

Asia's textile industry

transforming to adopt

EU's sustainable fashion standards



Bananatex®:  
Sustainable fabric for  
a circular future

*More at... 06*

German Smart  
Technologies on show  
at ITMA Asia + CITME

*More at... 14*

Adobe's Project Primrose:  
Interactive dress changes  
color & pattern in real time

*More at... 19*



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# Asia's textile industry transforming to adopt EU's sustainable fashion standards

■ Ahosanuzzaman Roni

## What's Europe's issue with the textile industry?



**2,700 litres** of water is needed to produce one T-shirt, enough drinking water for one person for 2.5 years



**10% of global greenhouse gas emissions** are caused by clothing and footwear production; this is more than all international flights and maritime shipping combined



**79 billion cubic metres of water** was used by the textile and clothing



**0.5 million tons of microfibers** from washing into the ocean every year; this accounts for 35% of primary microplastics



The new European Union Strategy for Sustainable and Circular Textiles passed in June 2022, mandates that by 2030, companies selling textiles to the EU must meet standards for durability, absence of hazardous substances, and use mainly recyclable materials. This framework will impact Asian manufacturers, who supply over 70% of the EU's textiles.

The plan is still not a law, but it will become one soon. Some European fashion brands agree with the plan and want to improve how they make and use fashion. H&M supports the EU's initiative, acknowledging the necessity for a shift in how fashion is produced and consumed. Sheng Lu, who teaches fashion and apparel studies at the University of Delaware in the U.S., says that the new strategy holds significant importance, as Asian companies will need to adhere to various aspects of the plan to continue selling their products in Europe in the future.

Manufacturers in Asia are seeking to reduce water use, cut down on

microfiber shedding, and minimize textile waste. Some companies in Asia, like Chetna Organic in India, Hirdaramani Group in Sri Lanka, and Singapore-based Ramatex, are already making progress in sustainability.

H&M helps its suppliers to use renewable energy and green practices by starting initiatives such as the Fashion Climate Fund. Moreover, H&M created the Sustainable Supplier Facility initiative, which invites other brands to join in helping apparel suppliers to lower their carbon emissions.

Nicole van der Elst Desai, a textile innovation expert from Singapore who works with Forum for the Future, says that some manufacturers are doing well because they have used new technology.

There is a pressing need for increased knowledge, know-how, and financial support for manufacturers to transition to a circular business model. Fashion for Good and Boston Consulting Group estimated in 2020

that changing the \$2 trillion industry would need \$20 billion to \$30 billion of money every year. A fourth of this money is for making raw materials better and more innovative, a third for improving sourcing, processing, and making processes, and 20% for dealing with textile waste.

The Green Climate Fund and programs like the International Finance Corporation's Advisory Partnership for Cleaner Textile (PaCT) are providing some funding for sustainable practices in textile production. However, there is a call for fashion companies to invest more in research and development for circular solutions.

Asian manufacturers excel at producing low-cost products in bulk. However, in the new age of slow fashion, consumers may prefer fewer products in limited quantities but made from eco-friendly materials, which implies that Asian nations may not be the best option for sourcing products any longer.

# Bananatex®: Sustainable fabric for a circular future

■ Faujia Mushtari

Bananatex® is a groundbreaking fabric that has redefined the landscape of sustainable materials, setting new standards in environmental, economic, and social responsibility. Developed through a collaborative effort by Swiss bag brand QWSTION, Taiwanese yarn specialists, and weaving partners, this fabric has emerged as a remarkable example of responsible innovation. Its journey from cultivation in the lush Philippine highlands to recognition on the global stage is a testament to its transformative impact on the fashion and textile industry.

## Sustainability Rooted in the Philippines

Bananatex® finds its roots in the Philippines, where the Abacá banana plant is cultivated in a natural ecosystem of sustainable mixed agriculture and forestry.

## From Plant to Fabric: The Transformative Journey

The creation of Bananatex® is a meticulous process, involving several crucial steps. Harvesting the Abacá plants starts with careful topping and tumbling, with the decomposing leaves acting as natural fertilizers. Skilled artisans then strip the plants to extract fine, resilient fibers, ensuring high quality. These raw fibers are sorted at cooperative warehouses before being

sent to a Taiwanese paper mill for transformation into yarn.

The yarn, colored using sustainable methods in the case of the All Black colorway, is then processed for its intended use, resulting in the remarkable Bananatex® fabric. The Natural White version retains its natural color, eliminating the need for additional dyeing and preserving its inherent beauty.

## Diverse Fabric Collection

Bananatex® offers a versatile range of fabrics, each embodying the exceptional qualities of this groundbreaking material.

In the lightweight category, options include Bananatex® Natural White LW Poplin DWR and Bananatex® Natural White LW Poplin Coated. For mediumweight applications, there's Bananatex® Natural White MW Oxford DWR, Bananatex® All Black MW Oxford DWR, Bananatex® Gravel MW Oxford DWR, and a range of other variations. The heavyweight option, Bananatex® All Black HW Twill DWR, caters to more robust requirements. This diversity in fabric options opens the door to an array of applications, showcasing Bananatex®'s versatility.

## Circular Sustainability

The concept of circularity is integral to the ethos of Bananatex®. To minimize waste and generate post-user value, the company has laid the groundwork for a closed technical recycling system. While recycling volumes have not been significant due to the novelty of Bananatex® products in the market, the company actively encourages its partners to initiate similar projects to create a fully circular ecosystem.

In addition to recycling, Bananatex® can also be decomposed in composting facilities or through traditional kitchen composting methods. Moreover, it has undergone lab testing to evaluate its biodegradability for industrial composting and marine conditions, further enhancing its eco-friendliness.

## Global Recognition and Certifications

Since its launch in October 2018, Bananatex® has garnered international recognition for its contribution to sustainability and design. Notable accolades include the Green Product Award 2019, the Design Prize Switzerland Award 2019/20, and the German Sustainability Award Design 2021. However, a significant milestone was achieved in December 2021 when Bananatex® was awarded the prestigious Cradle to Cradle Certified® Gold designation for various colors, including Natural White, All Black, Gravel, Asphalt, and their respective durable water repellent (DWR) versions.



Figure: MCM Sommer Bucket Hat in Bananatex®.

# Double-digit demand growth of recycled polyester & nylon in next 5 years, New report predicts

■ M A Mohiemen Tanim



Figure: Recycled material is now growing global concern. Courtesy: China Eco Fiber

A new report from Textile Exchange predicts that the demand for recycled polyester and nylon will grow by double digits in the next five years. The report, titled “Materials Market Report 2023,” forecasts that the global fiber market will reach \$1.1 trillion by 2030, with recycled fibers accounting for a growing share.

## The report cites several factors driving the growth of recycled materials, including:

- Consumers are increasingly aware of the environmental impact of the fashion industry and are demanding more sustainable products.
- Governments around the world are implementing policies to promote the use of recycled materials, such as bans on single-use plastics and extended producer responsibility schemes.
- The cost of recycled materials has been falling in recent years, making them more competitive with virgin materials.
- New technologies are being developed to improve the quality and performance of recycled materials.

This growth is being driven by several factors, including:

- Recycled polyester and nylon are now being used in a variety of products, including clothing, sportswear, home furnishings, and automotive parts.
- New technologies are being developed that make it easier and more efficient to recycle polyester and nylon. For example, a new process called “chemical recycling” can

break down polyester and nylon into their basic building blocks, which can then be used to make new products.

- The recycling industry is investing heavily in new infrastructure, such as sorting facilities and reprocessing plants. This is making it easier and more cost-effective to collect and recycle polyester and nylon.
- Consumers are demanding more transparency about the origins of the materials used in the products they buy. This is leading to the development of new certification schemes and traceability systems for recycled materials.
- The report concludes that the demand for recycled polyester and nylon is likely to continue to grow in the coming years. This presents a significant opportunity for businesses that can provide high-quality recycled materials and products.

Some challenges need to be addressed to meet the growing demand for recycled materials. These challenges include:

- The current supply of recycled materials is not enough to meet the growing demand.
- The cost of recycling materials is still higher than the cost of producing virgin materials.
- Many consumers are still not aware of the benefits of recycled materials

The report concludes that the future is bright for the recycled materials market. With continued investment in innovation and infrastructure, the recycled materials market has the potential to make a significant contribution to a more sustainable future.

# Secondhand Clothing: A Sustainable and Socially Responsible Choice for Fashion Lovers

■ Homayra Anjumi Hoque



Figure: Secondhand is becoming popular due to concern about sustainability Courtesy: Business Insider

Buying second-hand clothes is one of the most sustainable ways to shop. For Generation Z, secondhand clothing is the trendiest fashion practice as we can see. According to thredUP's 2021 Resale Report, the second-hand market is expected to double within five years, to \$77 billion. Additionally, 76% of the 33 million people who bought used clothes in 2020 plan to increase their spending on used clothes in the next five years. According to a report from GlobalData, the resale market has grown 53.3% over the past five years.

The secondhand clothing market constitutes a slice of a larger pie –called the resale market. While a few years ago, secondhand items used to be traded mainly on flea markets and in thrift shops, today much of the trading has shifted to online platforms. Both fashion industry and non-fashion businesses have been pioneering resale models over recent years.

The trend has even caught up with giants in the game with famous retailer IKEA launching a take-back offering as well as a secondhand pop-up store two years back. It is estimated that by 2025, the resale sector will grow 10 times faster than traditional retail. By 2030, nearly one in five items in people's wardrobes will be occasion items.

Speaking of fashion, Boston Consulting Group (BCG) estimates that the second-hand and luxury market, which includes the resale of clothing, shoes, and accessories, is worth between \$100 billion and \$120 billion USD worldwide. BCG found that while buyers typically enter the second-hand market through handbags before moving on to clothing and eventually jewelry, demand for second-hand clothing is very evident, with used clothes accounting for 25% of the average consumer's total second-hand wardrobe.

Motivators Behind the second-hand marketing ( From buyer's perspective):

## Sustainability and circularity:

Although emissions increase due to the logistics of moving used products between new owners, resale models generally outperform "take, make, throw" tradition on most environmental indicators. Resale models encourage companies to design more sustainable products.

Product durability is a necessary prerequisite for model resale, as a longer product life cycle allows new owners to resell more frequently. This sets a new target with implications for designing products that last longer,



requiring clothing to be made from sustainable clothing.

The technology involved in this process must follow a modular design that allows resale companies to easily repair and replace parts. The focus on designing for resale has spurred innovation and led to better product quality.

**Saving money:**

Second-hand shopping can ensure saving an incredible amount of money. Buyers have to never pay anywhere near full price. It's so helpful when anyone is seeking for a high-quality brand for trust issues.

**Unique Clothing style:** The majority of second hand clothing found in thrift stores is completely unique and sold at extremely low prices. The chances of there being two of the same item in the same thrift store or in other thrift stores are slim to none. Especially for vintage clothing, it's sometimes impossible to find the same piece ever again. For those who are demanding one-of-a-kind types of clothes, second-hand shopping can be a greater option.

**Defining luxury and slow fashion at the same time:** Luxury don't come with fast fashion, rather it comes from elegance and vintage styling habit. Today's Gen Z are mostly aware of crucial impacts of fast fashion. On the other hand, this generation is more likely to style up with aristocracy and elegance. As the practice of shopping second-hand from thrift stores is increasing day by day, more people are becoming likelier to choose this trend.

**Step Away from Overconsumption to Help the Planet:** Overconsumption, fueled by fast fashion, has become a real scourge for our planet, fashion enthusiasts keep concern about that. In the past decade, clothing consumption has increased by 60%. New collections every season, or even every month, low prices, and non-durable clothes, Each year, the world consumes about 130 billion items of clothing. Production rates have become insane.

A pair of jeans can travel the equivalent of 1.5 times around the earth from the cotton field to the retail store where they're sold. This is an enormous over consumption

of resources. Pre-owned clothes have already been made and used, which reduces both carbon footprint and waste. Furthermore, most physical and online second-hand stores operate on a circular economy model, supporting a different system.

**What High-end brands are doing for this practice?**

Renowned brands like Burberry and Gucci are partnering with consignment services like The RealReal to collect and resell their pre-owned products. The consumers can also directly sell used luxury goods to their peers on platforms such as Vestiaire Collective. At the same time, like buyers, private sellers are often driven by financial motives while cleaning out their closets.

Some companies are adopting a special approach to implement their resale business models. Many traditional companies which started engaging in resale business initially launched pilots and spin-off solutions that kept the main business separate but allowed the company to have lighthouse projects where they could learn how to cope with a new but different business.

