

Intelligent Precision Systems Shaping T&A Manufacturing Landscape



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Ripple effects of EU deforestation law delay on fashion industry

■ M A Mohiemen Tanim

The European Parliament's recent decision to delay the implementation of the EU Deforestation Regulation (EUDR) marks a critical juncture for Europe's textile and fashion industry. While aimed at combating deforestation globally, this delay introduces uncertainty into an industry increasingly dependent on sustainable supply chains and consumer trust.

EUDR at a Glance

The EUDR, adopted in 2022 as part of the European Green Deal, targets the environmental impact of global supply

chains. It mandates that EU importers of products like coffee, cocoa, leather, and rubber provide proof of deforestation-free supply chains or face penalties up to 4% of their turnover. Originally slated for full implementation by late 2024, the enforcement for large businesses is now pushed to late 2025, with small companies following in mid-2026.

The delay is significant as tropical forests—the lungs of our planet—lost 37,000 square kilometers in 2023 alone, an area almost the size of Switzerland. EU studies estimate this 12-month

delay could result in an additional 2,300 square kilometers of deforestation globally. Deforestation and the Textile Industry

The regulation directly impacts raw materials like:

Cotton: Often grown in deforestation-prone regions.

Leather: Sourced from cattle raised on cleared forest land, particularly in Brazil.

Rubber: A critical input for footwear, linked to tropical deforestation.

Viscose: Derived from wood pulp, requiring sustainable forest management.

These materials are integral to the €66 billion apparel export market, making compliance with the EUDR a crucial step toward sustainability.

Economic and Environmental Costs of Delay

Business Investments at Risk

Brands such as H&M, Zara, and luxury players like Gucci and Louis Vuitton have invested millions in sustainable sourcing strategies.

Trade Relationships and Supply Chain Adjustments

Supplier nations like Ghana and Ivory Coast, responsible for over 60% of the world’s cocoa, have developed

innovative systems to meet EUDR standards. For example:

Ivory Coast: Introduced electronic ID cards to trace cocoa from farms to export ports.

Ghana: Established an end-to-end traceability system and mapped its cocoa plantations.

Sustainability Goals Jeopardized

Tropical deforestation contributes up to 12% of global greenhouse gas emissions annually.

The fashion industry, responsible for 8-10% of global emissions, depends on strong regulation to mitigate its impact.

Consumer Sentiment and Brand Reputation

Europe’s consumers are increasingly eco-conscious, with studies indicating that 72% of consumers prioritize brands with strong sustainability commitments. Delays in regulation may harm consumer trust, putting brands at risk of losing market share to competitors perceived as environmentally responsible.

Challenges and Opportunities for the Fashion Industry

While the delay highlights unpreparedness in certain sectors, it offers an opportunity for brands to refine their strategies. Some actionable steps include:

 **Read Full Article:** <https://www.texspacetoday.com/ripple-deforestation...>

Paradise Textiles unveils first garment made with Kintra Fibers' bio-synthetic fiber

■ Rahbar Hossain



In an impressive leap toward sustainable apparel, Paradise Textiles, the material innovation center of Alpine Group, has announced the launch of the first garment made with Kintra Fibers' bio-synthetic fiber. This pioneering collaboration utilizes Kintra's breakthrough bio-based resin, offering a lower-carbon, renewable alternative to traditional fossil-fuel-derived synthetics.

Lewis Shuler, Head of Innovation at Paradise Textiles, shared the inspiration behind the project: "At Paradise Textiles, we're always looking for new fiber technologies that have a lower carbon footprint and are good substitutes for synthetics derived from fossil fuels." With Kintra's technology, the partnership aims to leverage bio-based materials to develop various fabrics suitable for various apparel applications.

The unique advantages of Kintra's bio-based fiber stand out in its impressive environmental impact reductions.

Kintra's resin can be produced on standard polyester manufacturing machinery, yet its production promises to cut emissions by 95%, water usage by 30%, and energy consumption by 20%. These advancements stem from the fiber's bio-based feedstock, lower processing temperatures, and efficient production techniques, which are expected to decrease further downstream emissions in processes like spinning, dyeing, and finishing. Paradise Textiles' fabric testing revealed the material's outstanding characteristics, showing that Kintra yarns match polyester's strength but with additional benefits: they are four times softer and twice as stretchy, creating a distinctive fabric profile.

Expressing optimism about the partnership, Kintra Fibers' CEO and co-founder, Billy McCall, said, "We are thrilled about the possibilities this collaboration holds as we proceed towards commercial-scale production, and Paradise Textiles' proficiency in creative fabric development has been crucial in realizing our vision." With this first garment launch, Paradise Textiles and Kintra Fibers set a new benchmark for sustainable textiles, offering a durable, high-performance option with a reduced environmental footprint.

Hong Kong's Esquel Group faces US import ban over alleged forced labor links

The U.S. government has banned Hong Kong-based Esquel Group, a major garment manufacturer and former supplier to global brands such as Nike and Tommy Hilfiger, from importing goods into the country due to alleged connections to forced labor in China's Xinjiang region. Effective November 1, the move comes under the Uyghur Forced Labor Prevention Act (UFLPA), which prohibits imports from companies with suspected ties to forced labor.

The U.S. Department of Homeland Security (DHS) added Esquel and its related entities to the UFLPA's "entity list." This designation blocks these companies' goods from entering the U.S., extending a previous ban on Esquel's Xinjiang-based subsidiary, Changji Esquel Textile, which had been barred from the U.S. market over similar allegations. Esquel has long maintained that it does not engage in forced labor and has sought to clear its name through legal channels. However, its initial bid to reverse the ban was unsuccessful, resulting in the expansion of restrictions to include the parent company.

Esquel Group has historically played a substantial role in the apparel industry, reportedly shipping over



Photo: Figure: City Of Hong Kong (AI Generated)

60% of its annual output of 110 million garment pieces to the U.S. market. The addition of the parent company to the entity list poses a severe challenge for the group as it works to rebuild business relationships disrupted by its subsidiary's earlier blacklisting.

Homeland Security Undersecretary Robert Silvers, who chairs the forced labor enforcement task force, reaffirmed the administration's commitment to eliminating forced labor from U.S. supply chains. The UFLPA, enacted in 2022, primarily targets imports linked to Xinjiang, home to the Uyghur and other minority groups. While the U.S. asserts that these groups are subject to forced labor, China denies the claims, viewing U.S. actions as interference in its domestic affairs.

The UFLPA's entity list, which now includes Esquel Group, helps U.S. businesses vet supply chains, giving them more transparency and ensuring compliance with U.S. labor standards.



Bio-derived LYCRA® EcoMade fiber makes global debut at kingpins amsterdam

The LYCRA Company, a leader in sustainable fiber technology, unveiled its bio-derived LYCRA® EcoMade fiber at Kingpins Amsterdam, held on October 23-24, 2024. This innovative fiber, which consists of 70% renewable content certified under the USDA Bio-Preferred Program, will officially launch in the first half of 2025.

The bio-derived LYCRA® EcoMade fiber promises the same performance as traditional LYCRA® fibers, allowing manufacturers to produce garments without needing to alter existing fabric processes or patterns. Nicolas Banyols, the chief commercial officer of The LYCRA Company, emphasized that brands can now utilize renewable resources without compromising on quality. "There's no need to sacrifice

performance for renewable content with bio-derived LYCRA® EcoMade fiber," he stated, highlighting the fiber's potential to significantly reduce environmental impacts.

In addition to the new fiber, The LYCRA Company showcased its LYCRA FitSense® denim technology, which addresses common fit challenges in denim wear. This technology discreetly enhances the fit in areas like the waist, thighs, and rear, ensuring that jeans maintain their authentic look and feel while providing tailored comfort.

The debut of bio-derived LYCRA® EcoMade fiber represents a significant step towards more sustainable practices in the apparel industry, aligning with growing consumer demand for eco-friendly products.

Faircraft raises \$15.8mn to scale sustainable lab-grown leather



Faircraft, a Paris-based pioneer in lab-grown leather, has raised \$15.8 million to revolutionize the leather goods industry with sustainable innovations. Backed by notable global investors such as Kindred Ventures, Cap Horn, and Entrepreneur First, this funding will bolster Faircraft's team expansion, accelerate operations, and meet increasing market demand for eco-friendly materials.

Faircraft's lab-grown leather is crafted using cutting-edge tissue engineering techniques. By replicating the structure of traditional leather with animal skin cells in a lab, the process significantly reduces environmental impact—90% fewer CO2 emissions, 95% less waste, and 80% less water usage. The material maintains the authenticity of genuine leather while offering sustainable options to luxury brands.

Co-founder and CEO Haïkel Balti emphasizes their product's ethical and innovative nature, stating, "Lab-grown

leather represents a major evolution that goes beyond the fashion industry. It enables the creation of unique pieces with minimal environmental impact, honoring ethical considerations."

Faircraft collaborates with master tanners to perfect the craftsmanship of its leather, blending innovation with the French heritage of premium materials. With its proprietary, patented manufacturing process, the company aims to achieve price parity with traditional leather while scaling its operations.

As the luxury market increasingly embraces sustainable materials, Faircraft positions itself at the forefront, partnering with major brands to harmonize tradition and innovation. Founded in 2021 by materials science expert Haïkel Balti and cellular biology specialist César Valencia Gallardo, the company boasts a diverse team of experts dedicated to shaping the future of sustainable luxury.

