vision.” 

Safety shoes add new level of comfort

WSA spoke to Thomas Wagner, head of marketing for Steitz Secura.

Where did the project begin?

We have been working for some time on the individualisation of safety shoes. Based on our decades of experience in the development of shoes with weight-dependent cushioning systems, this was a logical step. In the early development stage we considered whether we could convert the highly precise measurement data of the shoe wearer into production data, and on demand and cloud based, so that the physical separation between measurement of the individual wearer and our production here in Germany would cease to be a problem. We have been able to do this with our partner HP with its cloud-based FitStation platform.



What are the benefits to your customers?

Consumers will benefit from custom fit shoes, which are tailor-made for their anatomy, their individual gait as well as their weight, with all the advantages that our fully functional safety shoe provides.

The wearer will also experience further benefits in the event of a reorder, no matter whether it is for the identical model or some other model. They need not undergo renewed measurement, since the personal measurement data is transmitted as an individual code together with their order thereby ensuring that the new shoes will once again fit perfectly.

For our direct customers, this new service implies a noticeable reduction in warehousing since it is no longer necessary to hold a stock of shoes in different sizes and widths. The capital tied up in stock items is practically nil. In addition, measurements with self-service kiosks as well as reorders take considerably less time.

What are the benefits to you as a company? And what are the limitations of the service?

Our benefit is in the provision of custom fit safety shoes, a clear market benefit that our customers appreciate. We do not anticipate any restrictions to the service. Quite the opposite. Opportunities for growth are achieved as well as the opening up of new markets.

What feedback have you had so far?

After the presentation at the A+A fair in Düsseldorf, the feedback has been tremendous. In the meantime, we have received very interesting enquiries and highly promising onsite visits from potential key customers.

How do you see this technology influencing the future of footwear?

The technology will noticeably change the buying habits as well as the expectations regarding the quality of the shoes. The classic shoe size, which has been restricted to a few parameters, will cease to play a part. In future, the shoe will be custom-made like a sock for the foot. Fittings or compromises with regard to the fit will become history. We also expect noticeable cost savings for shoe shippers and shoe retailers. Returns of shoes that do not fit will practically cease to occur.