Both H&M and Zalando introduced independent platforms for selling quality-controlled pre-owned fashion – H&M's Sellpy and Zalando's Zirkle. Players like Lulumelon, Cos and Isabel Marant also claim to have seen success selling collections on their websites and in their stores, aided by in-house capabilities or white-label solutions. In fact, Isabel Marant reported that two-third of its second hand buyers became its new direct clients within one year of launching its vintage resale arm.

In retail, responding to shifting demands with more sustainable offerings can attract new customers and also improve customer loyalty. Resale business models can also help in creating a so-called lock-in pattern. For example, in exchange for used products, some companies offer their customers vouchers that can only be used in-store. This helps the customers gain new value from used assets and the sales loop stays closed within the retailer business ecosystem, also generating new revenue streams for the resellers.

<b>Motivators Behind the second-hand marketing ( From buyer's perspective):</b>
<b>Sustainability and circularity</b>
<b>Saving money</b>
<b>Unique Clothing style</b>
<b>Defining luxury and slow fashion at the same time</b>
<b>Step Away from Overconsumption to Help the Planet</b>

For over 30 years M&R has helped countless screen printers realize their dreams by supplying them with innovative screen and digital printing products that stand the test of time. We have the right solutions, from pre-press to product finishing, for shops of all sizes. M&R equipment is designed and built with a commitment to quality, durability, and innovation, and is backed by unrivaled 24-hour service and support. With efficient systems integration from start to finish, it's no surprise that year after year, print after print, M&R's hard-working equipment is the choice of professional printers around the world.



## DS-4000™ Digital Squeegee® Hybrid Printing System

M&R's DS-4000 Digital Squeegee is setting the standard for hybrid printing. At production rates of 400+ prints per hour the DS-4000 bridges the gap between direct-to-garment (DTG) printing and screen printing. Since the Digital Squeegee prints on top of a screen-printed underbase a wide array of fabrics - including synthetic and performance blends - can now be printed digitally, opening the door to new market trends and cost-effective high-end digital textile imaging.



### Screen Printing

Tiny dots while handling halftones



### Digital Printing



Smoother gradient at up to 1200 dpi

Executing complex designs and multicolor prints like this is possible in screen printing but requires a lot of screens and a lot of time to setup, otherwise there may be quality problems as well as alignment problems

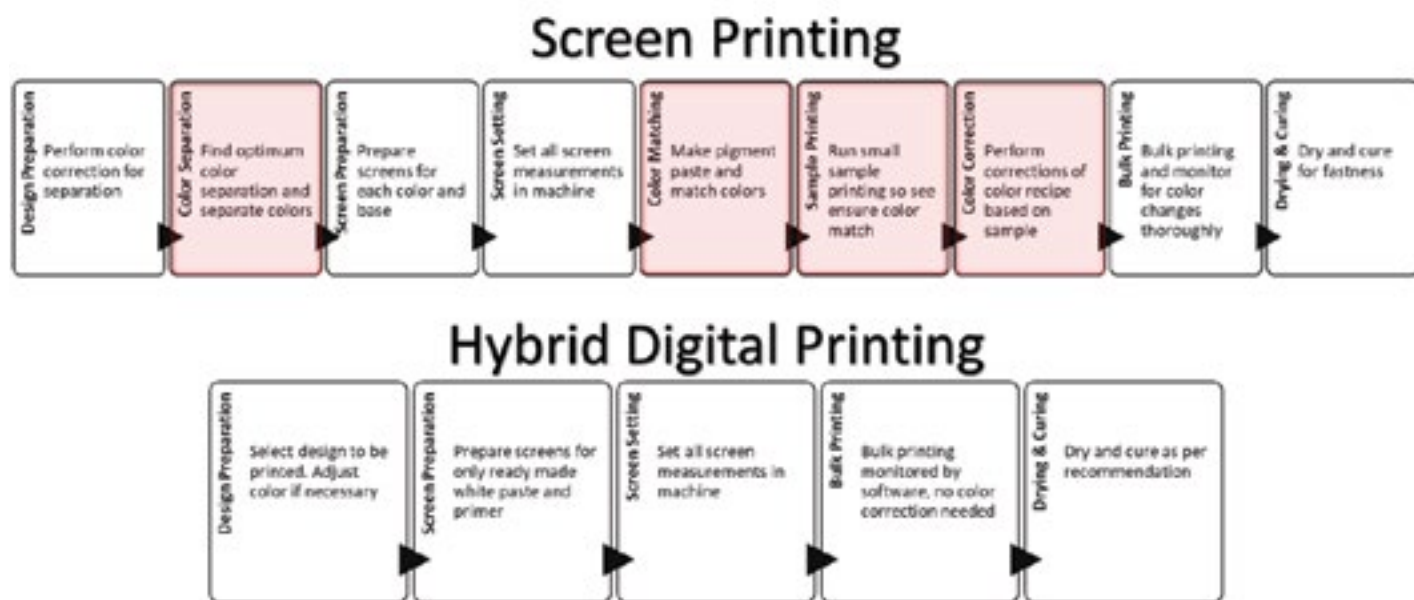


Digital printing handles complex designs with multiple colors with ease reducing the amount of screens needed for the print as well as saving time for setup

Using a screen printed underbase eliminates the need for time-consuming pretreatment, and expensive digital white underbase inks. M&R's hybrid printing process reduces the time, labor, and cost required by digitally printing alone, making small and mid-size print runs cost effective.



An eight-to-twelve-color screen print would typically require hours to perform separations, process and expose screens, mix inks, and register the press. The same screen print can be set up and printed on the Digital Squeegee in a fraction of the time with a minimal number of screens, greatly reducing art times that are normally associated with multi-color screen print jobs.



Hybrid prints can be embellished with specialty printing effects before or after the digital print, expanding creative possibilities by blending the best attributes of screen printing with the ease and detail of digital imaging.

- Efficiently Unleashing Human Potential**
- Streamline, Automate, Thrive, Succeed**
- More than 50% Flash Energy Saving**
- Up to 20% Time Saving in Printing**
- More than 50% Cost Saving in Screen Preparation**
- More than 25% Energy Saving in M/C Operation**

With some creative planning, a common screen-printed white underbase can be used with varying digital print data to produce completely different images in the same print run. It can also result in savings in the production process in various aspects.

Digital Squeegee inks can be cured in conventional gas dryers, such as the Sprint® 3000, Sprint 3000 D, and Sprint 3000 DHZ

# Space Fabric: NASA's "Scale Maille" – A Fabric from the Future

■ M A Mohiemen Tanim

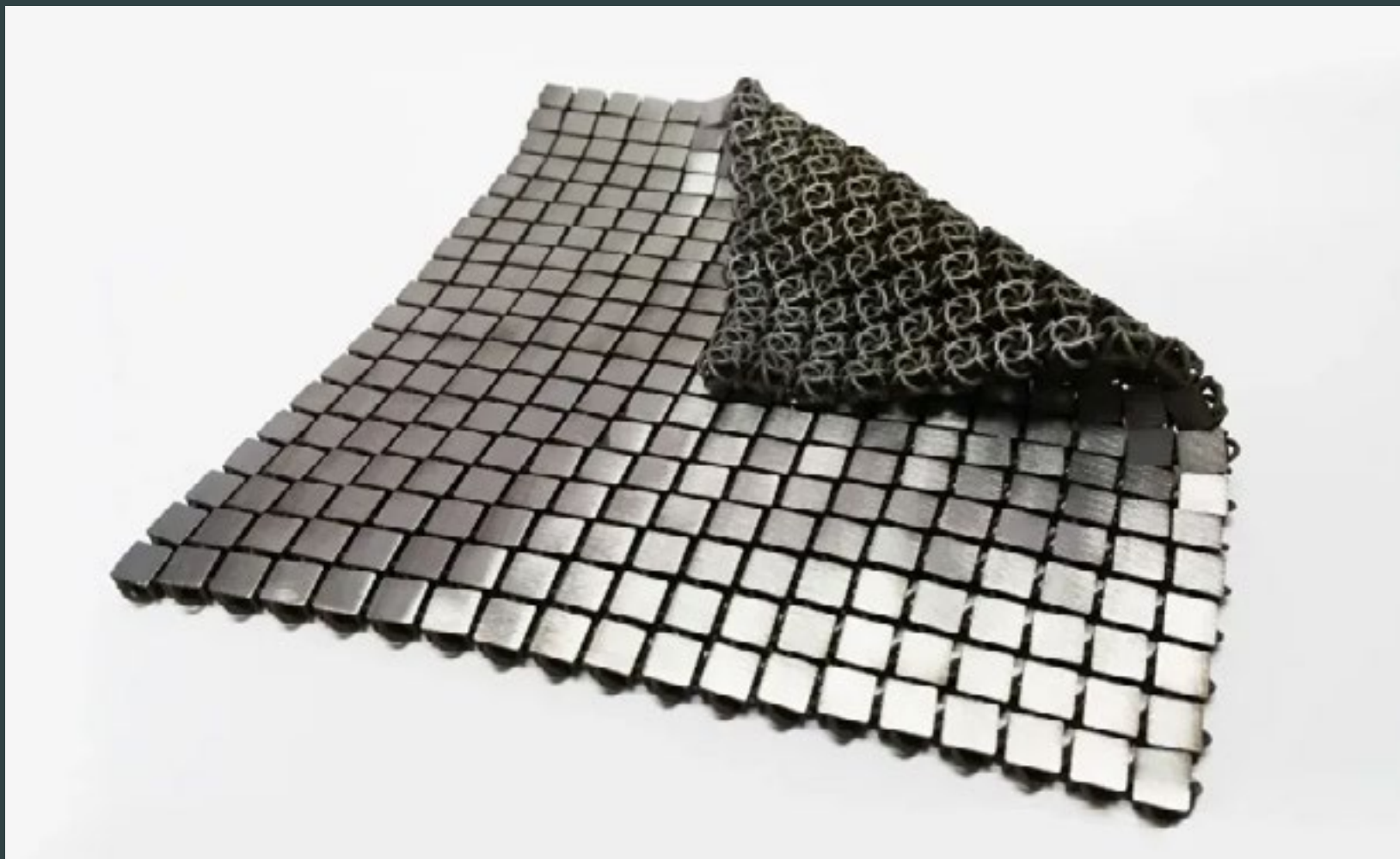


Figure: NASA's "Scale Maille", courtesy: NASA

Imagine a fabric woven from the threads of the future, one that protects like armor, adapts like a chameleon, and unfolds like a magician's trick. This is no longer a figment of science fiction, but a reality forged in the laboratories of NASA. Inspired by the intricate links of ancient chainmail, Scale Maille is a metallic fabric crafted from a single sheet of stainless steel. However, unlike its medieval counterpart, this modern marvel is not bound by welds or rivets. Instead, an innovative 3D printing process extrudes the metal, creating a sheet adorned with two distinct faces.

The front face of Scale Maille is a glistening array of interlocking squares, reminiscent of a mosaic. These squares, polished to a mirror finish, excel at reflecting heat and light. Imagine a spacecraft cloaked in this fabric, gracefully gliding through the scorching heat of the sun, its shimmering surface deflecting harmful radiation.

The reverse side of the fabric reveals its hidden secret: a network of tiny, flexible hinges that connect each square. These hinges allow the fabric to fold and unfold with remarkable ease, transforming from a rigid shield into a pliable sheet.

This unique duality grants Scale Maille unparalleled versatility. In the vast expanse of space, it can unfurl

into expansive solar sails, propelling spacecraft with the power of the sun. It can morph into deployable antennas, transmitting vital signals across celestial distances. And when astronauts venture into the hostile environments of other worlds, Scale Maille can shield them from the harsh elements, acting as a resilient and adaptable second skin.

While Scale Maille's potential in the realm of space exploration is undeniable, its impact extends far beyond the cosmos. Its unique combination of strength, flexibility, and adaptability offers limitless possibilities in the textile industry. Imagine garments that seamlessly transition from providing warmth to allowing for optimal ventilation. Picture protective gear that is both lightweight and impenetrable. Envision building materials that are both robust and easily deployable.

The possibilities are endless, and the future of textiles is poised for a transformative shift. Scale Maille stands at the forefront of this revolution, paving the way for a new generation of fabrics that adapt to our needs, protect us from harm, and empower us to explore the frontiers of science and technology.

The heart of Scale Maille lies in its innovative 3D printing process. Unlike traditional printing methods that layer

material upon itself, Scale Maille utilizes a technique known as “additive manufacturing.” This process involves strategically depositing molten stainless steel onto a surface, building the fabric’s intricate structure layer by layer.

The intricate geometry of Scale Maille is key to its unique properties. The flat, mirror-like squares on the fabric’s front face are strategically arranged and sized to ensure optimal heat and light reflection. This design not only protects astronauts and spacecraft from harmful radiation but also holds the potential for creating highly efficient solar sails.

