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In Focus: Technology

BUSINESS

The Latest 'Circular Fashion' Technologies

● From AI to IoT to dedicated "upcycling" factories, the imprint of circular economy technology for fashion is sharpening.

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For a circular fashion economy to exist, whereby sustainable business growth is fueled by the reuse of materials and zero waste, technologies for product identification, authentication and upcycling are essential. And for solutions to be successful in the long term, it must be scalable and standardized.

Here, WWD examines a few of the latest initiatives intent on turning the wheels towards fashion's circular future.

NOVETEX'S "THE BILLIE SYSTEM"

As an anchor to the apparel industry's evolution, designing, developing and churning out yarns, textiles, garments and what have you, with efficiency at scale – the importance of Hong Kong-based manufacturers and textile mills is undeniable.

But even long-enduring textile mills, such as Hong Kong-based Novetex Textiles Ltd., are not concealing the issues of textile waste that comes with an uptick in production.

"In Hong Kong alone, over 370 tons of textile waste end up in our landfills on a daily basis," said Ronna Chao, chairman of Novetex Textiles, to WWD. Seizing the opportunity, Novetex Textiles opened The Billie System formally in July, which is the company's first upcycling factory and textile mill designed to face textile waste head-on.

Founded more than four decades ago by Chao's grandfather, Novetex aims to be the "complete yarn resource" for a wide range of fashion and apparel clients, including Reformation, Tommy Hilfiger, Ralph Lauren and H&M, among others.

Novetex's upcycling factory is located in Taipo, Hong Kong and was soft-opened in September 2018, initiated by a collaboration with the Hong Kong Research Institute for Textiles and Apparel. With The Billie System, an ode to Chao's grandfather who was nicknamed "Billy" by his Western friends, Novetex aims to "support and advocate for a circular economy within the fashion sector." The technology has already garnered attention, winning the gold medal at the International Exhibition of Inventions in Geneva.

The Billie uses no water to process textile waste, transforming old garments, excess apparel and raw material inventory into "upcycled, sanitized fibers that can be spun into new yarn." Typically, textile recycling processes may require high volumes of water and chemicals, but The Billie is able to bypass hazardous discharge by instead pressuring oxygen extracted from the air to form ozone.

A wide range of fibers can be processed, including both natural and man-made fibers. Through a combination of existing technologies: ozone sanitation, hardware removal, automatic color sorting, and finally, fiber and sliver processing, The Billie "breathes new life into textiles that would have otherwise ended up in landfills," according to Chao.

CIRCULARID

In the idealized circular fashion world, all the fashion is invisibly strung together by Internet of Things technology, linking physical garments with its "digital twin," thereby opening up product data to reveal a garment's every move from resale, rental, recycle.

The Billie is the upcycling factory opened by Novetex in July.

"By marrying the adoption of digital identification technology with circular economy principles, we can dramatically accelerate our transition to a circular model," said Natasha Franck, founder and chief executive officer of Eon, to WWD.

Dovetailing off of Franck's work with Eon, the IoT-powered company she founded to help brands and retailers create digital identities of their products, The Connect Fashion Global Initiative aims to propel the vision that much further, unifying fashion and retail industry leaders and partners from circular businesses, technology, policy and academia – using its CircularID, premarket technology, as the launchpad for standardization. Members include Microsoft, PVH, H&M and Target among others.

In its simplest form, CircularID is, readily and openly, sharing information about fashion products, using what's broken down into three core components: a physical identifier (such as RFID, NFC, QR codes), a digital birth certificate (the unique web location of the product) and a digital passport (the log of interactions that is associated with the product).

Previously, supply chains were mucked in secrecy, but the hope is to enrich the product life cycle with "measurement," "accountability" and "transparency" through the digital foundation enabled by companies such as CircularID.

Rachel Kibbe, cofounder of Helpsy, a large-scale clothing collector, said CircularID "has the potential to change the consumer transparency, recycling, upcycling, and resale game," citing the embedded electronic tag as beneficial for companies like hers to access "quicker and more accurate sorting and reselling potential." Franck informs that products can, in fact, be "retroactively tagged and identified," but cites maximum value is seen when items are tagged at initial production.

ALYX'S IOT PILOT

Evrythng, Iota Foundation and Avery Dennison are the tech players behind Alyx's pilot in traceability.

Alyx, a luxury fashion brand spearheaded by creative director, Matthew Williams – who has designed for Dior, as well as collaborated with Virgil Abloh, Kanye West and Lady Gaga, to name a few, has been in pilot a year now with a consortium of technology companies to make a small segment of its seasonal collection traceable.