Integrity Council approves three REDD+ methodologies for high-integrity carbon credits

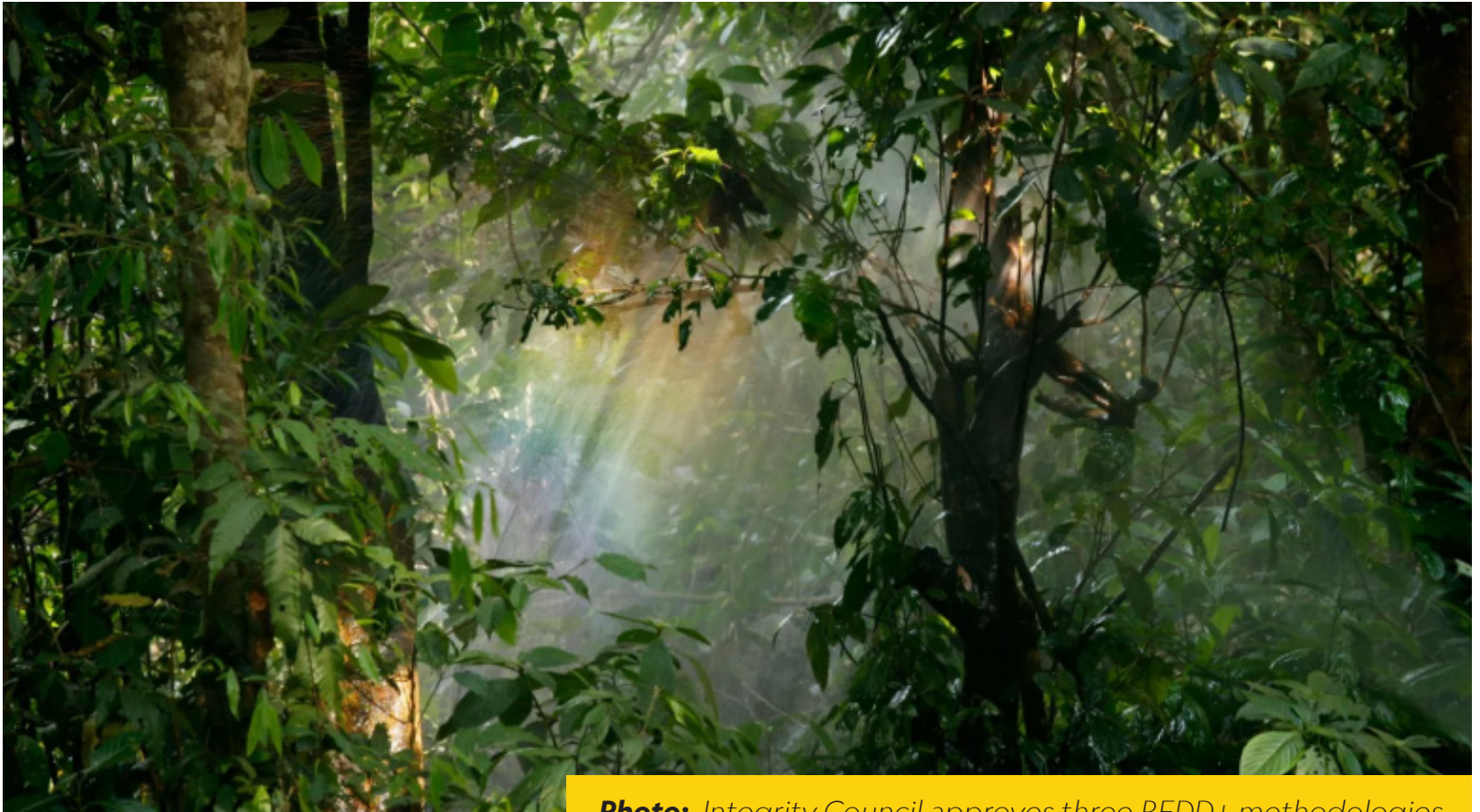


Photo: Integrity Council approves three REDD+ methodologies

The Integrity Council for the Voluntary Carbon Market (ICVCM) has announced the approval of three methodologies aimed at generating high-integrity carbon credits for reducing emissions from deforestation and forest degradation. These methodologies are crucial for achieving global climate goals and ensuring forest protection in developing countries. The approved methodologies are:

The REDD+ Environmental Excellence Standard (ART-TREES) v2.0

VCS (Voluntary Carbon Standard)
VM0048: Reducing Emissions from Deforestation and Forest Degradation

VCS Jurisdictional and Nested REDD+

(JNR) Framework v4.1

This decision is a significant milestone in the voluntary carbon market, as it paves the way for the issuance of carbon credits that meet the Integrity Council's Core Carbon Principles (CCPs), ensuring the highest levels of environmental integrity. These credits, once issued, will carry the CCP label starting in early 2025, offering a clear indication of their quality and reliability for investors and stakeholders.

Currently, no credits have been issued under these approved methodologies, but there is a substantial volume in the pipeline. Under the ART-TREES methodology, nine jurisdictions are

poised to issue up to 123 million credits. Similarly, 21 projects under the VM0048 methodology have the potential to issue around 300 million credits during their first crediting period. Additionally, five projects under the Verra JNR Framework are in development, further expanding the potential for high-quality carbon credits. These new methodologies represent a major shift from older REDD+ methodologies, particularly through changes that reduce the risk of over-crediting. For instance, the VM0048 methodology now establishes baselines based on jurisdictional deforestation data and an assessment of deforestation risk, rather than allowing project developers to set their own baselines based on self-selected reference areas. This adjustment ensures that credits are issued in a more transparent and scientifically rigorous manner.

The ART-TREES and VCS-JNR methodologies also operate at a much larger, jurisdictional scale. This means that national or state-level programs will protect vast areas of forests from deforestation through comprehensive policy and regulatory frameworks. These jurisdictional approaches are expected to play a central role in national forestry policies and the fulfillment of countries' Nationally Determined Contributions (NDCs) under the Paris Agreement.

The Integrity Council's CEO, Amy Merrill, emphasized the importance of these decisions, noting that the approved

methodologies reflect a robust approach to ensuring additionality, permanence, and strong social safeguards. "There is no chance of meeting our climate and biodiversity goals without increased finance for nature, Indigenous Peoples, and local communities," Merrill said, highlighting the need for rigorous assessment to attract investment into nature-based solutions.

Gabriel Labbate, co-chair of the Integrity Council's Expert Panel, echoed this sentiment, noting that the methodologies represent a significant improvement in the integrity of REDD+ projects. "These methodologies have rigorous approaches in place to ensure additionality, permanence, robust quantification, and social safeguards," he stated.

The approval of these methodologies marks the beginning of a new chapter for REDD+ carbon credits in the voluntary carbon market. With their rigorous standards and large-scale impact, they are expected to attract significant investments aimed at curbing deforestation, mitigating climate change, and protecting biodiversity.

As the voluntary carbon market continues to evolve, the Integrity Council's decisions pave the way for more transparent, effective, and high-integrity carbon offset projects, supporting global efforts to mitigate climate change and ensure a sustainable future for both people and the planet.

Cascale & Open Supply Hub collaborates to advance supply chain sustainability



Photo: Integrity Council approves three REDD+ methodologies

Cascale (formerly the Sustainable Apparel Coalition) and Open Supply Hub (OS Hub) have announced a strategic partnership aimed at driving greater sustainability and transparency across global supply chains. Cascale, a nonprofit committed to promoting ethical business practices in the consumer goods sector, will collaborate with OS Hub, a supply chain mapping platform, to provide open, accessible data that enables informed decision-making.

The partnership merges Cascale's Higg Index tools with OS Hub's expansive database of over 500,000 production sites, creating a powerful resource for brands, manufacturers, and retailers. This integration aims to promote

responsible sourcing and industry accountability, addressing increasing demands for transparency and sustainability.

Cascale CEO Colin Brown expressed enthusiasm for the collaboration, emphasizing the need for actionable tools and collaboration to achieve meaningful advancements. "This partnership is a significant step toward creating a more ethical and accountable supply chain," he stated.

OS Hub CEO Natalie Grillion highlighted the importance of standardized, interoperable data. "By aligning our resources, we can empower businesses to go beyond compliance and make impactful, sustainable choices," she said.

China's fashion event highlights 'Green Fashion for the New Future'

The China Garment Zero-Carbon Fashion Release 2024, themed "Green Fashion for the New Future," showcased the latest strides in sustainable and low-carbon fashion. Lenzing Group & China Garment Association (CGA) jointly hosted the event spotlighted the industry's shift towards climate-conscious production and eco-friendly design, underscoring sustainability as essential for the future of fashion.

Prominent Chinese designers Liu Yong and Chen Yu contributed original designs tailored to the event's sustainability focus, while popular menswear brand JACK & JONES held a notable catwalk



show featuring garments crafted from TENCEL™ fibers, a material known for its low environmental impact. This special collection aimed to raise awareness of climate action and responsible fashion, aligning with the event's message on reducing the industry's carbon footprint.



EDANA's sustainability forum 2024 highlights pathways for a greener nonwovens industry



Photo: Integrity Council approves three REDD+ methodologies

EDANA, the European Disposables and Nonwovens Association, hosted its 2024 Sustainability Forum, themed “Building a Sustainable Future Together,” at Brussels’ KBR Royal Library. The forum gathered industry leaders, policymakers, and sustainability experts to address critical issues like climate change, waste reduction, and circular economy practices within the nonwovens sector.

Keynote speakers Ana Rovzar, Founder of Polygon AR, and sustainability expert Mike Barry emphasized the necessity for corporate responsibility in the face of climate challenges. Rovzar highlighted the swift global shift to renewable energy, while Barry underscored the need for companies to align their strategies with bold sustainability goals to meet consumer expectations for

transparency and responsibility.

Sessions led by EDANA’s Marta Roche Díez and Briec Lits explored the effects of EU policies, such as the EU Green Deal, on the industry. They stressed the importance of balancing sustainability with competitiveness, positioning the nonwovens sector as a key player in the EU’s regulatory landscape.

A focal point of the event was the transition to a circular economy. Presentations from Albert Hammerschmied of Freudenberg and Alexandre Butté of ANDRITZ Laroche explored sustainable practices in automotive materials and building insulation, showcasing the diverse applications of nonwovens in achieving circularity.

LWG, Leather Naturally & SPIN360 set new standard for bovine leather in Higg MSI

The Leather Working Group (LWG), Leather Naturally, and SPIN360 have launched a pioneering dataset in the Higg Materials Sustainability Index (MSI) that dramatically reduces the calculated environmental impacts of bovine leather. This breakthrough, based on extensive Life Cycle Assessment (LCA) data, decreases the ecological footprint of bovine leather by up to 67% compared to previous estimates.