But the true magic lies in the hidden network of hinges on the backside. These hinges, meticulously crafted during the 3D printing process, are designed to be both strong and flexible. This allows the fabric to fold and unfold with remarkable ease, making it highly adaptable and versatile.

This combination of heat-resistant squares and flexible hinges unlocks a plethora of potential applications. Imagine buildings with deployable walls that adjust to the sun’s position, maximizing natural light and optimizing energy consumption. Picture sports apparel that adapts to changes in temperature and activity levels, offering both comfort and protection. Envision medical devices with intricate origami-like structures, capable of performing intricate surgical procedures with minimal invasiveness.

The possibilities extend beyond the realm of physical applications. Scale Maille’s unique properties can be harnessed to create next-generation metamaterials with tailored electrical, magnetic, and even optical properties. This opens doors for advancements in solar energy harvesting, wireless communication, and even stealth technology.

Developing such revolutionary applications, however, requires a deep understanding of the material’s behavior. Researchers are actively studying Scale Maille’s mechanical properties, thermal conductivity, and electrical resistance. This data is crucial for optimizing the fabric’s design and ensuring its performance in specific applications.

The research extends beyond the material itself. Scientists are exploring new 3D printing techniques that can create even more intricate and functional structures.

Let’s take a leap into the future and envision the impact this revolutionary fabric could have on various industries:

**Space Exploration:** For astronauts venturing into the unknown, Scale Maille offers unparalleled protection and versatility. Imagine spacecraft adorned with this shimmering fabric, reflecting the harsh radiation of the sun while also acting as deployable solar sails, harnessing the sun’s energy for propulsion. On alien planets, astronauts could don suits made of Scale Maille, shielded from the elements yet able to move with ease thanks to the fabric’s flexibility.

**Architecture:** Scale Maille could revolutionize the way we design and construct buildings. Imagine walls that adapt to the sun’s position, maximizing natural light and reducing energy consumption. Picture roofs that unfold automatically to provide shade during peak sunlight hours. These dynamic structures could create comfortable and energy-efficient buildings without compromising on aesthetics.

**Sports and Recreation:** Imagine athletes wearing apparel that adapts to their body temperature and activity level, providing optimal comfort and performance. Picture cyclists wearing aerodynamically optimized Scale Maille suits that reduce wind resistance while still allowing for optimal ventilation. This innovative fabric could usher in a new era of sports and recreation, pushing the boundaries of human potential.

**Medical Applications:** The intricate origami-like structures made possible by Scale Maille could be used to create next-generation medical devices. Imagine surgical instruments that fold and unfold with precision, allowing for minimally invasive procedures. Picture implants that adapt to the body’s needs, promoting healing and recovery. These advancements could revolutionize healthcare, improving patient outcomes and reducing recovery times.

**Metamaterials:** Scientists are exploring the use of Scale Maille to create metamaterials – engineered materials with tailored properties. Imagine materials that absorb or reflect specific wavelengths of light, creating cloaking devices or enhanced sensors. Picture materials with unique electrical or magnetic properties, enabling advancements in fields like wireless communication and renewable energy.

**Fashion and Design:** Scale Maille’s unique aesthetics and flexibility could revolutionize the fashion and design industry. Imagine garments that change color and texture with the touch of a button. Picture accessories that morph into different shapes and sizes. This innovative fabric could offer designers endless possibilities for creating truly unique and dynamic pieces.

**Environmental Sustainability:** Scale Maille’s lightweight and durable nature could contribute to a more sustainable future. Imagine buildings that require less material to construct and offer improved energy efficiency. Picture airplanes that are lighter and more fuel-efficient thanks to their Scale Maille components. These applications could reduce our environmental footprint and contribute to a more sustainable future.

The development of Scale Maille is still in its early stages, but the possibilities are boundless. This innovative fabric has the potential to revolutionize the way we live, work, and explore the world. With continued research and development, Scale Maille promises to be a cornerstone of a brighter and more advanced future.

# German Smart Technologies on show at ITMA Asia + CITME

■ Sayed Abdullah

ITMA ASIA + CITME, Asia's leading trade fair for textile machinery, taking place in Shanghai, is once again marked by a considerable presence of VDMA member companies. The round about 40 exhibiting VDMA members cover nearly all different machinery chapters with a focus on spinning and manmade fibers, nonwovens, weaving, braiding, knitting & hosiery, finishing & dyeing and textile processing. They are part of a strong German presence with a total of around 60 German exhibitors – including non-machine manufacturers.

The VDMA Textile Machinery Association and VDMA China will be present in the industry hub in Hall 8 zone B. Since the strict travel restrictions are over, the VDMA team in Shanghai will be staffed again with both colleagues from the VDMA headquarters in Germany and from VDMA China.

During a press conference on the first day of the show, Dr. Janpeter Horn, chairman of the VDMA Textile Machinery Association and managing director of August Herzog Maschinenfabrik expressed: "After years of cancelled or postponed trade fairs and travel restrictions, this year's ITMA ASIA + CITME is the first edition of the show that can be attended not just by Chinese but by visitors from various countries and regions. The event is a good opportunity to meet customers and partners again in person and not just on a screen. ITMA ASIA + CITME provides a good chance to deepen the already good relations with China and other Asian countries further and to set-up new partnerships."

Dr. Horn continued to present latest



Figure: At the ITMA Asia press conference, VDMA leadership asserted that member companies focusing on smart technologies.

facts and figures about the German textile machinery industry. Between January and August 2023, the overall exports of textile machinery and accessories summed up to 1.7 billion euros, which was a slight decrease compared to the same period in 2022. The shipping to almost all major markets decreased between January and August: China: 440 million € (2022: 453 million €), Turkey: 205 million € (2022: 265 million €), USA: 177 million € (2022: 144 million €), India: 170 million € (2022: 228 million €).

Numerous VDMA member companies have production sites in the major Asian markets China and India and serve their customers in these countries from there. A latest VDMA business climate survey among the textile machinery companies in China showed, that 75% of all participants

assessed their current business situation as either good (6%) or satisfactory (69%). For the coming quarter, 50% of the companies see the market to decline. Asked about the business situation during the next six months, 44% of the companies expect the market to remain stable, 56% expect the situation to become worse. This is also reflected in the HR of the companies: 63% expect the number of employees to remain unchanged.



*"At Oerlikon, we contribute with our innovative technologies for resource-saving use in almost all manmade fiber spinning mills in the world. Our promise for the future is to continue to expand the zero-waste production approach and thus take care of achieving our customers' and our own sustainability goals. This sets out the claim of one of the world's leading suppliers of machinery and plant solutions for manmade fiber production not only for this show: In the future, it will be solely a matter of sustainable innovations."*

**Georg Stausberg**

CEO of the Polymer Processing Solutions Division and Chief Sustainability Officer of the Oerlikon Group.

# Reimagining Textile Waste in India: A Conference to Accelerate Circularity

■ Arif Hossain



Figure: 'Reimagining Textile Waste in India' will be held on 1-2 December 2023 in New Delhi, India

Fashion for Good, Canopy, IDH, and Laudes Foundation are joining forces to host **Reimagining Textile Waste in India**, a two-day conference taking place on December 1-2, 2023, in New Delhi, India. This landmark event marks the official closure of the Sorting for Circularity Project India and heralds the launch of **Re-START ALLIANCE**, a textile recovery alliance established by the four founding partners with catalytic funding from Laudes Foundation.

The conference will unveil a toolkit for valorizing textile waste in India, building upon the findings of the Wealth in Waste report released last year. A series of sessions will delve into the current textile waste landscape in India, exploring chemical recycling and sorting technologies, brand engagement, and the financing environment that will drive India's circular transition.

Attendees will hear from pioneering brands and suppliers, governmental actors, sorters, financiers, and disruptive innovators, including Circ®, Renewcell,

Infinite Fiber Company, Worn Again Technologies, Reverse Resources, TOMRA, PICVISA, and Matoha Instrumentation Ltd. Together, these stakeholders will explore strategies to transform India into a leading recycling destination and a global next-gen hub for circularity.

As per recent data, India generates a significant amount of textile waste, with 3,265 KTONs of pre-consumer waste, 3,944 KTONs of post-consumer domestic waste, and 584 KTONs of imported waste. Despite the potential for recycling, a substantial portion of this waste ends up in landfills, posing environmental concerns. However, the textile recycling market in India is projected to expand rapidly, reaching US\$375 million by 2028, indicating a growing recognition of the need for sustainable waste management solutions in the textile industry.

## Key Highlights of the Conference

- Celebration of the Sorting for Circularity Project India's successful completion
- Launch of Re-START ALLIANCE, a textile recovery alliance committed to accelerating circularity in India
- Unveiling of a toolkit for valorizing textile waste in India
- In-depth sessions on the current textile waste landscape, cutting-edge technologies, brand engagement, and the financing environment for circularity in India
- Insights from pioneering brands, suppliers, government representatives, sorters, financiers, and disruptive innovators

# Jeanologia transforms denim design with eDesigner

■ Sayed Abdullah

Jeanologia is boosting digitalization in eco-design with a new version of its eDesigner software.

Since its development in 2020, this innovative software for the digital creation of jeans has situated itself as the creative and eco-efficient technological alternative to traditional denim design, shaping the future of garment finishing.

## The perfect editor for denim design

The new version of eDesigner offers a more intuitive user interface, as well as tools specific to jean design, providing a unique design experience. Worth highlighting is the “Trace” tool, which uses artificial intelligence to generate hyper-realistic designs from a single image.

## Access to Jeanologia’s know-how

eDesigner also provides designers with a valuable source of inspiration and expertise through its Lightbrary, which gives users access to an extensive gallery of laser designs, vintage designs, wash effects, textures, tear and fray gallery, as well as a “Discover” section with trends and inspirational designs.

Jeanologia thus will share its know-how with designers, who will be able to create things from scratch or build on previous designs as a starting point for new creations.

## Digital wash

The new eDesigner takes digitization to the next level, enabling the digital creation of patterns and garments and in doing so, reduces physical samples by 80 percent. This not only

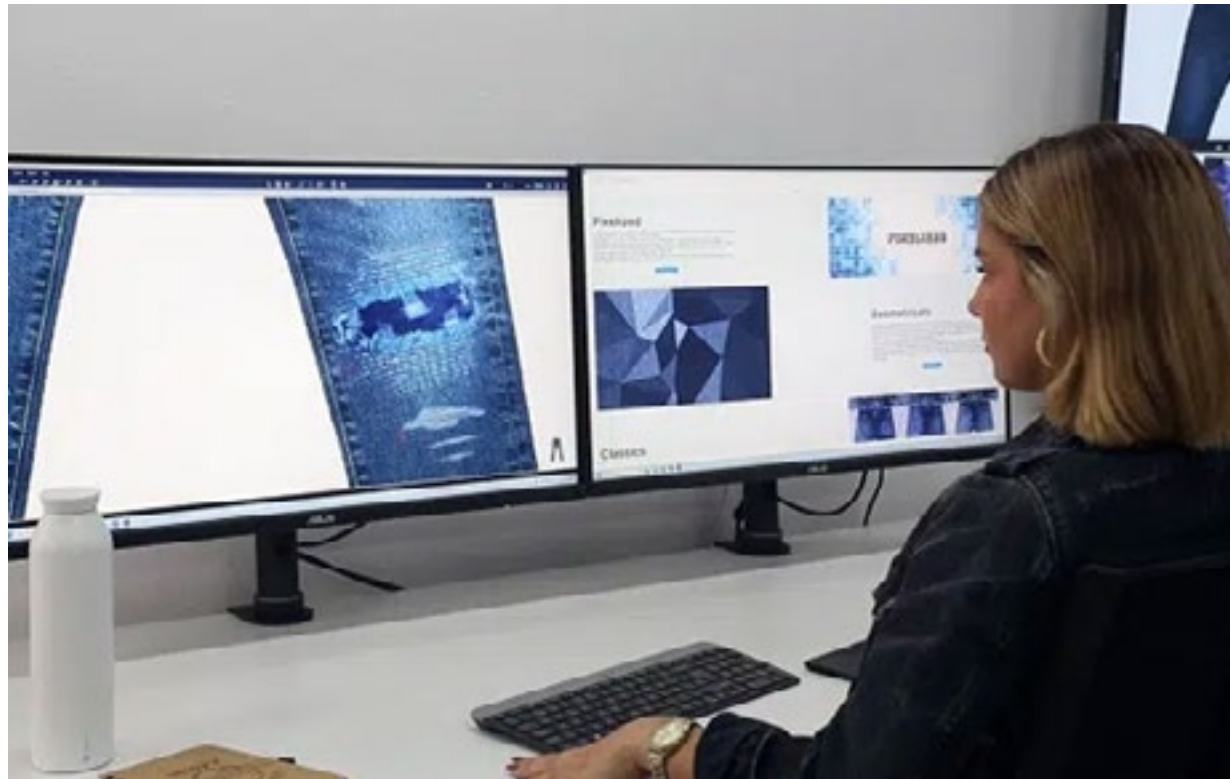


Figure: The new version of eDesigner offers a more intuitive user interface, as well as tools specific to jean design, providing a unique design experience.

means significant savings in terms of resources, but also a substantial reduction in the carbon footprint generated by the transportation of samples.

