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Down to fibre's finest detail

As sustainability and transparency in fashion gathers momentum, an Australian technology can help brands prove their 'raw' credentials.

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To be fair, where sustainability is concerned in the fashion industry, there's a lot of trust involved — from raw materials suppliers right through to consumers — that what is being claimed is, indeed, fact. It's why greenwashing has become so prevalent in this notoriously opaque industry, with so many different layers of suppliers involved in the process.

So, how good would it be to be able to prove, definitively, that what you say is being offered is exactly what it says it is?

Enter FibreTrace. This Australian innovation is helping to prove the authenticity of materials from the farm (or mill) to the shop floor. “We refer to the FibreTrace technology as creating a passport for the fibre to move through the supply chain,” says Danielle Statham, a co-founder of the company, which was launched in 2018. “It gives full visibility to the supply chain.”

Traceability was something the fashion design graduate became even more passionate about when she married her husband and fellow co-founder David, whose Good Earth Cotton farm west of Moree in NSW is considered the world’s first carbon-positive cotton farm, using modern regenerative farming techniques. Given the environmental impact of cotton-growing globally – known for its high water usage, heavy use of chemicals and land degradation – it is an industry that has been long under the microscope from a sustainability perspective.

“Marrying a cotton farmer, I could see the disconnect between the two industries (farming and fashion). Typically, farmers were very happy to leave their commodity at the farm gate. Once it leaves the farm gate it goes on a ship and it sails. It’s gone. I felt that we needed to go downstream and understand the end result for our farmers.”

With so much talk of transparency within the fashion industry – understanding who is making our clothes, where and with what materials – Statham realised it was almost impossible to prove the fibre heritage once it was sent offshore for processing and likely blended with other fibres.

The Fibretrace process, in principle, is simple: luminescent pigment, which offers an individual signature, is added ideally to the raw fibre (it could be added at any stage of processing); at every stage of manufacturing this signature is picked up with a handheld scanner, and the data added to blockchain technology.

“FibreTrace enables the supply chain to be able to be audited at every stage that garment is being manufactured,” says Statham. “When that audit takes place, it scans and drops code onto the blockchain so the brand has full visibility over the garment, where it is, the emissions it has created at raw fibre level, the GPS location of where that fibre, that yarn, that garment is at that moment. It offers full visibility and full transparency over the supply chain and the garment in real time.”



Luminescent pigments used to create unique FibreTrace signatures.

There are any number of initiatives being developed and rolled out globally within the transparency space as brands and the broader industry try to tackle the issue.

Those with a broad application include Lyfecycle, which uses QR codes on clothing labels to show the provenance of a garment via the corresponding app; or EON, which uses QR codes or an NFC (near-field communications) tag to offer a CircularID – offering details such as original price and material composition, which could assist with the garment’s future journey such as recycling or luxury authentication; or CertainT, which applies molecular tags to fibres that can then be recorded throughout the supply chain and the information uploaded to a cloud database.

On a brand scale, it might be a company such as London’s Sheep Inc, which has an NFC hem tag that can be scanned with your phone to tell you about the product and connect you with the New Zealand merino farm of origin.

Nobody Denim founder John Condilis, who has built the brand on solid sustainability credentials, could see FibreTrace’s worth from the beginning; the Melbourne brand became the first to use the technology for a small range of denim items last October.

“When something new comes up and I see no one’s doing it, I think, ‘why don’t we do it?’,” Condilis tells *The Australian*. “One of my visions was how do I get Australian cotton in all my denim? I’m an Australian brand, it starts off here and finishes here.”

While he bemoans the fact that it currently isn’t possible to process the cotton into yarn and fabric in Australia, Condilis worked closely with his denim mill in

Turkey to make denim purely with cotton from Good Earth Cotton, then verified with FibreTrace technology.

In March, US label Reformation became the first international partner for the technology, launching a capsule collection of denim jeans and shorts made with 100 per cent cotton from Good Earth Cotton. Since launching in 2009, initially as a vintage retailer, the brand has become synonymous with its sustainable principles.