The October 2024 Higg MSI update incorporating SPIN360's findings indicates a significant 60% reduction in Global Warming Potential (GWP) for bovine leather. The GWP impact score dropped from 36.8 to 14.6 points on the Higg MSI scale, underscoring a monumental step forward for leather as a sustainable material choice.

SPIN360 analyzed data from 45 manufacturing facilities in 18 countries to establish this dataset, examining 92 leather products across major sectors, including footwear, automotive, leather goods, and upholstery. This global dataset was specifically designed to represent real-world leather production and offer accurate, comprehensive impact figures that reflect current



industry practices.

The reduction in environmental impact underscores the leather industry's commitment to transparency and environmental stewardship. "At Leather Working Group, we regard transparency as fundamental to fostering meaningful progress in the leather industry. Our collaboration with Leather Naturally reflects this commitment, and we are proud to see our combined Life Cycle Assessment data integrated into the Higg MSI update," an LWG spokesperson said.

As sustainability becomes central to material sourcing, this updated dataset in the Higg MSI provides a critical, verified resource for brands and manufacturers, enabling them to make better-informed, environmentally-conscious decisions about leather usage.

Teijin Frontier launches biodegradable BIOFRONT® PLA resin worldwide



Photo: BIOFRONT® resin pellets

Teijin Frontier Co., Ltd., a key player in sustainable materials innovation, has announced the global availability of its advanced biodegradable resin, BIOFRONT®, made from polylactic acid (PLA). Unlike conventional PLA products, BIOFRONT® resin decomposes faster in natural environments like oceans, rivers, and soil. The resin incorporates a pioneering biodegradation accelerator that enhances the breakdown process without compromising its mechanical strength, crystallinity, or moldability.

The introduction of BIOFRONT® resin marks a significant stride in Teijin Frontier's THINK ECO® initiative, an environmental strategy dedicated to developing sustainable materials. BIOFRONT® joins Teijin's extensive lineup of eco-friendly products aimed at reducing plastic-related environmental impacts.

The biodegradation accelerator in

BIOFRONT® resin promotes hydrolysis, speeding up microbial consumption and decomposition compared to standard PLA. Remarkably, the resin performs effectively in marine and riverine environments, where bacterial presence is typically lower than in composting systems. Teijin Frontier has fine-tuned the resin's composition to allow control over its decomposition rate, making it adaptable to diverse applications and desired product lifespans.

BIOFRONT® resin can be processed like traditional PLA, making it compatible with a wide range of applications, from films to fibers used in textiles and non-woven fabrics. Given its rapid biodegradation rate, BIOFRONT® is expected to mitigate microplastic pollution significantly while also cutting CO2 emissions, thanks to its plant-based composition.

Temu under EU investigation over illegal goods & compliance

Chinese e-commerce giant Temu is under investigation by the European Union for allegedly failing to prevent the sale of illegal products on its platform. The European Commission announced the probe five months after designating Temu as a “very large online platform” under the Digital Services Act (DSA), which imposes strict obligations on tech platforms to ensure user safety and transparency.

Temu, owned by China’s Pinduoduo Inc., has rapidly gained traction in Western markets by offering low-cost goods directly shipped from Chinese sellers. It boasts 92 million EU users but now faces scrutiny for allegedly allowing “rogue traders” to sell non-compliant goods that could reappear after suspension.

Margrethe Vestager, the European Commission’s Executive Vice-President, emphasized the need for Temu to uphold EU safety standards and ensure fair competition. “EU enforcement guarantees a level playing field and safeguards

The investigation will also examine Temu’s compliance with the DSA’s transparency requirements, including whether its recommender systems



provide non-personalized options for users. Regulators are probing the platform’s “game-like” reward programs for potentially promoting addictive behavior.

Temu pledged cooperation, stating, “We take our obligations under the DSA seriously and continue to invest in compliance to protect consumers.”

The investigation could lead to significant fines if Temu fails to address the concerns or meet EU standards. The company is also under scrutiny in the U.S. for allegedly allowing goods produced with forced labor to be sold on its platform.

This move reflects the EU’s broader crackdown on major tech platforms, including AliExpress and social media giants like TikTok and X, as part of its mission to ensure safer and more transparent digital marketplaces.

4M scales up plasma oxidation for carbon fibre production

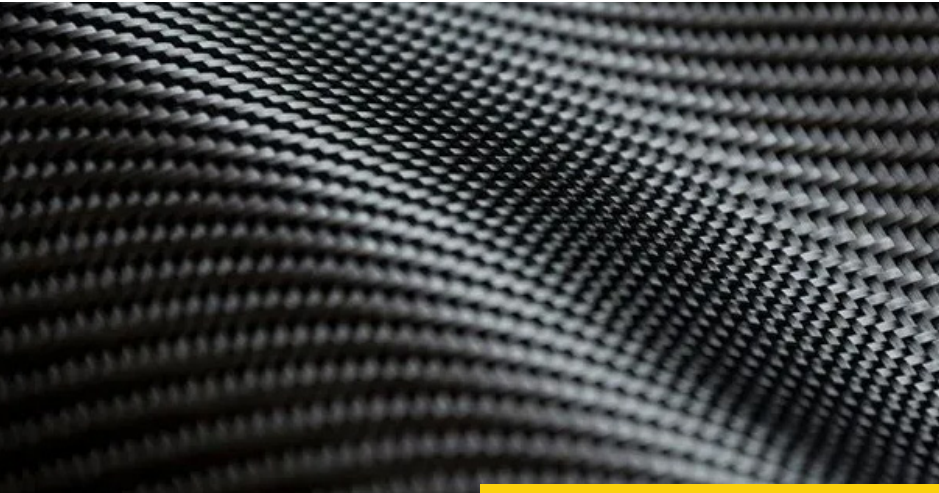


Photo: © 4M Carbon Fibre

4M Carbon Fibre, headquartered in Knoxville, Tennessee, has unveiled a groundbreaking plasma oxidation line with an annual capacity of 50 tons, marking a significant step forward in carbon fibre manufacturing. This \$4.5 million initiative promises to triple throughput and dramatically reduce costs, setting new benchmarks in the industry.

The innovative plasma oxidation process slashes energy consumption by 75%, cuts capital costs by 50%, and lowers operating expenses by 30% compared to conventional carbon fibre production methods. These advancements position 4M as a disruptor in the sector, offering an efficient and cost-effective solution for carbon fibre manufacturing.

“This project is a critical milestone in scaling our technology for commercial

applications,” stated Dr. Truman Bonds, Chief Technology Officer of 4M Carbon Fibre. “Our plasma oxidation process not only significantly reduces costs but also delivers superior carbon fibre properties. This new line allows us to showcase its full potential to partners and customers across various industries.”

The company’s next step is large-scale qualification projects, a prerequisite for securing licensing agreements and equipment sales. Several major carbon fibre manufacturers and new entrants have already expressed interest in adopting the technology once validated.

Beyond traditional markets, 4M’s plasma oxidation line will support collaborative development with domestic oil companies and other industrial players aiming to establish in-house carbon fibre production using 4M’s patented process.

This breakthrough technology underscores 4M’s commitment to making carbon fibre production more accessible and affordable, potentially transforming industries such as transportation, aerospace, and energy.

Advance Denim launches LoopTy Collection with Roica V550 stretch fibre

Advance Denim has unveiled its latest LoopTy Collection, combining Asahi Kasei's Roica V550 degradable stretch fibre with Lenzing's Tencel lyocell to deliver sustainable innovation in denim. This cutting-edge collection debuted at Kingpins Hong Kong (November 21-22) and is set to become commercially available in 2025.

The Roica V550 stretch fibre is a game-changing innovation, offering partial degradability under ISO14855-1 conditions while holding the distinction of being the world's first Cradle to Cradle-Certified stretch yarn with Material Health Gold Level certification. By seamlessly incorporating this fibre into denim manufacturing without requiring changes to existing production methods, Advance Denim has introduced a new level of sustainability in stretch denim.

Tencel lyocell fibres further enhance the collection with their soft, breathable texture and environmentally responsible origins. Made from sustainably sourced wood pulp through a closed-loop process, these fibres are certified biodegradable in both water and soil and carry the EU Ecolabel certification.

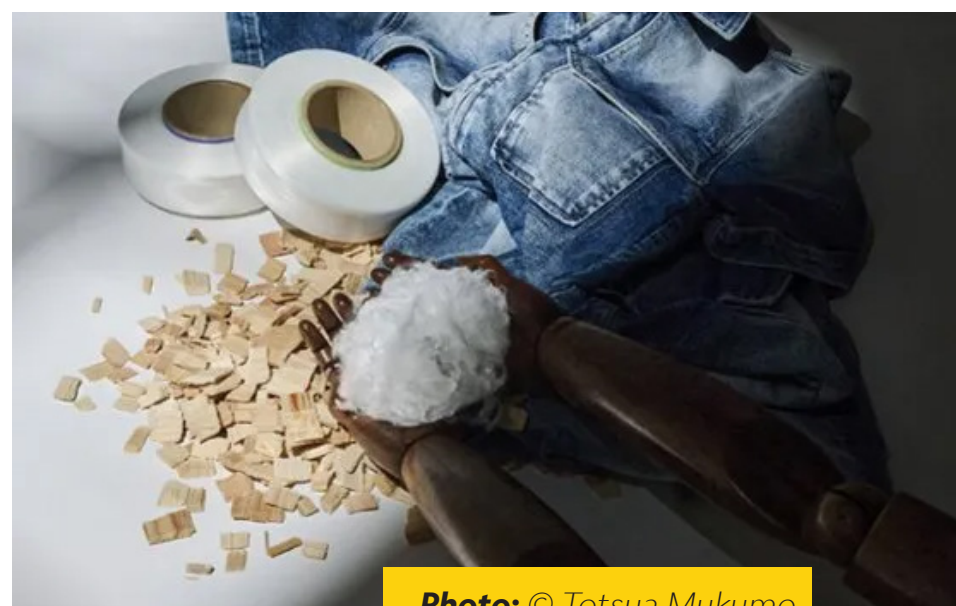


Photo: © Tetsua Mukume

"Sustainability and performance have always been guiding principles for Advance Denim since our inception in 1987," said Amy Wang, General Manager of Advance Denim. "Past collaborations with Tencel yielded groundbreaking collections like Zero Cotton and Zero Virgin Cotton, which featured vintage denim styles made entirely from recycled or no cotton. The missing piece was sustainable stretch, now solved with Roica V550."