The user can create digital cufflinks, combining digital patterns (eFit) with digital fabrics (eFabric), and partake in a truly authentic experience, as he or she will be able to analyze the results of wash applications on the fabrics.

## The perfect partner for the digitization of the development process

eDesigner acts as a fluid and agile two-way communication channel

that connects laser designers with wash developers and brands with manufacturers. In this way, it speeds up the production and marketing of collections.

Once the design is finalized and the collection approved, the tool provides final digital files, which can be sent to production centers around the world to be converted into actual jean production.

More than simply software, eDesigner is an eco-efficient digital transformation tool, destined to revolutionize the textile industry and contribute to its transformation into a more competitive, productive and



*“Thanks to this tool we’ll enable infinite iterations at zero cost and impact, while standardizing formats and communication. We’ll improve production processes by making them more efficient and accelerate time-to-market, since we go from design, to sample and approval in a very short time.”*

**Carmen Silla**  
Jeanologia’s Marketing Director



# Recover™ partners with EuRIC to advance EU textile recycling policies

■ Amena Kamal Khan



Figure: Recover™ joined EuRIC Textiles with the aim to support EU institutions in framing these policies that will enhance textile recycling. Courtesy: Recover™

Recover™ – a leader in Materials science – has joined the European Recycling Industries' Confederation (EuRIC) Textiles with the aim to support EU institutions in framing these policies that will enhance Europe's economic growth while considering the perspective of textile recyclers.

The move will see the fibre-to-fibre recycling specialist help frame economic growth policies that consider the perspective of textile recyclers.

Through this collaboration, Recover™ can contribute to shaping key EU policies and regulations that impact the recycling sector such as the End of Waste Criteria, the Waste Shipment Regulation, and the Ecodesign for Sustainable Products Regulation.

This partnership allows Recover™ to participate in working groups to formulate industry positions and acquire legal and technical support on EU regulatory matters. Also, our involvement in EuRIC Textiles enables our participation in high-level European recycling events, offering a platform for engagement among industry leaders, policymakers, and innovators to explore the path towards a more sustainable and circular textile sector.

EuRIC Textiles (European Recycling Industries' Confederation) aims to be the leading voice for a competitive European recycling industry, enabling the circular economy and preserving resources for future generations.

Their main objectives are to connect the European

recycling industries and other circular economy stakeholders, to act as a trusted partner between the European recycling value chain and policymakers and to provide specific and cross-sectoral expertise on a broad range of materials.

EuRIC Textiles was traditionally dominated by sorters aimed at facilitating reuse, but now EuRIC is witnessing a growing involvement of recyclers, both mechanical and chemical. EuRIC Textiles members come from various European countries and are active in the collection, sorting, preparing for re-use, recycling, transport, and marketing of used textiles, shoes, and accessories, gaining representation in the whole textile and footwear recycling value chain.

While EuRIC Textiles' primary focus will be on promoting, representing, and protecting the collective interests of the European textiles reuse and recycling industry, it also seeks to cultivate collaborative ties with the textile industry, thus exploring mutual objectives.

At national level, Recover™ Spain is also joining FER (Federación Española de la Recuperación y el Reciclaje). FER is the Spanish recyclers association and a member of EuRIC. This association enables Recover™ to be in touch with important stakeholders in the Spanish textile recycling value chain, such as collectors, sorters, or other recyclers. In this sense, we can work together to provide a better understanding of textile recycling to the textile sector in Spain.

# 'SHEIN' singly controls USA's 40% fast fashion Shein's on-demand business model is reason for its low prices

■ M A Mohiemen Tanim

SHEIN, a Chinese fast fashion company, has become a major player in the US market. According to a recent report, SHEIN now controls 40% of the fast fashion market in the US. This is a significant increase from just a few years ago, when SHEIN was a relatively unknown brand.

One of the reasons for SHEIN's success is its low prices. The company is able to sell its clothes for much cheaper than its competitors because it uses an on-demand business model. This means that SHEIN only produces a small number of each item, based on customer demand. This helps to reduce waste and keep costs down.

SHEIN's on-demand business model has also been criticized. Some critics have said that it leads to worker abuse. In 2021, an investigation by the Wall Street Journal found that SHEIN suppliers were paying workers as little as \$1.50 per hour.

Despite these criticisms, SHEIN remains a popular brand among young consumers.

## What is SHEIN's on-demand business model?

SHEIN's on-demand business model is a system in which the company only produces a small number of each item, based on customer demand. This helps to reduce waste and keep costs down.

## What are the criticisms of SHEIN's on-demand business model?

SHEIN's on-demand business model has been criticized for leading to worker abuse and environmental impact.

- **Worker abuse:** Some critics have said that SHEIN's on-demand business model leads to worker abuse because it puts pressure on suppliers to produce clothes quickly and cheaply. This can lead to workers being paid low wages and working long hours.
- **Environmental impact:** SHEIN's fast fashion model produces a lot of waste. The company's clothes are often made from cheap, synthetic materials that are not biodegradable. This means that they end up in landfills, where they can take hundreds of years to decompose.

## What is SHEIN doing to address these criticisms?



SHEIN has said that it is committed to improving its labor practices and environmental impact. The company has released a number of reports detailing its efforts to address these issues. However, some critics have said that SHEIN needs to do more to be transparent about its supply chain and to ensure that its workers are being treated fairly.

SHEIN's on-demand business model is a complex issue with both benefits and drawbacks. On the one hand, it helps to reduce waste and keep costs down. On the other hand, it has been criticized for leading to worker abuse and environmental impact. It remains to be seen whether SHEIN can address these criticisms and continue to grow its business in a sustainable and ethical way.

# Adobe's Project Primrose: Interactive dress changes color & pattern in real time

■ Md. Hasan

The fashion lovers' urge to own dresses that can change colors and patterns so that they do not need to fill their wardrobe with countless dresses. Surprisingly, this isn't far from reality as some companies have started working on it and have achieved amazing developments.

Recently, Adobe made waves at the Adobe MAX 2023 event in Los Angeles when it launched Project Primrose, a revolutionary interactive dress that can transform design and style in a matter of seconds. Researcher Christine Dierk led the presentation. Viewers were both confused and surprised after observing the dress's remarkable capabilities.

Although Adobe is primarily known for its innovative and cutting-edge software suites, the company surprised attendees at the Adobe MAX 2023 conference with the discovery of something they've been secretly developing. A host walked onto the stage in a seemingly normal dress, only to shock viewers when the dress suddenly changed from translucent white to reflective.

The individual components of the dress then change color, creating unique patterns that allow the wearer to effectively change their outfit in real time. Called Project Primrose, the interactive dress uses a "reflective light diffusion module" to create a flexible, emission-free display system.

## Adobe Project Primrose: How the dress changes style

With the press of a button, the special Project Primrose dress, covered in scales, begins to change style at Dierk's command. But it doesn't stop there; This outfit can also understand how the wearer moves and make the design move in sync. The system developed by Adobe uses reflective polymer dispersed liquid crystal (PDLC), an electroactive substance commonly used in smart window technology. This energy-efficient, non-emitting material can be easily customized into different shapes and has flexible light diffusion capabilities, far beyond what e-ink and other technologies offer.

Speaking of e-ink, this isn't the first time vivid color-changing designs are witnessed. At CES 2022, BMW introduced the iX Flow concept model that can change color in real-time. The technology dates back to 2017 when Sony introduced an e-ink-powered FES Watch that could also change its design. What Adobe did was



Fig: The color changes as the model's movement and reaction.

different in two notable ways:

1. First, it did away with electronic ink or conventional screens for something more reflective and eye-catching.
2. Second, it combines this technology with its own design software, showing how the industry will enable future designers to design on new surfaces.

## Interactive fashion with Instant transformation:

What sets Project Primrose apart is its ability to change depending on the user's movement. As Dierk demonstrated on stage, the dress included multiple small-scale screens that could change appearance at the press of a button. The audience watched the transition of the dress from color to one color to another, a shimmering metallic silver very smoothly. The dress continues to stun with its series of transformations, transforming its scales into a variety of patterns, from V-shaped stripes to intricate diamond patterns.

Dierk, the genius behind the dress, revealed that it could do more than change the color and pattern; it can come alive with animation. A simple button press activates amazing movement patterns, further blurring the lines between fashion and technology. What's even more appealing is the skirt's buttonless mode, which relies on built-in sensors, providing a smooth and intuitive experience.

Adobe's creation is paving the way for a fashion revolution, where clothes can change with a simple command or move with the person wearing them. It's undoubtedly a fantastic blend of fashion and technology.

# CHT awarded as Top Performer by Adidas for sustainable chemicals

■ Rahbar Hossain

CHT Group, a global leader in sustainable chemical products for the textile industry, has been awarded the “Top Performer” title by Adidas AG in its latest evaluation of suppliers. The award recognizes CHT’s commitment to sustainability and innovation, as well as its leadership in the development and implementation of sustainable chemical management practices.

CHT’s portfolio of products includes 98% ZDHC Level 3 auxiliaries and colorants, making it the preferred partner for the sustainable chemical treatment of certifiable brand products.

The company also invests heavily in research and development, with the goal of making the entire textile value chain more sustainable.

In 2022, CHT generated 77% of its total sales with sustainably classified products. The company’s customers benefit from its comprehensive know-how and the highest technical expertise in machine application.

## CHT drives innovation

According to CHT’s own self-image, being innovative means taking responsibility for the future. For this reason, the Tübingen-based company pursues a strategy of sustainable product ranges in all business areas. CHT also supports its customers with comprehensive individual application advice for maximum sustainable success at all levels.

## CHT feels home in textile standards

In this regard, CHT has already been active as a ZDHC Contributor since 2019 with a comprehensive range of more than 2200 certified products. Of these, 70 % are textile auxiliaries and 30 % are dyes in the portfolio that are certified to Level 3 ZDHC, bluesign®, or C2C standards.

With high-performance products and comprehensive technical application advice, CHT offers textile producers the opportunity to supply brands and retailers with demonstrably sustainably produced textiles at the highest level.

“I am proud of this great achievement. Our strategy is consistently geared to the sustainability of the textile



value chain, and our efforts have been impressively confirmed here. I am very pleased that this performance is underpinned by a major brand such as adidas. This motivates us to continue on our path to support and accompany our customers in producing more sustainable textiles,” Benoit Moutault, Group Vice President of CHT.

To this end, CHT fully supports its customers and business partners and invests extensively in compliance and regulatory measures. Especially in the textile sector, the group of companies cooperates with all renowned standards and labels. Among others bluesign®, C2C, or GOTS. Especially in the context of the ZDHC program, CHT is a global leader. More than 2200 products certified by CHT currently reach LEVEL 3, the highest possible level for safe textile chemistry. It is particularly noteworthy that this includes textile

auxiliaries (70 %) as well as dyes and pigments (30 %).

This is a big plus for textile customers of the CHT Group, who get everything from a single source. In addition, CHT Group was one of the driving forces when a group of 10 internationally renowned chemical companies decided to become ZDHC Contributors in the summer of 2019. Together, ZDHC members develop and implement methods and tools for safer chemical management. To conserve

resources and the environment, and to protect people and nature.

CHT Group is involved in several ZDHC task teams and is also a member of the ZDHC internal Chemical Industry Advisory Group (CIAG).

# Fulgar's AMNI SOUL ECO® Yarn Combats Microplastic Pollution for Sustainable Fashion

■ Md. Emon



In a world grappling with environmental challenges, Fulgar, an Italian leader in man-made yarn production, is taking strides towards sustainable fashion with its innovative AMNI SOUL ECO® yarn. This biodegradable polyamide yarn tackles the growing problem of microplastics, offering a solution that prioritizes both performance and environmental responsibility.

Microplastics, tiny fragments of plastic less than five millimeters in size, are a major threat to marine life and biodiversity. AMNI SOUL ECO® addresses this issue directly. Tests confirm that microplastics released when washing garments made with this yarn decompose twenty times faster in the marine environment compared to conventional synthetic yarns. This significantly reduces their harmful impact on our oceans and ecosystems.