Leveraging the Internet of Things platform enabled by a partnership between Avery Dennison (intelligent labeling solutions), Iota Foundation (verifies data integrity using its proprietary distributed ledger technology) and Evrythng (real-time IoT software platform), Alyx is just a glimpse of the potential that exists for a fashion industry that chooses to design with digital identities in mind.

Connecting physical product with unique digital identities, the project aligns with what Niall Murphy, cofounder and ceo of Evrythng calls a "transparency goal" – digitizing products and organizing the journey it takes with a solution that is scalable.

"The label is really the primary communication that is out there," said Michael Colarossi, vice president, innovation, product line management and sustainability, at Avery Dennison; comparing the label to a "trigger" for realizing authenticity and transparency along the supply chain at scale. Digital IDs reveal the entire life cycle of a product, including material, type of labor, factory location and more, to serve both brand and consumer purposes.

For an apparel brand or retailer, brand protection and identifying counterfeits is already on the list of "asks" remedied by tech. But as of yet, the industry has not seen a scalable standard – only brands dabbling in pilots and app-restrictive tech.

Scaling is realized in a number of ways, and Jens Munch Lund-Nielsen, head of global trade and supply chains, at Iota Foundation mentioned that keeping transaction costs (when data is scanned by a device from a QR code on a label, for example, and shared on the distributed network) at a minimum is key to a sustainable business model. While blockchain is a type of distributed ledger technology, Iota Foundation is not using blockchain, rather it's enlisting its proprietary "tangle" protocol that has zero-fee transactions.

"It's about data management," reiterated Lund-Nielsen, who during a collaborative workshop with the other teams found that the "front-end and process changes are the most challenging" area to work through, as "the technology is ready and available."

Regardless, standardization (whether be it the platform or the way the world shares digital links (QR codes, traditional bar codes, radio-frequency identification, near-field communication, etc.) is important as IoT takes its swing at the apparel industry's disparate systems and aims to introduce a more "connected" vision. Murphy finds that when information is transferred with trust and readily accessible to consumers (with the digital link standard set by GS1, every smartphone can essentially interact), then traceability truly becomes global.

"This is the start," reiterated Colarossi. With any distributed ledger technology, there are concerns over the energy use in the mining of the data.

ENTRUPY

On authentication, Entrupy is what may be an outlier – it's an artificial intelligence-powered app and handheld hardware solution for authentication that operates with 99.1 percent accuracy. Less than 0.1 percent of fakes slip through the cracks at Entrupy.

The meaning behind the name is similar to the word it sounds like. Vidyuth Srinivasan, cofounder and ceo, said it is to "map the randomness of physical products to get to the truth behind it." Journalist by trade, Srinivasan is intent on "finding the unbiased truth," and now he's just truth-seeking in physical products, scaling the process and licensing the product out to government bodies (including the commercial compliance and consumer protection sector in Dubai), retailers (Goodwill in Orange County), luxury brands (choose to not say) to curb counterfeits.

The company was officially registered in 2012, incubated in NYU and moved out in 2015 with the team spending more than a year exclusively collecting data on handbags. Entrupy supports verification of 15 luxury brands, including Balenciaga, Chanel, Dior, Fendi, Gucci, Hermès and Louis Vuitton, among others, although no disclosure is given whether brands are partners. Last year, Entrupy authentication $50 million of merchandise.

"Counterfeits are going back into the legitimate supply chain," said Srinivasan to WWD, citing the 35,000 shipments jointly seized by the U.S. Customs and Border Protection and U.S. Immigration and Customs enforcement agencies in 2017, to which 15 percent were apparel and accessories.

The major use cases Entrupy sees are: government bodies detecting and removing counterfeits at the border, retail sales associates "removing liability" for brand and customer in the storefront (transactions are assigned to that unique bag, so if a customer returns a different bag that looks identical – the device will indicate "no match") or luxury brands authenticating more legitimately with the aid of technology.

Srinivasan says it is comparable to the "Good Housekeeping Seal" for product authentication, using deep-learning to "create a more trustworthy marketplace" – be it an online reseller, off-line reseller, vintage shop, pawn shop, wholesaler or anyone in the business of reselling and retailing. The only limitations are reflective materials, such as porcelain and diamonds, (best left to gemologists).

One single bag can warrant as many as 500 data points that are mapped during Entrupy's guided authentication process. The user is directed to take images of the bag exterior, interior, logos, hardware and any other differentiating details with their smartphone and Entrupy's handheld hardware device. Within four seconds after imagery is collected, the device tells whether the product is authentic or "unidentifiable."