The LoopTy Collection is a milestone in combining sustainability with high performance, reflecting the evolving demands of environmentally conscious consumers. This development reinforces Advance Denim's reputation as a leader in sustainable innovation within the denim industry.

University of Copenhagen develops innovative nanofibre treatment for psoriasis

■ M A Mohiemen Tanim



Photo: © William Brøns Petersen

Researchers at the University of Copenhagen have developed a groundbreaking nanofibre patch that promises a more effective and convenient treatment for psoriasis, one of the most common inflammatory skin conditions globally. Affecting 4-5% of Denmark's population, psoriasis manifests as red, scaly rashes of varying severity and currently requires treatments such as creams, ointments, radiation, or medication.

The innovative patch, created using electrospinning technology, simplifies the treatment process by reducing the frequency of application to once a day. *"We've developed a dry patch containing active ingredients for psoriasis treatment, making it more comfortable for plaque psoriasis patients,"* explained Andrea Heinz, associate professor at the university's Department of Pharmacy.

The patch is designed to deliver two active ingredients in a controlled manner:

Salicylic acid, released immediately, removes accumulated dead skin cells.

Hydrocortisone, released gradually, reduces inflammation over time.

This dual-action delivery system not only matches the efficacy of conventional creams and ointments but also offers the potential for better user compliance due to its simplicity.

“We tested the prototype on pig skin and human skin cells and found it just as effective as standard treatments,” said PhD student Anna-Lena Gürtler.

While the prototype has shown

promising results, further research, development, and clinical trials are required before the patch becomes commercially available. Beyond psoriasis, the nanofibre patch could revolutionize treatment for other inflammatory skin conditions, such as atopic eczema, or even aid in wound healing.

“This approach offers an alternative to traditional creams and ointments, opening up possibilities for treating a range of skin conditions with greater precision and convenience,” Heinz added.

This innovation highlights the potential of nanotechnology in advancing dermatological treatments, bringing hope to millions affected by chronic skin

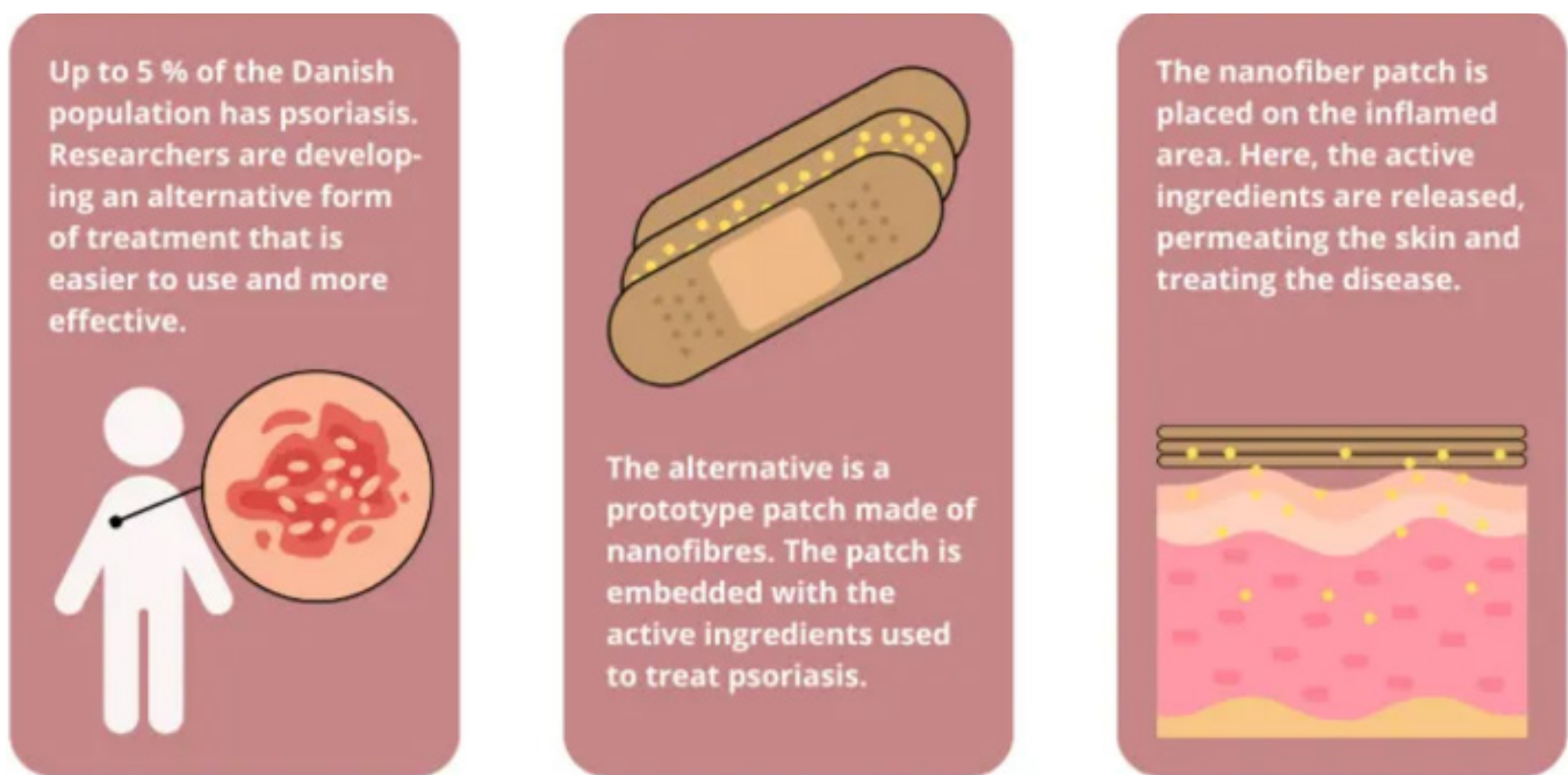


Photo: © University of Copenhagen

Avery Dennison launches Optica to drive traceability in apparel supply chains

Avery Dennison (NYSE), renowned for its advancements in materials science and digital identification solutions, has launched Optica, a comprehensive portfolio designed to tackle traceability challenges in the apparel industry. This latest offering combines cutting-edge RFID technology, atma.io connected product cloud, and advanced software to deliver real-time insights across the supply chain, helping brands and manufacturers boost resilience, transparency, and sustainability.

Optica's suite of tools is structured to enhance operational control and data transparency from sourcing to retail. By leveraging RFID-enabled smart labels, powerful software, and in-field hardware, Optica empowers brands to proactively manage inventory, minimize waste, and streamline compliance. These tools are also aligned with Digital Product Passport (DPP) initiatives, providing an added layer of regulatory compliance.

The solutions offered within Optica address key areas of supply chain efficiency. "Materials Traceability" enables brands to verify and track the origin and composition of materials at the item level, making it easier to link transactional documents and compliance certificates along the product's journey. "On-Demand Labeling" is designed for last-minute



labeling needs, enabling centralized label orders with the flexibility to print on-site when necessary.

In addition, the "Packing Verification" tool reduces inventory discrepancies by validating shipments against packing plans. The "Inbound and Outbound Verification" system is an automated tool that enhances order accuracy, reducing the risks of inventory loss in high-volume warehouse environments.

"Lack of visibility costs the industry billions each year, and erodes trust between partners and consumers," said Sergio Shmilovitch, VP strategy, M&A, and solutions at Avery Dennison. "By connecting the physical to the digital, Optica makes on-demand visibility and real-time data possible, helping brands optimize their operations, reduce their risks, and improve their sustainability performance."

With Optica, Avery Dennison aims to transform the apparel supply chain, driving operational efficiency, reducing environmental impact, and fostering trust across global markets.



Read more: <https://www.texspacetoday.com/crocs-elevates-sustainability...>

ZDHC publishes new dissolved pulp guidelines for sustainable manufacturing

The Zero Discharge of Hazardous Chemicals (ZDHC) Foundation has announced the release of its ZDHC Dissolved Pulp Guidelines V1.0 and ZDHC Standard Industry Approach Implementation Guide V1.0. These guidelines are a significant step towards reducing environmental impact in wood-based dissolved pulp manufacturing, a key process in producing man-made cellulosic fibers (MMCF).

Dissolved pulp serves as the essential raw material for MMCF, commonly used in textiles and other industries. The newly published guidelines target the responsible use and discharge of chemicals within the dissolved pulp supply chain, to enhance transparency and encourage environmentally conscious practices. Covering the entire supply chain, from wood sourcing to production, the guidelines establish stringent requirements for chemical recovery processes, wastewater management, and air emissions in wood-based dissolved pulp facilities. The guidelines outline key expectations for chemical recovery, which minimizes hazardous discharge by recycling and



reusing chemicals within production cycles. Additionally, detailed requirements for wastewater quality address pollutants, ensuring that facilities comply with strict discharge limits to protect surrounding ecosystems. In doing so, the guidelines aim to set a new industry standard for sustainable dissolved pulp production. ZDHC encourages brands, suppliers, and dissolved pulp manufacturers to implement the guidelines and share them across their networks. By following these recommendations, stakeholders can work together to foster sustainable practices and support a shift toward greener production processes. Brands and suppliers are expected to promote the guidelines within their supply chains, while dissolved pulp manufacturers are urged to adopt the outlined best practices and meet the established requirements.



Read more: <https://downloads.roadmaptozero.com/output/ZDHC...>

Intelligent precision systems shaping T&A manufacturing landscape

■ M A Mohiemen Tanim



Photo: Lectra Vector Automotive—our Industry 4.0-ready & eco-friendly fabric cutting solution, image courtesy : Lectra

Smart manufacturing technologies are transforming the textile and apparel industries by improving product precision, operational efficiency, and sustainability. Manufacturers are increasingly adopting cutting-edge solutions like artificial intelligence (AI), robotics, Internet of Things (IoT), and advanced data analytics. These technologies enhance product quality, reduce waste, and enable customized production, aligning with consumer demands for fast fashion and sustainable practices. Below is an overview of actual technologies deployed by manufacturers that exemplify these advancements.