Despite its focus on sustainability, AMNI SOUL ECO® doesn't compromise on performance. The yarn's biodegradable component has no negative impact on wear, quality, or comfort. It retains the high performance of polyamide 6.6, ensuring garment durability, breathability,

moisture management, and excellent color yield.

Prestigious fashion brands like Herno, Colmar, and Save the Duck have already chosen AMNI SOUL ECO® for their collections, recognizing their reliability, versatility, and ability to redefine sustainable fashion standards without sacrificing style or performance.

Fulgar's dedication to sustainability extends beyond AMNI SOUL ECO®. The company boasts a robust portfolio of eco-conscious yarns, including Q-Nova® regenerated yarn, bio-based Evo® yarn, and Q-CYCLE®, a yarn derived from recycled plastic waste. Their commitment to R&D and environmental responsibility has earned them a leading position in the sustainable fashion industry.

AMNI SOUL ECO® represents a significant step forward for the textile industry. By offering sustainable solutions that address pressing environmental issues, Fulgar paves the way for a more responsible and eco-conscious future for fashion.

# Unlocking cotton transparency: Exploring industry's traceability dimensions

■ Homyra Anjumi Hoque

Growing consumer awareness of the profound social and environmental impact of the fashion industry has sparked a global movement for change. In 2022, A Bain & Company study showed that approximately 15% of global fashion consumers are already concerned about sustainability.

These consumers are actively making choices to minimize their environmental impact, and this number is expected to reach more than 50% in the near future. As consumers reassess their purchasing habits and environmental regulations become more stringent, brands find themselves with an obligation to minimize their environmental and social impact.

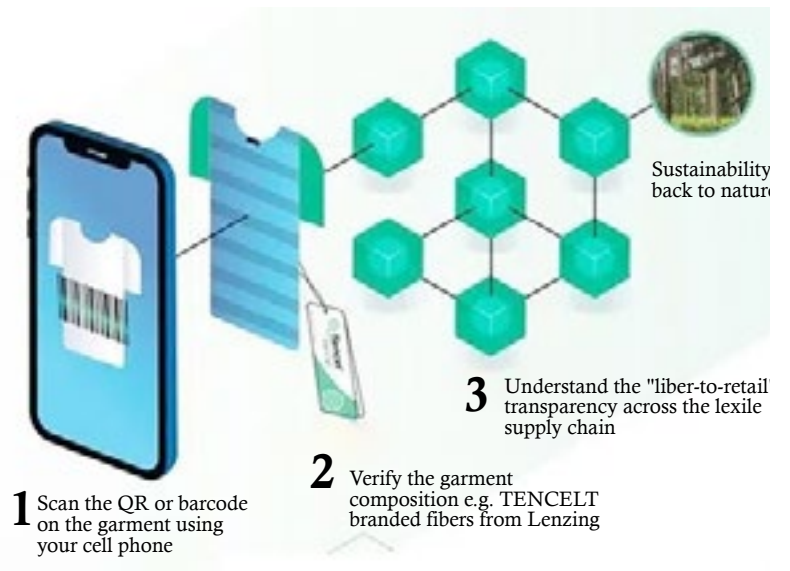
## Why traceability is needed in cotton industry and supply chain management.

Traceability plays a central role in greening the fashion supply chain, bringing transparency and accountability to the production process, while ensuring compliance with sustainability standards and best practices. In retail, this allows consumers to make informed choices and support brands that align with their values. Ultimately, tracing the supply chain will build trust and create positive change throughout the fashion industry.

## Cotton Protocol: An innovative solution

One of the programs at the forefront of this transformation journey is COTTON USA™, a Cotton Trust Protocol, which provides brands and retailers with an innovative cotton traceability solution. This advanced technology meticulously tracks Protocol Cotton through the blockchain-based Protocol Consumption Management Solution (PCMS).

The process begins at the ginning stage, where the Permanent Bale Identification (PBI) number and milling weight of each cotton bale are validated against the USDA master list. Once verified, a digital token, called



a Protocol Consumption Unit (PCCU), is generated for each kilogram of Protocol cotton yarn.

Starting this year, Protocol Cotton can be verified immediately upon ginning. Because more than half of the U.S. crop is marketed within a crucial three-month window beginning at the height of cotton ginning in November, this new timeline will allow Trust Protocol growers' cotton to be verified as Protocol Cotton on their initial Electronic Warehouse Receipt.

With this new timeline, Protocol member brands and retailers can collaborate with marketers in advance to plan for the sourcing and use of more sustainably grown cotton.

## Assuring transparency- Protocol cotton issue

For cotton tracked by PCMS, brands and retailers will receive a transparency tag verifying the origin from the original fiber shipment to the textile mill. It also provides the names and locations of Trust Protocol factories involved in every step of the manufacturing process until delivery of the finished product.

This creates enhanced communication opportunities, including the ability to incorporate relevant environmental data into marketing claims and product labels thereby promoting appropriate and sustainable sustainability practices. Protocol Cotton's traceability solution is revolutionizing the fashion industry, aligning it with the needs of consumers and global environmental standards. It empowers brands, retailers and consumers to make particular choices and drive positive change in the world of fashion. As sustainability continues to take center stage, this transformation is necessary for the fashion industry

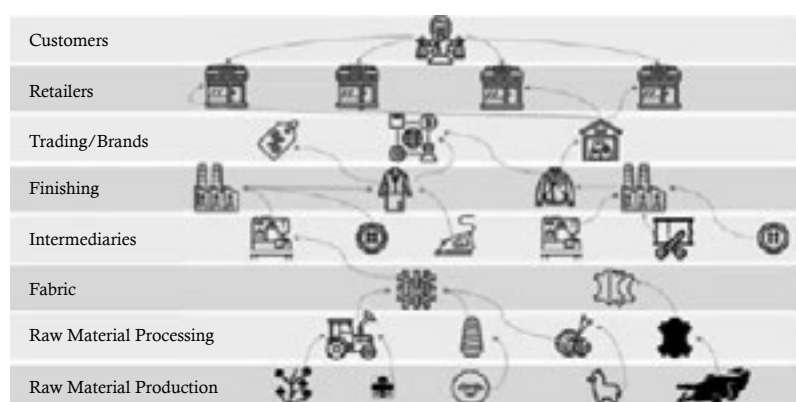


Figure 1: Traceability in the cotton industry.

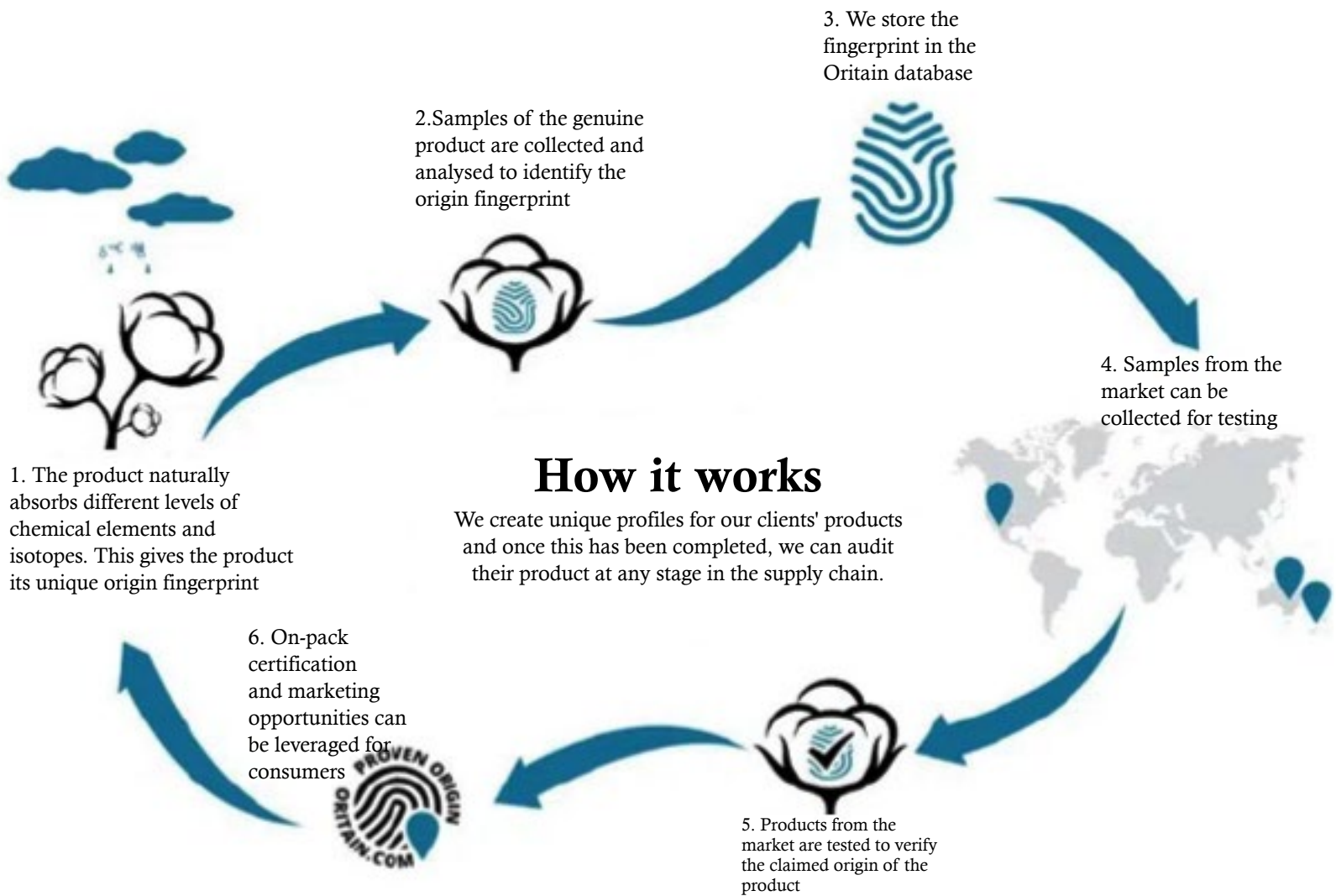


Figure 2: How cotton protocol works on traceability.

to become more responsible and environmentally conscious as well.

### Showcasing pathway to sustainability

The evolution of laws, standards, regulations and consumer habits shows a clear trajectory that sustainability efforts by brands and retailers will continue to increase. As the industry grapples with these challenges, it is definitely clear that scalable solutions are required to

effectively mitigate negative environmental impacts.

In this regard, the necessity of programs like the Trust Protocol offering a promising avenue to address these pressing concerns etc. are needed. By working together towards a common goal and prioritizing the scalability of sustainable practices, the fashion industry can confidently navigate the evolving landscape, paving the way for a sustainable and resilient future more ethically.



Figure 4: Cotton protocol can be a sustainable initiative for the future world.

# ACT Pushes for Textile Circularity in Biden's plan to boost sustainable procurement

■ Ahosanuzzaman Roni

act

AMERICAN  
CIRCULAR TEXTILES

The American Circular Textiles (ACT) coalition has urged the Biden-Harris Administration to include textile circularity in its plan to increase sustainable procurement by the federal government. Textile circularity is a practice that reduces textile waste and environmental impact by using recycled materials, extending product lifespan, and recovering fibers. ACT believes that textile circularity can help the government achieve its goal of net-zero emissions by 2050, as well as create economic opportunities and jobs in the US.

ACT Executive Director Rachel Kibbe submitted the letter to the Biden-Harris Administration on behalf of the coalition, outlining the need to incorporate textiles into the procurement strategy and extend collaborative opportunities to textile industry stakeholders.

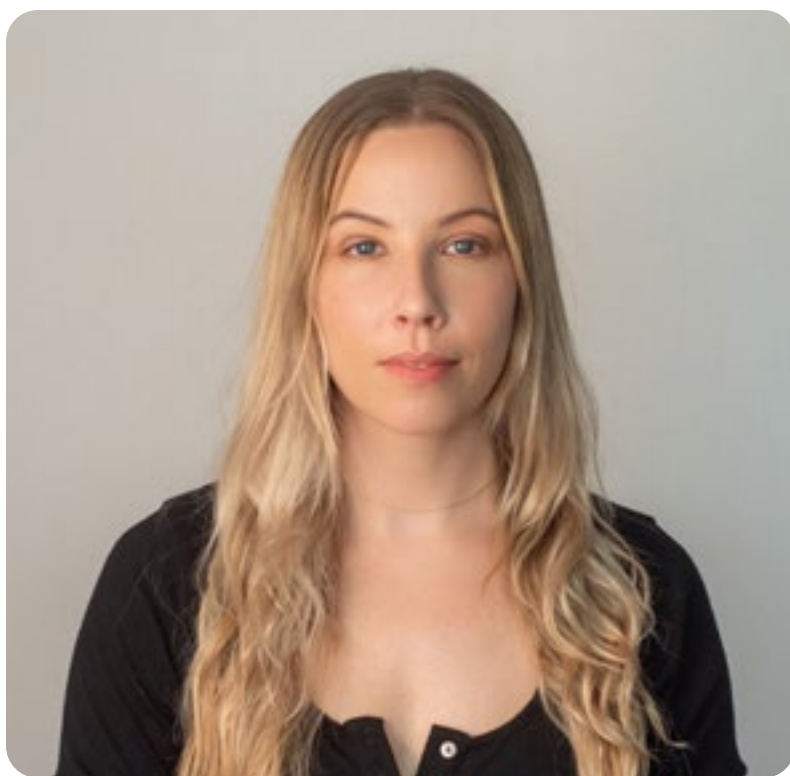


Figure: ACT Executive Director Rachel Kibbe

Kibbe explained: “As the largest purchasing body in the world, the U.S. government has the influence to catalyze more sustainable options, and scale innovation for environmentally preferred alternatives that create jobs and boosts our economy. I am optimistic that the Biden administration will reverse this trend of leaving textiles out of important funding opportunities and incorporate textile circularity, including recycled content, reuse, rental, and repair, into their efforts to enhance sustainable product and service procurement.”