So much so that while many brands were spruiking their credentials and ambitions, it has managed to provide 100 per cent transparency of its tier one and two suppliers (garment manufacturing and fabric production) and is at 93 per cent for tier three (including fibre producers, spinners and recycled materials collectors). “But what we really see as the white space, the innovation space, in fashion is getting all way back to tier four, raw materials,” says Kathleen Talbot, sustainability director of Reformation. “Let’s understand our farms, our forests and take responsibility as a brand for the impacts that happen at that level, too.

“FibreTrace is our first collection where we can have physical traceability back to our farms. We have other categories where we know our farms, but we can’t tie our product back to the farms. You do need this technology in order to deliver this type of assurance and transparency to customers.”



The FibreTrace scanner picks up the embedded pigments.

On its website, Reformation explains the journey of its FibreTrace pieces to customers: from Good Earth Cotton, to the nearby cotton ginning company where fibres are separated from seeds and cleaned – and where the FibreTrace pigment is added in minute quantities. (The pigment is non-toxic, safe for skin and doesn't interfere with subsequent take-up of dyes.) Then it's off to Turkey, where the fabric is milled and to another factory in the country where the garments are produced, before heading to the brand's US headquarters for quality control and distribution.

Unique signatures have so far been developed by FibreTrace to identify Good Earth Cotton, and can be applied to other cotton products (for example, organic cotton or Australian cotton), responsible viscose and recycled polyester, and blends of these. A signature for wool is expected this year.

While Talbot says that COVID-19 has “unquestionably” pushed forward the momentum around conscious consumerism, she adds that their customers have always asked questions of the brand around what it is offering. “They really do want to ensure that where they're putting their dollars is a vote for more responsible fashion. And if they're going to invest in more sustainable product, they want to have full assurance.”

According to the State of Fashion 2019 report, from Business of Fashion and McKinsey & Company, 66 per cent of consumers are prepared to pay more for sustainable items, and 42 per cent of Millennials want to know how, and from what, products are made before they buy.

Conversely, the 2020 Fashion Revolution Transparency Index, that rates transparency among 250 of the world's biggest fashion brands, showed the average score for traceability was only 16 per cent.

Buying more sustainably usually comes at a higher price point, but both Nobody and Reformation are committed to the concept and to a large degree have absorbed much of the cost along the way.

“There's a small increase because it's new,” says Condilis. “We put only a \$5 or \$10 increase at the retail level, which isn't much.”



Nobody Denim was the first brand to use FibreTrace technology.

According to the FibreTrace numbers, once the technology is at scale, the numbers could border on insignificant – adding around 3c to the production cost of a T-shirt and 10c for a pair of jeans.

“This is one of the things that we should be able to scale, it should be plug-and-play,” says Talbot. “The real work comes in knowing your supply chain. Building those relationships and making sure that you have the buy-in at each step of your supply chain is honestly the real work and the leadership that hopefully Reformation is demonstrating and other brands will ultimately have to step up to do.”

There is of course a cost at the farm end, but Statham says that new technology in farming is always significant before it depreciates over time.

“Technology always does cost,” says Statham. “It costs at farm level to have the latest technology, it costs to make sure your water use efficiency is perfect, it costs to make your plant-spacing perfect, that your beds in your farming technique (are) perfectly laser-levelled. The more we scale, the less it becomes. It’s got to cost somewhere, whether it’s on the environment or whether it’s a couple of cents within the supply chain.”

For both Nobody and Reformation, this is still the beginning of the journey to full transparency. Condilis says “this is not a one-off project” and is still increasing the number of items using the technology until it is “an expectation” for the brand. And, while he concedes that some might find the whole concept a bit “gimmicky”, he is still looking forward, to the day an iPhone app might be able to scan for the pigment, and also to the circularity applications of the technology.

“The intent with FibreTrace is once you break down (the used denim) back into fibre, the actual FibreTrace (pigment) is still in there. So there’s a possibility to respin and recreate the yarn and create the denim again. It has the possibility to go into another fabric and continue its journey and life cycle. We love that vision. This is the future.”

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