1. Automated Sewing Systems

Technology Providers: Juki Corporation, Brother Industries, and Dürkopp Adler.

Automated sewing systems incorporate robotics and computer vision to execute complex sewing patterns with minimal human intervention. These systems enhance precision in garment construction by ensuring consistent stitch quality, reducing errors caused by manual handling.

Example:

Juki's Intelligent Sewing System uses AI to adjust thread tension and needle positioning dynamically, producing flawless seams in high-volume production environments.

Dürkopp Adler's M-TYPE Delta features a fully automated workflow, reducing sewing defects and labor costs by up to 30%.

2. Digital Printing Technology

Technology Providers: Kornit Digital,

Epson, and Mimaki.

Digital textile printing has revolutionized precision in fabric design and production. It enables high-resolution prints with intricate details, offering customization capabilities for niche markets and large-scale production alike.

Example:

Kornit's Presto Max integrates IoT sensors to monitor ink application, ensuring precise color reproduction and fabric compatibility. Epson's SureColor F-Series uses piezoelectric printheads for accurate, high-speed fabric printing, reducing material waste by up to 50%.

3. IoT-Enabled Smart Factories

Technology Providers: Siemens, Schneider Electric, and Bosch Rexroth.

IoT-driven solutions connect machines, systems, and workers to create smart factories, where real-time monitoring ensures consistent product quality. IoT sensors and edge computing track parameters such as temperature, humidity, and machine vibrations, directly affecting fabric properties like elasticity and dye uptake.

Example:

Siemens' MindSphere platform collects and analyzes data across production units, enabling predictive maintenance to minimize machine downtime. Bosch Rexroth's IoT solutions optimize energy use in dyeing and finishing processes, improving fabric consistency.

4. AI-Powered Quality Control

Technology Providers: Uster Technologies, Inspectron, and SoftWear Automation.

AI-driven quality control systems use machine learning algorithms to detect flaws in fabrics and garments, ensuring adherence to stringent quality standards.

Example:

Uster's EVS Fabriq Vision identifies weaving and knitting defects at a rate of 200 meters per minute, reducing inspection time by 90%. SoftWear Automation's Sewbots identify seam imperfections in real time, allowing instant corrections.

5. Advanced Cutting and Laser Technologies

Technology Providers: Lectra, Gerber Technology (now part of Lectra), and Coherent.

Precision cutting technologies use automated cutting tables and laser systems to ensure exact pattern replication. These technologies optimize fabric utilization, reduce material waste, and allow intricate designs.

Example:

Lectra's Cutting Room 4.0 combines AI and IoT for synchronized cutting operations, achieving a material savings of up to 20%. Coherent's ExactCut Series employs lasers to cut synthetic fabrics with unparalleled accuracy, ensuring

clean edges and reducing post-processing.

6. Digital Twin Technology

Technology Providers: Siemens and PTC.

Digital twin technology creates virtual replicas of production systems to simulate and optimize manufacturing processes before actual implementation. This minimizes errors and ensures precision.

Example:

PTC’s ThingWorx Platform allows apparel manufacturers to simulate fabric drape and tensile strength during prototyping, reducing time-to-market by 25%. Siemens’ Tecnomatix integrates 3D modeling to identify bottlenecks in textile production lines.

7. RFID and Blockchain for Supply Chain Precision

Technology Providers: Avery Dennison, IBM, and Zebra Technologies.

RFID and blockchain technologies ensure traceability and precision across the supply chain. RFID tags embedded in garments provide data on production history, inventory levels, and logistics, enhancing transparency.

Example:

IBM’s Blockchain Transparent Supply tracks cotton’s journey from farm to finished product, ensuring quality compliance. Avery Dennison’s RFID-enabled solutions optimize warehouse

operations, reducing stock discrepancies by 80%.

8. Energy-Efficient Dyeing and Finishing Systems

Technology Providers: Thies, FONG’s Group, and Monforts.

Precision in dyeing and finishing processes directly impacts fabric quality and sustainability. Energy-efficient machinery reduces water and chemical usage while ensuring uniform dye application.

Example:

Thies’ iMaster H₂O employs IoT to regulate dye bath parameters, achieving up to 30% savings in water consumption. Monforts’ Eco Applicator ensures precise chemical coating, enhancing fabric performance while reducing environmental impact.

9. Wearable Technology for Workforce Efficiency

Technology Providers: ProGlove and Garmin.

Wearable devices enhance precision by aiding workers in maintaining optimal performance levels and tracking productivity metrics.

Example:

ProGlove’s smart gloves integrate scanners and sensors to guide workers in garment assembly processes, reducing errors by 15%. Garmin’s wearables monitor ergonomic stress, ensuring

precision by reducing fatigue-related mistakes.

10. Machine Learning in Trend Forecasting

Technology Providers: Stitch Fix, Thread, and StyleSage.

AI and machine learning tools analyze consumer preferences to forecast trends and customize production, ensuring precise alignment with market demands.

Example:

StyleSage leverages big data to predict seasonal trends, enabling manufacturers to reduce overproduction by 40%.

Stitch Fix uses algorithms to tailor fabric

choices for individual consumers.

Conclusion

Smart manufacturing technologies are reshaping the textile and apparel industries, enhancing precision in every aspect of production. By integrating robotics, IoT, AI, and advanced analytics, manufacturers can achieve unparalleled efficiency, superior product quality, and sustainable practices. These advancements position the industry to meet growing consumer demands while addressing challenges like waste reduction and cost management. Investing in these technologies ensures a competitive edge in an increasingly dynamic market.



Photo: Thies' iMaster H₂O

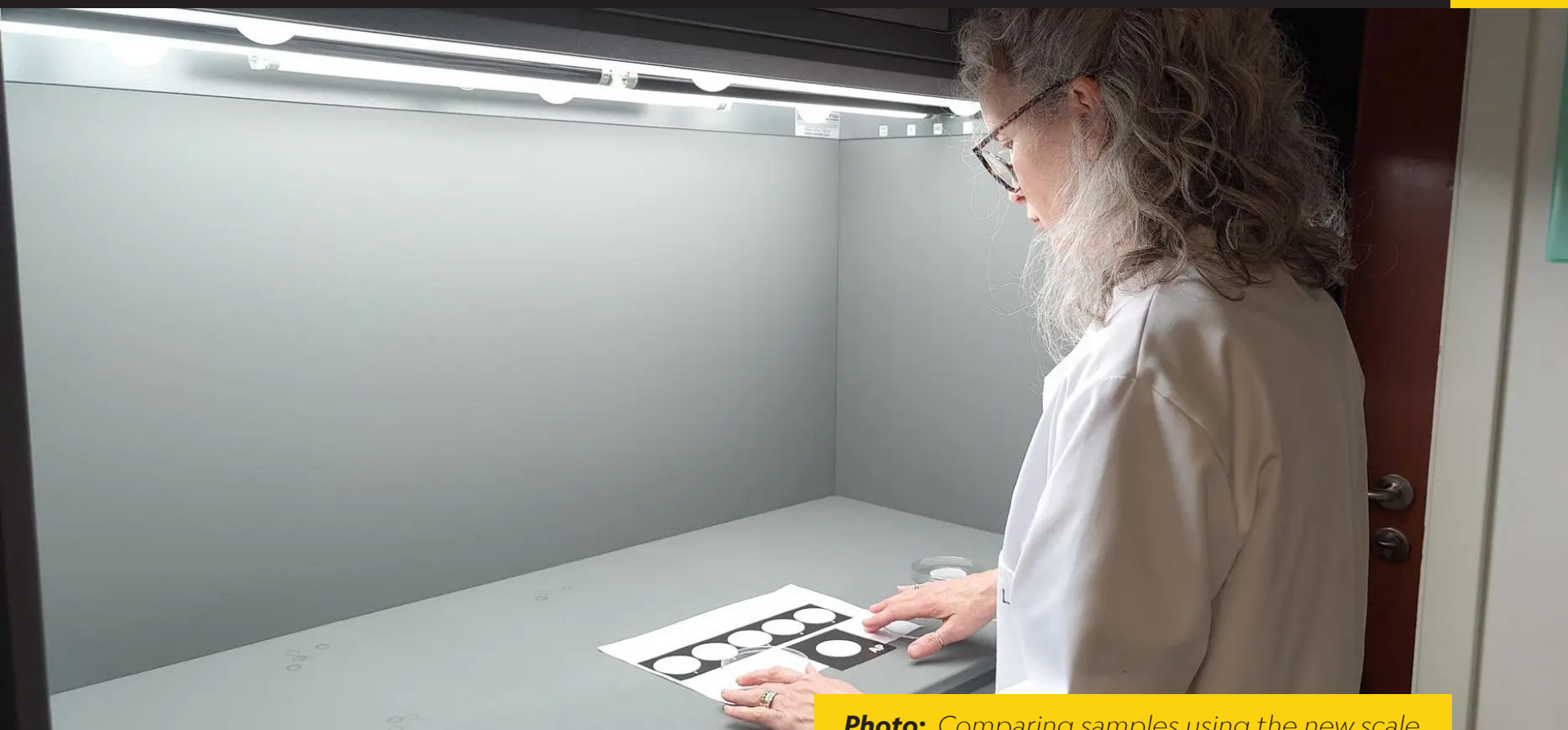


Photo: Comparing samples using the new scale.

HWU develops world's first microplastic grading system for fashion

■ Amzad Hossain Monir

Microplastic pollution is one of our most pressing environmental challenges, with the textile industry as a significant contributor. Every wash cycle of synthetic garments releases millions of microplastic fibers into waterways, eventually reaching the oceans and harming marine life. In a breakthrough that could reshape textile manufacturing, researchers at Heriot-Watt University have developed the world's first visual grading system to identify and reduce microplastic shedding from textiles, promising a greener future for fashion.