According to ACT, textile circularity can help address the growing problem of textile waste in the US, which has increased by 80% since 2004. Textile waste is the fastest-growing waste category in the country, accounting for over 30 billion pounds of landfill and incinerator disposal every year. This waste not only costs billions of dollars for taxpayers and private companies but also contributes to greenhouse gas emissions and global warming. This waste has a significant impact on the production of methane, which is a potent greenhouse gas responsible for around 25% of global warming.

ACT is a coalition of leading fashion organizations and brands that are committed to advancing circularity in the US fashion industry. Some of its members include H&M, Reformation, thredUP, PoliticallyInFashion, Rebecca Ballard Advisory, Transparentem, and TS Designs. ACT's mission is to advocate for public policy that supports fashion circularity, educate consumers and stakeholders about the benefits of circular textiles, and facilitate collaboration among industry players to scale innovation and best practices.



# Archroma completes 10 years with innovative chemicals

■ Sayed Abdullah

Founded in 2013, Archroma is a global, diversified leader in specialty chemicals with operations in 42 countries, including over 30 production sites, all certified to ISO management system standards. With the industry's broadest product portfolio, they serve many of the world's top companies in textiles, packaging, and paper, paints, and coatings. Our team of 5,000 passionate professionals offers industry-leading expertise in manufacturing, technical support, and innovation.

Archroma has continued to grow through additional acquisitions since then:

The global textile chemicals business of BASF was added to Archroma in 2015, with BASF's stilbene-based optical-brightening agents business for paper and powder detergent applications following in 2019.

- M. Dohmen, an international group specializing in the production of textile dyes and chemicals for the automotive, carpet, and apparel sectors, was gradually acquired between 2014 and 2018.
- Huntsman Textile Effects was combined with Archroma in February 2023, bringing together two global leaders to reshape the



Figure: Archroma team is diverse, global, and entirely united in its aim to lead the industry towards a more sustainable future for the customers and markets.

textile chemicals and dyes sector through sustainability, service, and innovation.

Our world-class research and development capabilities and leading-edge technologies and solutions help brands and manufacturers in their innovation projects. Together with them, we develop end-products that are safer, made in a more efficient and sustainable way, and add value for the consumer through unique and innovative functions and features.

Among Archroma's recent groundbreaking innovations are:

- **FIBERCOLORS®**, beautiful colors partially synthesized from upcycling textile waste, which recently won an Innovation Dyes award at the 2023 Just Style Excellence Awards
- **EARTHCOLORS®**, warm colors synthesized from partially plant-based waste, which won Gold in the Sustainable Innovations category at the 2017 ISPO OutDoor Industry Award
- **SMARTREPEL®**, PFC-free\* durable water repellents for textile applications
- **DENISOL® PURE INDIGO**, an aniline-free\* indigo solution for denim
- **CARTASEAL® NTR**, a partially bio-based polymer barrier solution for food
- **CARTASEAL®**, PFC-free\* and ammonia-free\* barrier solutions for paper and packaging



*"The Archroma team is diverse, global, and entirely united in our aim to lead our industry towards a more sustainable future for our customers and markets. We have pursued this singular goal for a decade through consolidation, innovation, and collaboration."*

**Mark Garrett**  
CEO of Archroma Group

PRO  
WEAVE  
fabrics reimaged



Coats Footwear  
Texon Rho Rhenoflex

Tencel™  
Feels so right

Lenzing  
Innovative by nature

# Coats & Lenzing unite for sustainable innovation

■ Md. Emon

In a groundbreaking collaboration aimed at transforming the footwear industry, Coats Footwear, and the Lenzing Group have come together to create synthetic-free engineered uppers and fabrics. This innovative venture brings together Coats Footwear's ProWeave™ technology and Lenzing's TENCEL™ Lyocell Filament, resulting in a remarkable fusion of sustainability and performance. The fruits of this partnership will be unveiled at the prestigious Lineapelle event.

## A New Era of Sustainable Footwear

Coats Footwear, a renowned leader in thread manufacturing and structural components for apparel and footwear, has joined forces with the Lenzing Group, a global specialist in cellulose-based specialty fibers for textiles. Their collaboration revolves around weaving TENCEL™ Lyocell Filament using Coats Footwear's patented jacquard weaving technology, ProWeave™, which can accommodate various fibers and yarns.

The outcome of this collaboration is truly groundbreaking. It is set to be featured in the prototype of Circle Sportswear's "SuperNatural Runner," marking the first synthetic-free performance footwear to incorporate

TENCEL™ Lyocell Filament blended with wool using ProWeave™ technology and other bio-based materials.

This novel approach enables the production of sustainable, exceptionally comfortable uppers and fabrics with an adaptive fit, mimicking a second skin. Importantly, this partnership is poised to benefit all footwear brands seeking to enhance supply chain traceability, embrace bio-sustainability, and reduce the carbon footprint associated with producing high-quality uppers and fabrics for various applications.

## Leading the Way in Sustainable Materials

Lenzing's TENCEL™ Lyocell Filament, derived from renewable wood sources, boasts eco-friendly production processes that recycle process water and reuse solvents at a rate exceeding 99%. Certified by The Vegan Society, TENCEL™ Lyocell Filament is known for its silky softness, color vibrancy, and strength.

On the other hand, ProWeave™ is a unique jacquard weaving technology that seamlessly integrates functionality and design freedom, allowing for the creation of intricately designed fabrics with distinctive properties such as gradient, rib, waffle, color, stretch, transparency, and 3D effects.

# Heberlein success story continues: New Swiss owners for long-established company

■ Sayed Abdullah

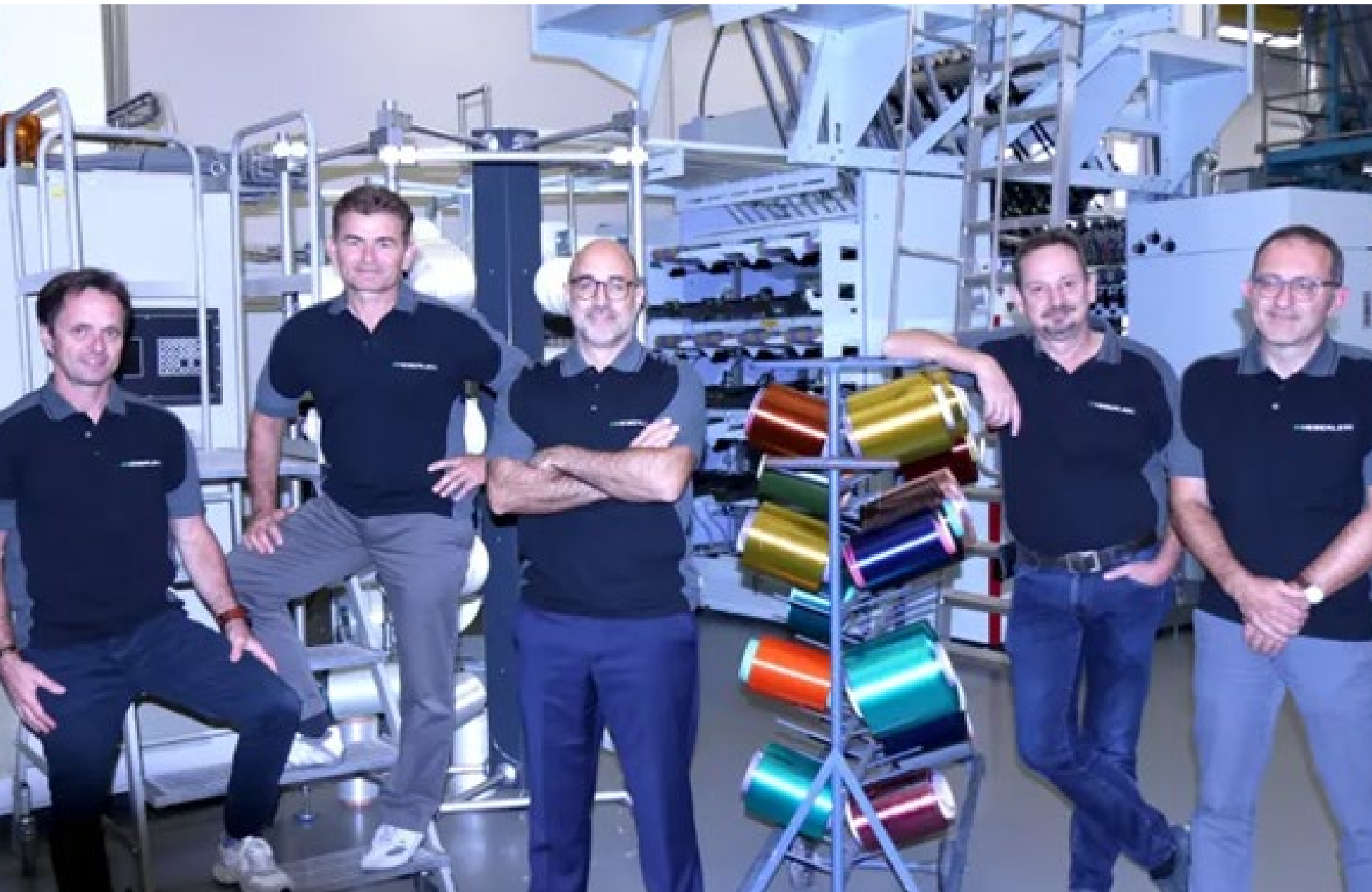


Figure: Management at Heberlein Technology AG: (left to right) Roland Messmer, COO; Roger Rueegg, CMO; Martin Zuercher, CEO; Patrick Buchmueller, CTO; Erich Peter, CFO.

Heberlein, founded in 1835, successfully completed the sale of its business on the 31st of October 2023. The new joint ownership comprises the company's management, alongside industry expert Daniel Lippuner and the Renaissance Investment Foundation. From November 1, 2023, the company will operate under the name "Heberlein Technology AG"

The owners are committed to investing in the long-term success of a business that already combines traditional values with innovative power. The brand is known for its high level of expertise, as well as its tailor-made solutions for the textile business. As the world's leading supplier of jets for synthetic yarns, Heberlein develops, produces, and distributes key

components for the man-made fiber industry. Around 80 employees and an efficient infrastructure in Wattwil, Switzerland, ensure that international customers can continue to rely on quality and reliability.

The Renaissance Investment Foundation was established by pension funds, for pension funds, and has been investing in unlisted Swiss SMEs for over 20 years.

Under the new ownership, the Heberlein business will continue unchanged at the current location in Wattwil with the current management and all current employees.

The board of directors and management of Heberlein AG welcome this solution and are

convinced that the existence of the company and its traditions will now be secured in the long term and that it will continue to develop successfully – positive news also for the business location of Toggenburg and the canton of St. Gallen.

Martin Zuercher, CEO of Heberlein, says of the transaction: "With this sale, we are opening a new, positive chapter in the company's long history. With the Renaissance investment foundation, we found an owner who is focused on long-term success. Together with the energetic management team, I look forward to continuing to make a significant contribution to Heberlein's success in the future."