Microplastics and Their Growing Environmental Impact

Microplastics—particles less than 5mm in size—severely threaten ecosystems and human health. Textiles, especially synthetic fabrics like polyester, nylon, and acrylic, are among the largest sources of microplastic pollution.

According to the International Union for Conservation of Nature (IUCN), the fashion industry is responsible for 35% of ocean microplastic pollution, amounting to approximately 500,000 tons of synthetic fibers annually. These particles

can take hundreds of years to degrade, leaching harmful chemicals into the environment and entering the food chain through marine organisms. Recent studies also highlight that humans consume up to 50,000 microplastic particles annually, with textiles accounting for a significant share. The urgency for solutions to tackle microplastic shedding has never been greater, and Heriot-Watt’s innovation may be the answer.

Inside the Visual Grading System: A Revolution in Textile Assessment

The Heriot-Watt University team, composed of textile scientists and sustainability experts, has developed a visual grading system designed to assess the shedding potential of different fabrics. Unlike conventional tests, this system uses high-resolution microscopy combined with advanced imaging technology to evaluate fibers’ physical characteristics, including texture, weave density, and surface roughness.

Key Features of the System:

Shedding Quantification: Measures the volume of microfibers released under simulated wear-and-wash conditions.

Material Assessment: Grades fabrics based on their structural propensity to shed microplastics.

Durability Insights: Provides manufacturers with guidelines to produce more robust textiles that release fewer fibers over time.

Dr. Sarah Whitman, the project’s lead researcher, explains:

“Our visual grading system offers a practical and scientifically robust way for manufacturers to identify high-shedding fabrics and redesign them for improved sustainability.”

Impact on the Textile and Fashion Industry

Heriot-Watt’s innovation comes at a pivotal time when the fashion industry is under immense pressure to embrace sustainable practices. The visual grading system offers transformative benefits across the textile value chain:

Improved Material Design: By identifying problematic fabrics, manufacturers can shift towards materials with lower shedding potential or develop innovative fibers that degrade naturally.

Sustainable Product Development: Designers can incorporate the grading data into their selection process, reducing environmental impact while maintaining fabric performance.

Enhanced Consumer Trust: Brands adopting this technology can provide transparency through “low-shedding” labels, empowering consumers to make informed eco-friendly choices.

Policy Alignment: The system aligns with global regulatory movements, such as the European Union’s proposed Textile Strategy, which mandates durability and sustainability in garment production.

Case Study: Industry Adoption in Action
Several global brands are piloting the grading system to integrate it into their production cycles. For instance, a UK-based retailer tested their synthetic garments and discovered that certain items shed 30% more microplastics than their competitors. Armed with this insight, the company redesigned its supply chain, shifting to tighter weaves and incorporating recycled fibers, resulting in a 20% reduction in microplastic emissions.

Future Developments and Enhancements

Heriot-Watt researchers are now exploring ways to integrate AI and machine learning into the grading system. AI could predict microplastic shedding during the early stages of fabric development, reducing the time and cost of testing. Additionally, partnerships with leading washing machine manufacturers are in discussion to incorporate filtration systems that complement low-shedding textiles.

Call to Action: Industry and Consumer Collaboration

The success of Heriot-Watt’s innovation

relies on widespread adoption and collaboration. The textile industry must prioritize:

Investment in Sustainable R&D:

Encourage innovations like low-shedding fibers and biodegradable synthetics.

Stronger Regulatory Frameworks:

Push for policies that incentivize manufacturers to adopt sustainable practices.

Consumer Awareness Campaigns:

Educate consumers about the environmental impact of synthetic garments and promote sustainable washing practices, such as using filter bags or low-temperature cycles to minimize microfiber release.

A Step Towards a Sustainable Future

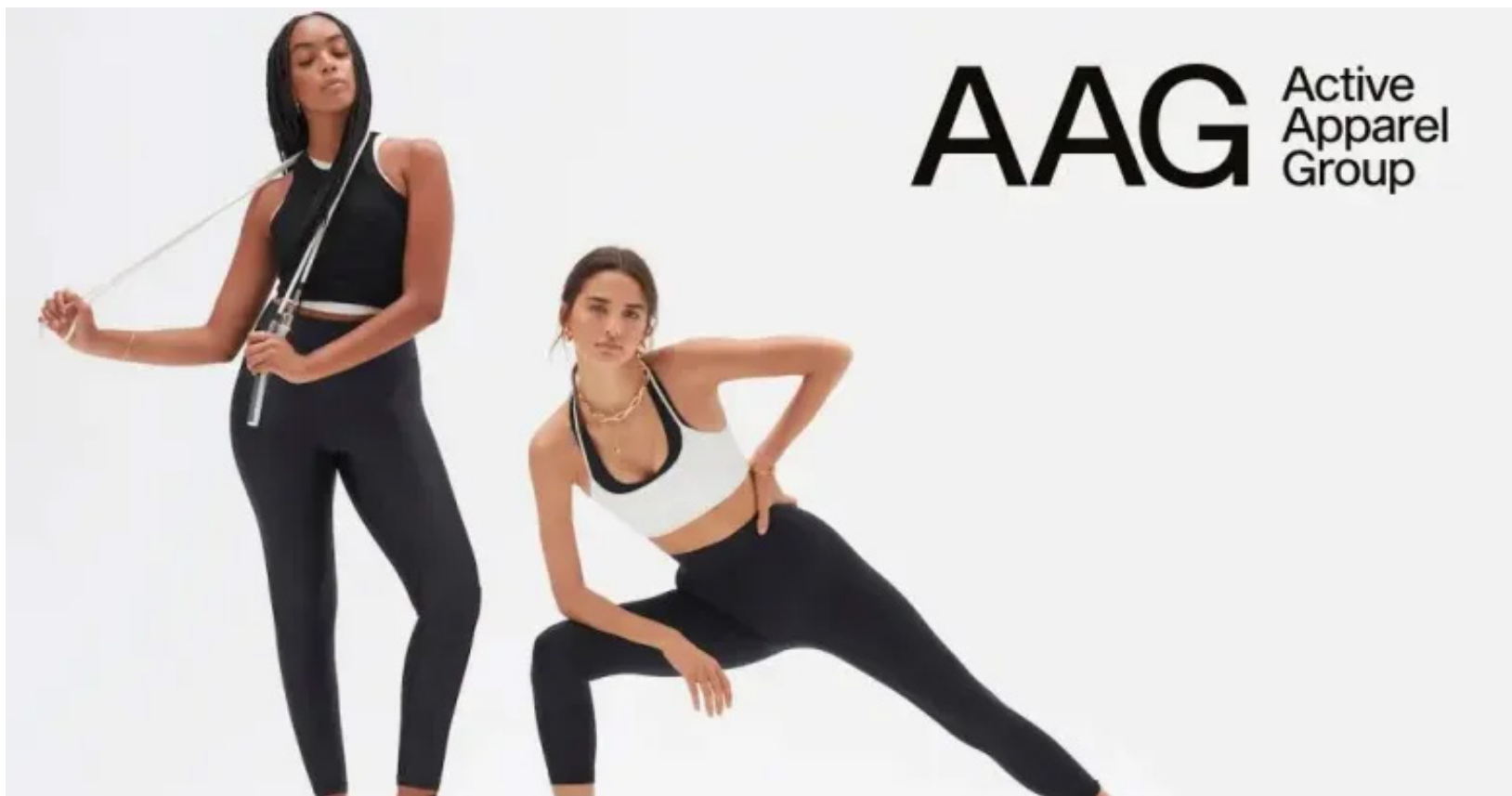
Heriot-Watt University’s visual grading system is more than a technical innovation; it’s a clarion call for the textile and fashion industries to rethink their approach to sustainability. With microplastic pollution threatening ecosystems and human health, this tool offers a pathway to reduce the environmental toll of textiles while inspiring further innovation.



Photo: The world's first visual fibre fragmentation scale.

AAG achieves B Corp cert, strengthens ESG leadership

■ Sayed Abdullah



Active Apparel Group (AAG), a performance apparel manufacturer, has earned B Corp Certification, highlighting its commitment to environmental, social, and governance (ESG) values. Based on AAG's score of 84.9 in the B Impact Assessment, the certification reinforces its pledge to positive business practices across workers, customers, community, and environmental areas.

The assessment revealed AAG's strengths in governance (17.6 points), workers (24.9 points), and customer relations (4.1 points), exceeding benchmarks within its industry and positioning it as a leader in sustainable manufacturing. A notable achievement was AAG's Impact Business Model points

for toxin reduction, driven by OEKO-TEX certified inks and rigorous chemical management practices.

"Our B Corp certification underscores AAG's role as a responsible, premium provider in the global market," stated Henry Jones, AAG's CEO. "This milestone validates our continuous drive toward sustainable innovation, operational efficiency, and our ability to attract top talent." Additionally, an audit by Bureau Veritas in 2023 confirmed that AAG's Ningbo Longson Garments factory in China pays wages 29% above the local minimum. With an environmental management system in place, AAG also aims to reduce its global carbon footprint and set ambitious sustainability goals across its operations.

Six Sigma advancing Precision & Quality in textile production

■ M A Mohiemen Tanim



Implementing Six Sigma in textile production is a transformative strategy that can enhance precision, minimize waste, and increase productivity across various stages of the manufacturing process. In an industry driven by customer demand for quality and sustainability, Six Sigma provides a systematic, data-driven approach that can tackle issues from production inefficiencies to quality assurance. This article explores how Six Sigma can be applied in textile production, its benefits, and real-world examples that highlight its effectiveness.

Understanding Six Sigma in Textile Production

Six Sigma is a quality management methodology developed to reduce

defects and variations in manufacturing processes, with the ultimate goal of achieving near-perfection. Originating in the 1980s within the manufacturing sector, Six Sigma's application has since expanded into various industries, including textiles. Six Sigma combines statistical analysis with structured problem-solving to identify root causes of defects and improve process stability and efficiency. The methodology is often structured around the DMAIC (Define, Measure, Analyze, Improve, and Control) approach, which provides a roadmap for continuous improvement.

In textile production, Six Sigma addresses challenges like inconsistent dyeing, fabric defects, and production delays, helping companies meet high

standards for quality and customer satisfaction. Precision in textile production is critical due to the variability in raw materials, equipment, and human factors that can affect the outcome of the product. Implementing Six Sigma principles can mitigate these challenges by improving control over the process and achieving a higher level of quality consistency.

Key Components of Six Sigma in Textile Production

Define: The first phase involves identifying the project’s scope, goals, and the specific problem or improvement area. For textile production, this could involve defining quality issues, such as inconsistent fabric thickness, uneven dye application, or other defects.

Measure: In this stage, data on the current process performance is gathered. In textiles, measurements might include fabric tension, dye consistency, or defect rates across production batches. Key Performance Indicators (KPIs) are established to provide a baseline for improvements.

Analyze: Using data analysis tools, this phase identifies the root causes of defects or variations. For example, analysis may reveal that defective fabrics are caused by machine calibration issues or inconsistencies in raw materials. Statistical tools like cause-

and-effect diagrams, Pareto analysis, and root cause analysis are commonly used.

Improve: Once the root cause is identified, the Improve phase focuses on implementing solutions to address these issues. In textile production, this could involve adjusting machine settings, standardizing material specifications, or enhancing operator training to reduce human errors.

Control: This phase ensures that improvements are sustained over time. Control measures might include regular monitoring of machine calibration, continuous training, and establishing a quality control system to detect potential issues before they escalate. This stage is crucial for preventing a regression to previous defect levels.

Benefits of Six Sigma in Textile Production

Implementing Six Sigma in textile manufacturing offers multiple benefits that help companies remain competitive, sustainable, and profitable. Key advantages include:

Improved Product Quality: Six Sigma’s focus on reducing defects ensures that the quality of textile products consistently meets or exceeds customer expectations. This quality improvement enhances brand reputation and customer loyalty, which are vital in today’s highly competitive market.

 **Read Full Article:** <https://www.texspacetoday.com/six-sigma-advancing...>

ISPO Munich 2024: A global celebration of sports innovation

■ Zahid Hossen



Photo: The Exhibition Halls present products, trends & innovations

From December 3 to 5, 2024, the Munich Exhibition Center will transform into the epicenter of the global sports industry as it hosts ISPO Munich 2024, the world's largest sports business event. Recognized for its influence and innovation, the trade show is more than an exhibition—it is a hub where ideas are born, trends are set, and connections are forged to shape the future of sports and business.

This year's theme, "LOVE EVERY CONTACT," underscores the value of relationships in both sports and business. It highlights the importance of building meaningful connections that propel success, much like the traction an athlete relies on for speed and stability. ISPO Munich embodies this

ethos, offering attendees unparalleled networking opportunities with over 2,400 international exhibitors and approximately 60,000 visitors from nearly 120 countries, including top athletes, startups, brands, investors, and media.

The event features an impressive lineup of conferences and panels aimed at sparking discussions and fostering collaboration. Notable highlights include the SPORT MARKE MEDIEN Summit, which will bring together leaders in media, sports organizations, and branding to chart the future of sports marketing. The German Trainers' Summit on December 4 will provide coaches with strategies to enhance their methods and broaden their professional networks.

AFFOA Welcomes Dr. Eric D. Evans to Board of Directors



Photo: Dr. Eric D. Evans

The Advanced Functional Fabrics of America, Inc. (AFFOA) has announced the appointment of Dr. Eric D. Evans to its Board of Directors. Dr. Evans, the former director of MIT Lincoln Laboratory, brings extensive experience in technology transfer, national security, and educational outreach to the board.

During his 18 years at MIT Lincoln Laboratory, Dr. Evans led initiatives to expand research and development efforts, enhance collaboration with MIT, and improve the Laboratory's approach to technology transfer and educational outreach. Currently, he serves as Director Emeritus and MIT Professor of the Practice, and he remains active on

the Defense Science Board, where he has served as Chair since 2020.

"We are thrilled to welcome Dr. Evans to our Board," said AFFOA CEO Sasha Stolyarov. "His defense technology expertise and connection to MIT will be invaluable to our mission." AFFOA, a public-private partnership founded in 2016, focuses on advancing functional textile technologies and strengthening the U.S. textile industry through its 150+ member Fabric Innovation Network.

Retired U.S. Army General Paul Kern, AFFOA Board Chair, emphasized that Dr. Evans' knowledge would further AFFOA's impact in the national security sector.

Texcare 2024 showcases innovations in textile care technology



Photo: Texcare 2024. (Source: Messe Frankfurt Exhibition GmbH)

After an eight-year hiatus, Texcare International, the world's leading trade fair for textile care, is underway in Frankfurt, generating high expectations from industry professionals worldwide. Organized by VDMA Textile Care, Fabric, and Leather Technologies, the event, running from November 6 to 9, offers a platform for top exhibitors to unveil cutting-edge innovations, addressing emerging global trends and challenges.

Elgar Straub, Managing Director of VDMA Textile Care, Fabric and Leather Technologies, emphasized the significance of this year's event, noting, "The exhibitors want to showcase innovations developed in recent years, and Texcare is the perfect platform

to present them to an international audience."

With global emphasis on hygiene and sustainability, and facing challenges such as labor shortages and cost increases, the industry is keenly focused on automation, digitalization, logistics, and AI. European exports in laundry and textile cleaning technology grew by six percent, totaling 1.064 billion euros in the first seven months of 2024, driven largely by demand from the USA, Poland, and Turkey. Texcare continues to attract industry leaders seeking networking, inspiration, and strategic insights into textile care's future. The event reaffirms its position as a hub for pioneering advancements and industry connections.

Euratex & AMITH partner to boost euro-moroccan textile industry



Photo: Officials from Euratex and AMITH during the signing of the MoU. Credit: © 2023 EURATEX.

The European Apparel and Textile Confederation (EURATEX) and the Association Marocaine des Industries du Textile et de l'Habillement (AMITH) have signed a Memorandum of Understanding (MoU) to enhance cooperation between the European and Moroccan textile sectors. This collaboration was formalized during the 21st Maroc in Mode (MIM 2024) event in Casablanca, underscoring both organizations' commitment to advancing sustainability, circularity, and competitiveness within the industry.

The MoU highlights shared objectives, including adopting European sustainability standards, aligning with regulatory frameworks, and resolving customs challenges. Euratex and AMITH also seek to foster a more supportive environment for investments and

business ventures, creating a stronger Euro-Mediterranean textile ecosystem.

"This partnership leverages the potential for growth within the EU-Morocco textile sector, with sustainability and competitiveness at its core," stated Euratex president Mario Jorge Machado. Additionally, the agreement facilitates knowledge sharing in industrial technologies, joint business projects, and skill development initiatives.

Both organizations are poised to benefit from the updated Pan Euro-Med (PEM) Convention rules, effective January 1, 2025, which aim to strengthen regional integration. AMITH president El Ansari Anass emphasized the MoU's role in elevating the Moroccan textile industry towards greater excellence and sustainability.

Robotics in the Textile Industry

■ **Mohammad Mithun**

The Industry 4.0 industrial revolution, defined by automation, digitalization, and intelligent data links, will heavily rely on industrial robots. During this procedure, industrial robots will become a vital component of a digitalized manufacturing environment. In the framework of Industry 4.0, industrial robots play a critical role in modernizing and streamlining manufacturing processes. Combining intelligent systems with data enables manufacturers to remain competitive while contributing to sustainability and efficiency.

The Czech term *robota*, which means compelled or obligated labor, is where the word "robot" originates. Karel Čapek used it for the first time in a play to describe a "human-shaped machine" that functions in place of actual people.

In this article, we discussed various industrial robots which used in various stages of textile processing and the garment industry.

Warehouse Robots

In a factory, these robots are used to load, maintain, and transport a wide range of things, including supplies, semi-finished goods, completed goods, raw materials, etc. Robots in robot-managed warehouses arrange products on racks at random to maximize available space, but the software that manages the robot is aware of every item's placement as well

as all the crucial indications. The robot management software automatically searches for and retrieves a specific item from the warehouse when it is inputted. The process is ongoing since the creels are reloaded following the usage of the yarn they contain in the production of textiles. Additionally, the task is physically taxing: A creel may accommodate up to 1,200 bobbins, each weighing between 10 and 20 kg. "They have to carry heavy loads the whole day," says Philipp Herpich, software engineer at ONTEC Automation GmbH (Naila, Germany; www.ontec-automation.de/en/), the company that developed the robotic system.



Photo: ONTEC Warehouse robot

Dyehouse Robot

For instance, a robot on Thies' iCont yarn dyeing machine (Figure 8) picks up the ready-made bobbins, positions them on a driven conveyor, inserts them into the dyeing machine, and then takes

them out and carries them to the dryer after the dying process is complete. This implies that the drying and dyeing machines' lids must both automatically open and close at the proper times. With this technology, the plant employee just plays the position of an observer and is no longer required to perform the loading and unloading.

Another way to think of the automated dye kitchen is as a robot. It automatically measures out the dyestuff and auxiliary materials it needs, dispenses them into a container, dissolves them, and moves them to another container from which the machine sucks them in at the appropriate the moment after receiving a signal from one of the dyeing machines in the system.



Photo: Thies GmbH end-to-end robotization of yarn dyeing plant

Robotisation of flat screen printing:

For flat-screen printing, the Japanese robot Ichi-nose X was created. By fully simulating human hand and arm actions, the robot's arms load the various inks into the printing template, move the template, and use the knife to push the ink pulp through the template's slots, automating the process with great speed and accuracy.