# Beating Heat: rise of cooling fabric technology

■ Faujia Mushtari

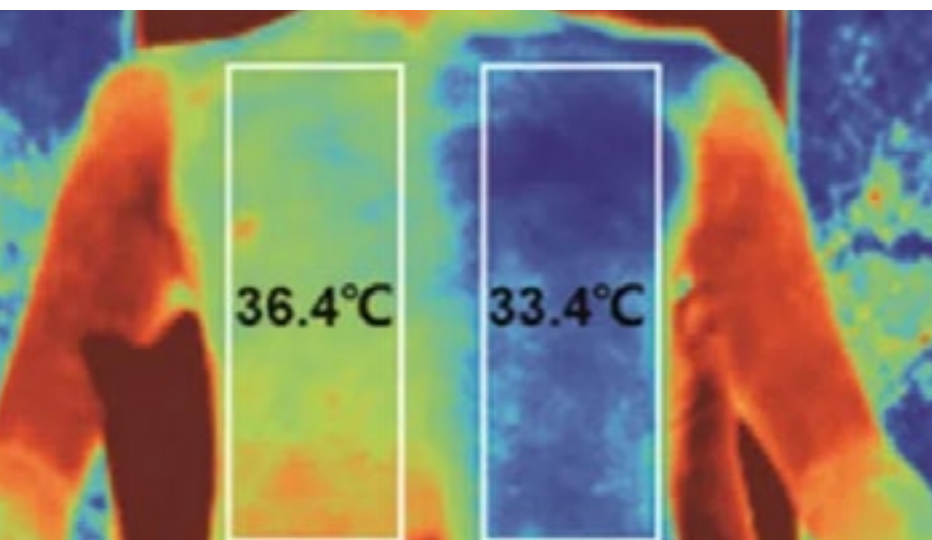
The relentless rise in global temperatures has given way to an era of increasingly unbearable summers, a stark consequence of the worsening climate crisis. In this exploration, we delve into the intriguing realm of cooling fabric technology, where a coalition of creative clothing brands and pioneering researchers strives to alleviate the discomfort brought about by record-breaking heat. These advancements mark a significant step forward in redefining our ability to withstand extreme temperatures.

## Leading the Charge

Several prominent brands have taken the initiative to develop cooling fabrics that hold the promise of transforming our battle against extreme heat. Among them, Bearbottom Clothing, LifeLabs, and Mission have emerged as pioneers, introducing innovative products designed to keep individuals cool and comfortable even in the harshest heatwaves.

## Bearbottom Clothing's Graphene Advancement

Bearbottom Clothing's approach revolves around utilizing advanced technology to treat fabrics, including recycled polyester and nylon, with graphene—a remarkable heat conductor. This groundbreaking treatment allows these fabrics to efficiently wick away body moisture and heat, resulting in a cooling effect that can lower one's



temperature by up to 3 degrees Fahrenheit.

## LifeLab's CoolLife: Embracing Polyethylene's Power

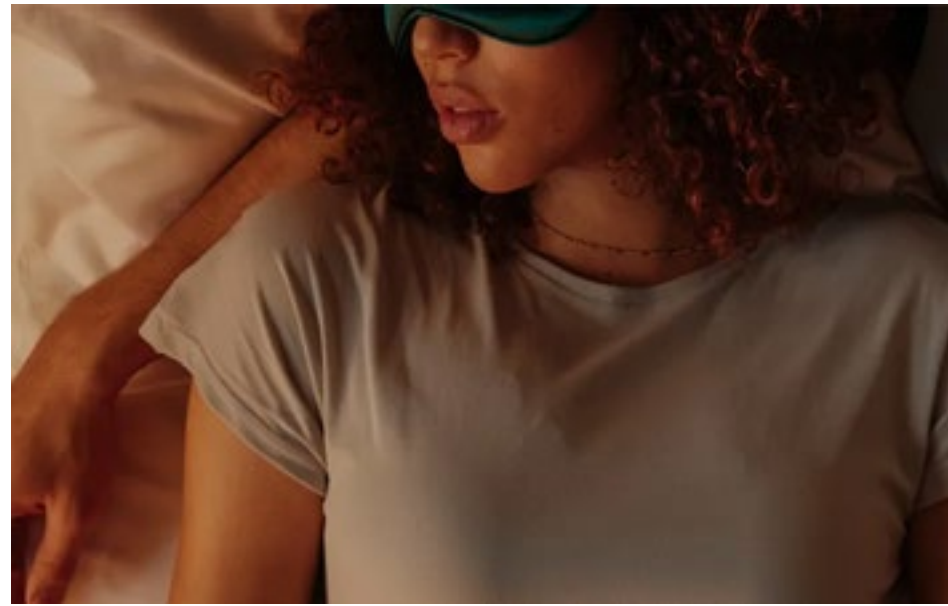


Figure 1: New 'Metafabric' passively cools the human body by 3-6 degrees Celsius. Courtesy: PR Newswire

LifeLab's CoolLife products center on the use of polyethylene fabric, uniquely adept at facilitating the release of body heat. This attribute leads to a significant reduction in the wearer's temperature, offering relief from the relentless heat, with potential benefits across a wide range of scenarios.

## NanoStitch: A Breathable Comfort Marvel

NanoStitch follows a similar path by engineering custom fabrics composed of Lycra® fiber and super-micro polyamide yarn. The outcome is an exceptionally lightweight and breathable material that effectively dissipates body heat, making it a favored choice for those seeking relief from oppressive temperatures.

## Mission's HydroActive™ Technology: A Game-Changer

Mission, on the other hand, offers a game-changing cooling technology powered by HydroActive™. This innovative approach has the potential to cool clothing items by an astonishing 30 degrees Fahrenheit below the average body temperature. Activating this remarkable cooling mechanism is as simple as dampening the clothing article and enjoying the ensuing rapid evaporation, which provides substantial relief from the heat.

While current innovations are indeed impressive, the future of cooling fabric holds even more promise. In a research laboratory in China, a team led by scientist

Guangming Tao has developed an award-winning “metafabric” capable of reducing skin temperature by an astonishing 9 degrees Fahrenheit.

## Metafabric’s Extraordinary Cooling Potential

This metafabric can be likened to carrying both a mirror and an air conditioner simultaneously. It leverages a mirror-like component to deflect solar radiation while allowing the exchange of body heat for cooler air, mirroring the functionality of an air conditioner. The result is unparalleled comfort, even when temperatures soar to unprecedented heights.

What sets this metafabric apart is its practicality. In contrast to earlier cooling fabrics, which were often thin and fragile, this metafabric boasts a thickness akin to conventional clothing. This quality makes it suitable for everyday use while delivering exceptional cooling benefits, promising a transformative impact.

## Stanford’s Innovations in Cooling Textiles

In parallel to these exciting developments, Stanford engineers have crafted a low-cost, plastic-based textile with the potential to surpass traditional fabrics in terms of cooling efficiency. This innovation holds the promise of a future where personal cooling could replace the need for energy-intensive building cooling systems.

This pioneering textile is designed to allow the body to disperse heat through two distinct mechanisms, resulting in a perceived temperature reduction of nearly 4 degrees Fahrenheit compared to conventional cotton clothing. It facilitates the evaporation of perspiration and the passage of body heat as infrared radiation, addressing a long-overlooked aspect of textile design.

To create this cooling textile, the Stanford researchers ingeniously blended nanotechnology, photonics, and chemistry to modify polyethylene, a material commonly used in battery production. The outcome is a fabric that permits thermal radiation, air, and water vapor to pass through while remaining opaque to visible light.

# H&M & Rabanne announced design collaboration

## XYZ

H&M, the worldwide fashion store, has once again created excitement in the fashion industry with its latest partnership with the famous French fashion brand, Rabanne. The two well-known brands celebrated their upcoming collection with a glamorous event at the famous Silencio nightclub in Paris, which was attended by many celebrities and featured amazing fashion and entertainment.

Rabanne, a pioneering force in French fashion since its inception in the 1960s, has continued to captivate audiences with its visionary designs, under the creative direction of Julien Dossena. The Rabanne H&M collection promises to seamlessly blend the brand’s iconic aesthetic with H&M’s accessibility, offering a range of womenswear, menswear, accessories, and even home décor.

The event kicked off with a



Figure: Jared Leto, Damson Idris, Irina Shayk and Elle Fanning dressed in the collection, pictured with Julien Dossena & Ann-Sofie Johansson in a event of H&M and Rabanne Copyright: BFA

mesmerizing performance by Swedish pop sensation Robyn, setting the stage for an evening of glamour and artistic expression. The acclaimed South Korean DJ and producer, Peggy Gou, followed with an electrifying set,

keeping the energy levels sky-high. The night they reached its crescendo with the appearance of none other than the legendary American singer and actress, Cher, who graced the event as a special guest.

# Proof data can boost spinners revenues

■ Amena Kamal Khan

Uster shares raw material management know-how

Raw material management has a high priority for Uster Technologies. That's clear from FiberQ – part of the new Uster 360Q suite of pioneering solutions for excellence in textile manufacturing. And it's underlined by a second webinar pointing the way from raw material data to profits, scheduled for early November.

Fluctuations in raw material prices and quality are constant headaches for spinners. And volatile market demand for yarns adds to the pain. Market conditions are unpredictable, so the big challenge is to implement reliable planning for cotton sourcing and yarn production, to cover all scenarios.

## Raw material management challenge

Efficient raw material management can be the basis for profitable mill operations. The recipe involves minimized raw cotton inventory to combat price fluctuations, combined with state-of-the-art raw material management to make maximum use of those valuable stocks. And the vital ingredient is reliable data.

Of course, reliable data comes only from accurate measurements. It then requires proper analysis and decision-making. Until now, this was a human task – usually time-consuming, with a high risk of mistakes and a low level of optimization. Increased sampling could enable better visualization of cotton quality, but that likely requires even more data analysis and interpretation. This is no longer a problem since the Uster FiberQ solution allows cotton classification data from HVI to be automatically uploaded to the Uster 360Q Platform. From there it's easy to create optimum laydowns.

## The FiberQ solution

One of the general issues is the lack of objective measurement data to start making sound decisions on the purchasing or utilization of cotton. Despite the high impact of instrument data, not all mills invest in this valuable equipment. In order to address the investment priority challenge, Uster HVI is now more accessible in selected countries through a subscription model, subject to conditions. With Uster HVI, higher sample testing and achieving objective, data-driven raw material sourcing and utilization will now be possible for a wider segment of the market.

Once the instrument is available and testing of incoming material is established, spinning mills face a delicate balancing act to ensure optimal stock levels without compromising quality or profitability. FiberQ can lead



Figure: Data can boost spinners' profits.

to higher quality consistency with minimum waste and mixing costs. The fact is that 65% to 75% of production cost is for raw materials. So, spinners will readily understand the impact of the Uster raw material management solution.

Spinning mills need to adopt innovative techniques and technologies to meet cotton-related challenges and ensure long-term sustainability and profits. Until today, raw material management was largely based on the experience of mill personnel, with available tools at the level of Excel files. This resulted in low utilization of data, because of the complicated and time-consuming processes which ultimately could not offer optimum results.

Data-enabled software is the key to progress and success with raw material management. Uster FiberQ works with powerful software, analyzing fiber data from available inventories and creating consistent and reliable laydowns for optimum yarn quality and performance, every day.

## Comprehensive and convincing

The Uster 'Think Quality' approach makes FiberQ unique and it's the central theme of the Uster raw material management webinar series. Uster's second webinar is titled 'How raw material data can boost profit in spinning'. It focuses on how spinners can apply Uster solutions to address today's raw material management challenges and boost their profitability. The webinar will explain how data can be translated into insights for improvements in raw material procurement and production.

The Uster webinars are in English and free of charge. Like the FiberQ solution, the Uster webinars are developed with the goal of supporting spinners and quality managers to improve the overall process – from fiber to yarn.

Uster Technologies is the world's leading provider of quality management solutions from fiber to fabric.

# Swiss textile machinery companies innovating with utmost importance to environment

■ Md. Emon

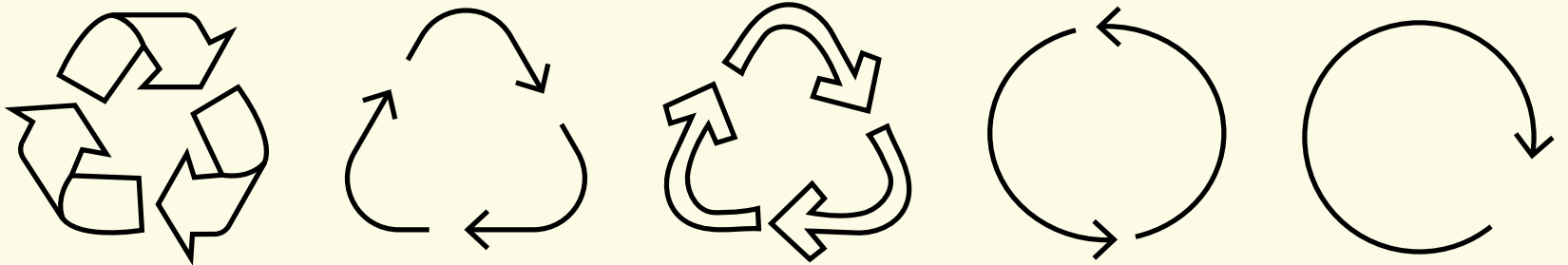


Figure: Swiss Textile Machinery Companies innovating and develop their products, considering environment with utmost priority

In a world that is paying more and more attention to taking care of the environment, Swiss companies that make machinery for textile production have become leaders in adopting practices that are beneficial for the planet. They are not only concerned with making textiles but also with using new technology and following the principles of a circular economy. They are dedicated to conserving global resources and not only focusing on their products but also on improving their own way of working and shaping the future of the textile industry.

## Sustainable Production: Changing the Way Textiles Are Made

Swiss textile machinery manufacturers have made significant strides in redefining the landscape of textile production. Their innovative technologies address critical issues such as water conservation, reduction in chemical usage, minimizing raw material waste, and optimizing energy consumption. These advancements are driving a sustainable transformation in the industry:

- **Swinsol's CO<sub>2</sub>-Neutral Compact System:** Swinsol's mechanical compacting system for cotton spinners operates without electricity, ensuring a CO<sub>2</sub>-neutral production process.
- **Loepfe's Yarn Quality Optimization:** Loepfe's technologies strike a balance between yarn quality and productivity, significantly reducing waste of both yarn and energy.
- **Retech's Energy-Efficient Solutions:** Retech's state-of-the-art heating godets and energy-optimized motor technologies lead to remarkable energy savings of up to 35% in mills spinning man-made fibers.
- **Stäubli's Long-Life Machinery:** Stäubli's machinery is designed for extended production life, even in the

harshest conditions, fostering sustainable investment for their customers.

## Innovation in Adapting to the Circular Economy

The circular economy concept is central to sustainability, and Swiss textile machinery companies are wholeheartedly embracing it. They are not just manufacturers but enablers of closed-loop manufacturing processes that minimize waste and resource consumption:

- **Swinsol's Fiber Recycling:** Swinsol enables the spinning of 100% recycled fibers, eliminating the need for new virgin fibers.
- **Jakob Müller's Sustainable Weaving Technologies:** Jakob Müller provides technologies for narrow weaving that support the processing of sustainable yarns, promoting closed-loop product manufacturing.
- **Retech's Upgrades and Retrofits:** Retech offers solutions to upgrade or rebuild existing production lines, reducing the need for entirely new machinery.

## Internal Ecosystems: Setting a Good Example

Sustainability begins at home, and Swiss textile machinery manufacturers recognize this. They are actively managing their internal ecosystems in sustainable ways, setting a positive example for the industry:

- **Jakob Müller's Energy Efficiency:** By optimizing manufacturing space and reducing energy consumption for climate control, Jakob Müller demonstrates responsible resource management.
- **Stäubli's Photovoltaic Initiatives:** Stäubli has installed photovoltaic systems globally, generating local and sustainable electricity while lowering its carbon footprint.

# New textile mechanism can assist disabled person

■ Md. Emran

The textile and apparel industry has always been at the forefront of innovation, continuously pushing boundaries to create fabrics that serve both form and function. In recent years, groundbreaking technology has emerged, offering immense potential for improving the lives of disabled individuals. Fluidically programmed wearable haptic textiles, as detailed in the scientific article “Fluidically Programmed Wearable Haptic Textiles,” present a promising avenue for enhancing accessibility and independence for those with disabilities.

A wearable device made of fabric, created by engineers in Texas named Prof. Marcia O’Malley, Barclay Jumet, and Prof. Daniel Preston, could help simplify, improve, and compensate for limited vision and hearing abilities by using other senses. One of the main benefits of this fabric-based device is that it is not easily noticed. Unlike larger assistive devices like wheelchairs or exoskeletons, this technology can be discreetly added to a person’s regular clothing. This not only helps the user feel respected and confident but also allows for a more natural and seamless experience.

The textile-based mechanism is crafted from advanced materials that can be seamlessly integrated into clothing or worn as an accessory, such as a belt or vest. Comprised of a belt and textile sleeves, the wearables rely on fluidic signals like pressures and flow rates to control the delivery of complex haptic cues, including sensations like vibration, tapping, and squeezing. A small, lightweight carbon dioxide tank affixed to the belt feeds airtight circuits incorporated in the heat-sealable textiles, causing quarter-sized pouches – up to six on each sleeve – to inflate with varying force and frequency.

Achieving complex cues is a great addition to the wearable technology in the world right now. This innovative design actually indicates the shift towards a safer future for over 1 Billion people with loss of hearing and an additional 1 Billion people with loss of vision. People have been looking towards a better haptic and feedback embedded in the existing textile. Complex structure and sensing technology can easily improve hearing and sensing functions in the textile field.

## Understanding the technology

Fluidically programmed wearable haptic textiles represent a fusion of materials science, fluid mechanics,



Figure: Wearable haptic belt's informed touch can tell you where to go.

and human-computer interaction. These textiles are designed to provide tactile cues and haptic feedback to the wearer through the controlled inflation and deflation of embedded cells within the fabric. The technology’s core innovation lies in its ability to deliver programmable, directional, and time-variant cues directly through clothing.

By employing pressurized air instead of electronics, this innovative method offloads a significant amount of control and sensor technology within the textile sheet structure. This improves haptics and reliably provides directional feedback with only a small piece of clothing. By providing a third sense in addition to touch, this technology can be of considerable assistance to those who are impaired. Haptic feedback may improve the functionality of cochlear implants or facilitate patients’ ability to interpret lips.

## How It Helps Disabled Persons

- **Enhanced Navigation:** One of the most profound applications of this technology is in navigation assistance for visually impaired individuals. By embedding these haptic textiles into garments such as shirts or jackets, wearers can receive real-time directional cues. For example, a blind person can be guided safely through city streets or unfamiliar environments by feeling tactile cues on their skin, eliminating the need for traditional navigation aids.
- **Improved Mobility:** With fluidically programmed textiles, motorized wheelchair users can experience a new level of control. The textiles can provide feedback on obstacles or terrain changes, allowing users to adapt





Figure: Marcia O'Malley (from left), Barclay Jumet, and Daniel Preston developed a wearable textile device that can deliver complex haptic cues in real time to users on the go. Image credit: Brandon Martin/Rice University.

their movements intuitively.

- **Communication Aid:** This textile can be integrated into gloves or vests, enabling users to communicate through touch-based sign language or other tactile codes.
- **Assistance in Daily Tasks:** Everyday tasks like cooking, dressing, or handling objects can be made more accessible. It can provide sensory feedback, guiding users' hands and movements, making these activities more manageable and safe.

### Advancement in the entertainment industry, bringing 'haptic touch'

These innovative textiles can be implemented into more and more segments such as the entertainment industry like movies, games, augmented reality virtual reality, etc. by incorporating haptic touch. These senses are achievable by the rapid speed and fabrication process. Advanced replication and complex sensing enable rapid feedback to the sensing system having an ample amount of response.

3D gaming and augmented reality can have a serious impact through the addition of this sensory textile. The rapid response can enhance the stimulation of force and feedback of the actions in gaming and AR-related stuff. Another application example is restoring the sense of touch for an amputee by embedding sensors on a prosthesis to gather data that the wearables could relay as haptic feedback elsewhere on the body.

Because the fluidly programmed functionalities are well-suited for tasks that require the delivery of repeated sets of information, such as navigation, teleoperation, and notifications, They opted to implement our haptic textiles

into a wearable format for directing a user in navigation. With these systematic upgrades and reduced reliance on solenoid valves, our haptic textiles are capable of communicating to a user in real-world scenarios without being constrained to a benchtop setting.

The heat-sealable textiles are resilient to wear and tear, making the device suitable for intensive daily use. Instead of a smartwatch with simple vibrational cues, we can now envision a 'smart shirt' that gives the sensation of a stroking hand or a soft tap on the arm. In addition to serving as the basis for medically useful applications, haptic textiles could "enable a more immersive and seamlessly connected world.

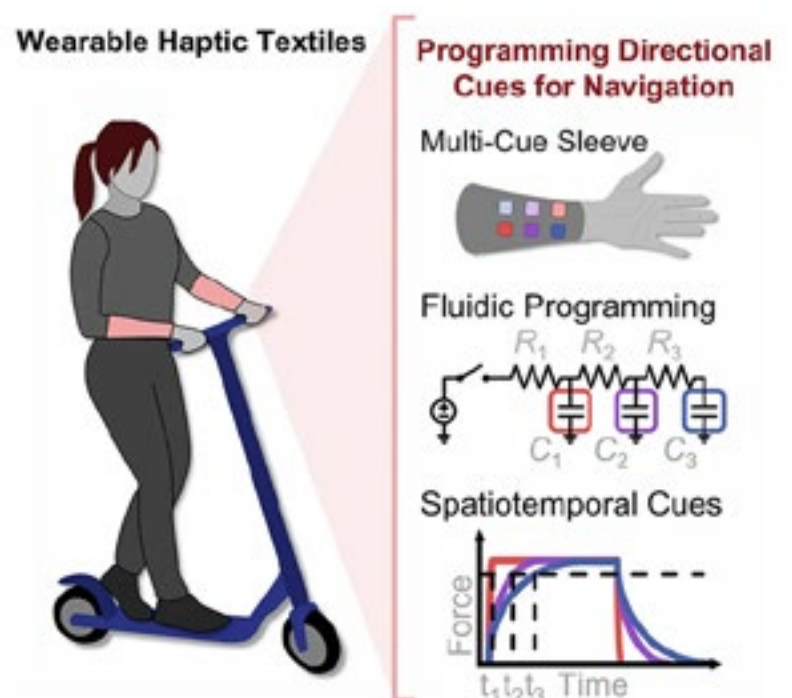


Figure: Embedded fluidic programming enables complex haptic cues from simplified inputs.

# Heberlein launches advanced DTY jets, promising profits and efficiency

■ Md. Hasan

Heberlein AG, a global leader in air interlacing and air texturing technology, has launched a groundbreaking range of Advanced Performance DTY interlacing jets. Designed to usher in a new era of efficiency and cost savings, the APe series offers a remarkable 15% reduction in compressed air consumption, while the APh series guarantees unparalleled knot stability. Heberlein's latest innovations are poised to revolutionize the textile industry, promising investors a profitable edge in an ever-evolving market.

## Navigating the Market

The textile industry experienced a significant cooling trend in 2022, as reported by the International Textile Manufacturers Federation (ITMF) through their International Textile Machinery Shipment Statistics (ITMSS). Globally, shipments of draw texturing spindles declined by 13%, with China accounting for a substantial 86% of the total. However, Heberlein's historical experience suggests that the DTY segment typically rebounds strongly after such slowdowns, such as those seen in 2007/2008 and 2020/2021.

## Savings Every Hour

Heberlein's newest offering, the APe series, has garnered attention for its potential to reduce compressed air consumption by 15% while maintaining the same knot count. Texturizers in Italy have calculated substantial cost savings, with one example citing a daily saving of USD 120 for a 288-position machine operating at 3 bars of working pressure. These calculations were based on local electricity costs, demonstrating savings of approximately \$5 per hour.

In China, where energy costs are comparatively lower, texturizers are expected to save around \$1 per hour, equating to a daily saving of \$24.3 for a machine equipped with APe series jets. However, it's worth noting that energy prices in China can vary significantly by location and are partly subsidized by the state.

## A Competitive Edge

Considering the context of a Chinese manufacturing plant where workers earn approximately \$800 per month in the Shanghai area, these savings are substantial. For a machine with 288 positions, adopting the new APe jets equates to saving about three-quarters of a worker's monthly salary.



Figure: SwissJet housing

## The Strategic Jets

Heberlein's strategy combines immediate cost savings with preparation for an industry upturn. The APe series jets offer superior performance across a range of multifilament yarns. They enable higher processing speeds, improved package build, and fewer filament and yarn breaks in downstream processes, which can significantly enhance operational efficiency.

## Pole Position for Success

As the textile industry hopes for a swift upswing, the APh interlacing jets position manufacturers for maximum production output. The APh series boasts unrivaled knot stability, ensuring exceptional performance without compromising yarn quality and process reliability. These jets excel in handling yarns in the 110 to 300 dtex range, making them ideal for processes involving elastane-blended yarns subjected to substantial forces.

## Easy Integration

For filament yarn producers looking to minimize power consumption and enhance knot stability, the new APe and APh series jets can be effortlessly installed into widely-used SlideJet FT15-2 and SwissJet housings, following a plug-and-play principle that requires minimal effort.

In a rapidly changing textile industry landscape, Heberlein's Advanced Performance DTY interlacing jets stand as a beacon of innovation and profitability, offering a path forward that combines savings and sustainability.