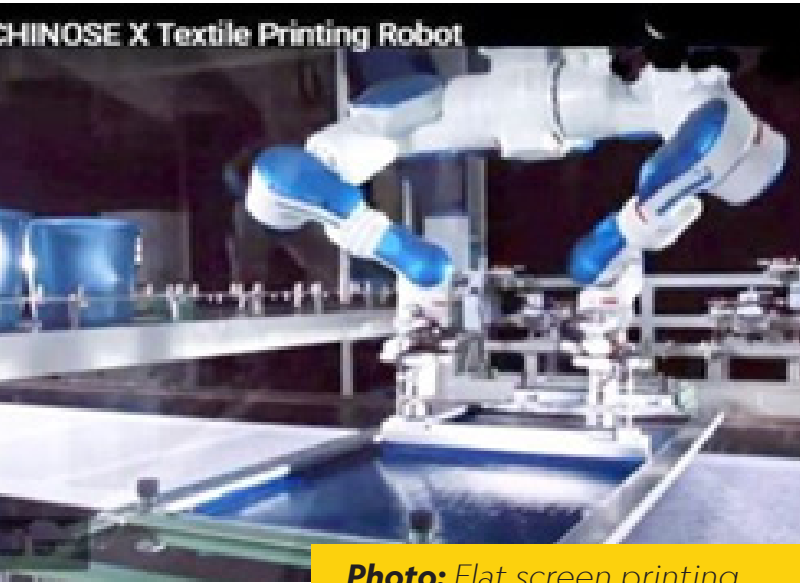


Photo: Flat screen printing machine (Ichi-nose X)

Sewing Robot:

The part that needs to be sewn is grabbed and moved by the "Sewbo" robot (Figure 12). The machine has been tried for completely automated T-shirt stitching as an experiment. The experiment's success showed that it is theoretically feasible to stitch a whole



Photo: 3D sewing technology

garment entirely by machine. It is possible to configure the robot to be a certain size and form, but it will need to be reprogrammed if the garment's dimensions change.

The American business Software Automation is the creator of the LOWRY® "SewBot". This particular kind of robot was created specifically for the clothing industry. It is a manufacturing line where a robotic arm positions the workpiece on a rotating conveyor table and directs it through the whole production process, from cutting and sewing to labeling and inspection. A single touch screen controls all of these functions. It speeds up manufacturing and lowers costs by 50-70%.

New sewing possibilities may arise from the application of robotic three-dimensional (3D) stitching technology. Philipp Moll GmbH & Co. developed this method, which can fully automate the production of a seam in three dimensions (Figure 14). The three-dimensional sewing robot arm detects pieces using a laser scanner, stitches them together

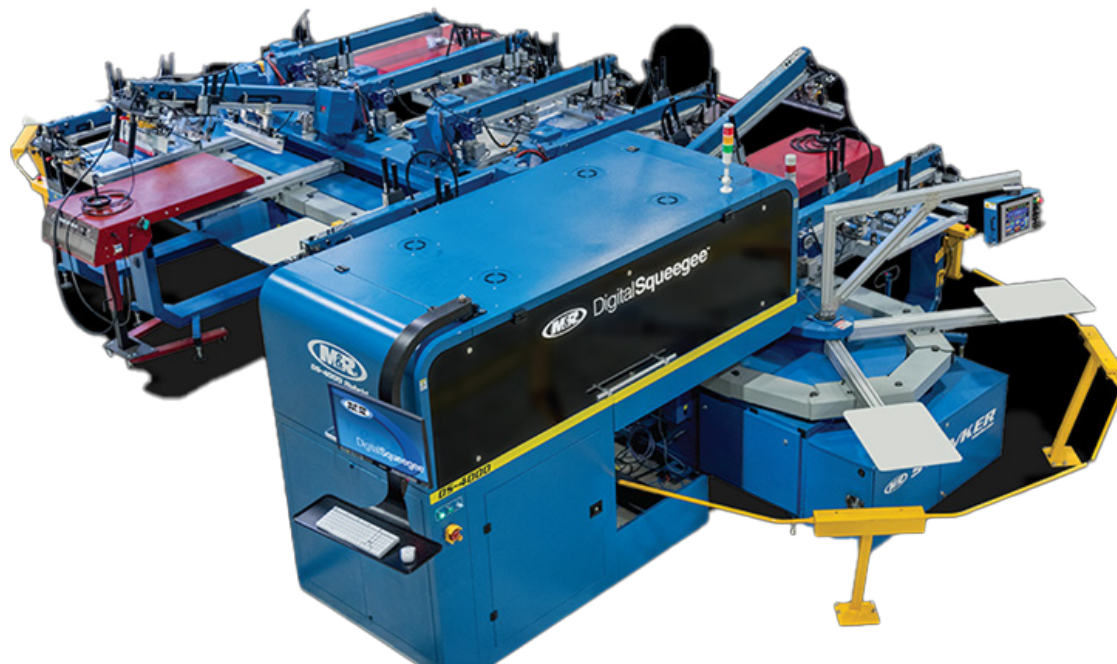
using preprogrammed motions, trims any remaining thread, and finally releases the completed item. Currently, seat coverings and airbags are sewn using this technique, but it may also be used to stitch shirts, coats, and pants.

Laundry robots

Several laundry operations may be controlled by robotic devices equipped with sensors and computer control. Robots find it challenging to handle fabrics because of their elasticity and propensity to wrinkle. Laundry robots are used to move laundry materials, sort them based on color, soiling, or other attributes, load and unload them from washing or drying machines, prepare them for ironing, feed them, and fold them. In addition to saving labor, its use reduces the possibility of handling errors or harm to sensitive textiles. An estimated 30% of laundry staff expenses are related to folding machines, although labor shortages are especially severe for these repetitive manual activities. Additionally, the utilization of robots.



Maximizing Textile Print Efficiency with M&R's DS-4000™ Digital Hybrid System



M&R's DS-4000™ Digital Squeegee® Hybrid Printing System is revolutionizing the textile printing industry with a unique blend of digital and screen printing technologies. Designed to meet the growing demands of the modern apparel market, the DS-4000™ combines the precision and quality of digital printing with the high-speed efficiency and flexibility of traditional screen printing. This hybrid approach offers a compelling solution for textile manufacturers seeking faster turnaround times, reduced waste, and superior print quality.

Key Features and Benefits of the DS-4000™

The DS-4000™ Hybrid Printing System utilizes a powerful combination of digital print heads and traditional squeegee technology to create detailed, vibrant prints on a variety of fabrics. One of its most significant

advantages is its versatility. It supports multiple fabric types, including cotton, polyester, and blends, providing manufacturers with the flexibility to produce diverse apparel lines, from basic garments to high-end fashion.

Equipped with advanced high-resolution print heads, the system is capable of producing crisp details and rich color gradations, making it ideal for intricate designs and small print runs. This is particularly advantageous for brands and manufacturers focused on custom or short-run orders, as the system reduces setup times and eliminates the need for costly screen changes, traditionally required for complex designs.

Enhanced Productivity and Operational Efficiency

One of the standout features of the DS-4000™ is its ability to seamlessly handle both short and long production

runs with consistent results. By combining the speed and efficiency of traditional screen printing with the precision of digital printing, the DS-4000™ optimizes workflow, reducing bottlenecks and enhancing productivity. Its automatic registration system ensures perfect alignment between the screen and digital print heads, minimizing errors and eliminating costly downtime. The system also incorporates intuitive, user-friendly controls that allow operators to quickly adjust settings, making it easier to scale operations and maintain print consistency across large orders. This flexibility ensures manufacturers can easily respond to changing market demands, whether for mass production or custom, one-off designs.

Sustainability and Eco-Friendly Impact

In addition to its operational benefits, the DS-4000™ offers a more sustainable approach to textile printing. By merging

digital and screen printing techniques, it significantly reduces ink waste and consumption, contributing to a more eco-friendly production process. This eco-conscious design supports the growing global emphasis on sustainability within the textile industry, making it an attractive solution for manufacturers focused on reducing their environmental footprint.

The M&R DS-4000™ Digital Squeegee® Hybrid Printing System is more than just a printing tool; it is a comprehensive solution for the future of textile printing. With its ability to deliver high-quality prints across a variety of fabrics, reduce waste, and improve production speed, the DS-4000™ is setting new industry standards for versatility and efficiency. As demand for customization, quality, and sustainability continues to grow, M&R’s DS-4000™ provides manufacturers with a competitive edge that is poised to reshape the textile printing landscape.



Screen Printed Underbase



Digital Printed Colors



Variable Data Using Same Underbase

PUMA & consortium unveil world's first 100% biorecycled "fibre-to-fibre" garment

On October 29, 2024, sportswear giant PUMA announced its involvement in a groundbreaking project, collaborating with a consortium of major brands to create the world's first piece of clothing made entirely from textile waste. The plain white T-shirt, manufactured with bio recycling technology from French company CARBIOS, represents a significant advancement in a circular fashion and sustainable manufacturing.

CARBIOS' innovative enzymatic depolymerization technology breaks down polyester in textile waste to its fundamental building blocks, producing biorecycled polyester of quality comparable to that of virgin oil-based polyester.

PUMA's Chief Sourcing Officer, Anne-Laure Descours, emphasized the company's ambition to source 100% of its polyester from textile waste, calling this project an essential milestone in moving toward a more circular fashion industry. *"Today's announcement is an important milestone towards achieving this and making our industry more circular,"* she noted. *"We now need to work together to make sure we can scale up this technology to make the*



largest possible impact." The consortium aims to accelerate the shift to a circular economy by refining and industrializing CARBIOS' biorecycling technology, which would allow polyester textiles to be continuously recycled without the need for new petroleum-based materials. This biorecycling process lowers carbon emissions and reduces waste, supporting a sustainable future for the textile industry.

With current recycling methods limited mostly to PET bottles, the project underscores an important step toward achieving fiber-to-fiber recycling on an industrial scale, signaling a new era for sustainable textile production.



SPINNOVA®

SPINNOVA® is blended with other preferred fibers, and maintains the look and feel that consumers love

SPINNOVA® fibres can be processed with innovative and traditional methods. Properties of the fibres are comparable to other natural cellulosic fibres. SPINNOVA® fibres are soft on the hand, breathable with hand-feel comparable to cotton.

74%
LESS CO₂ EMISSIONS*

98%
LESS WATER

85%
LESS LAND USE



*Figures are third-party life-cycle assessments for SPINNOVA® fibre made from eucalyptus wood pulp and compared to conventional cotton, which values are global averages from external databases. The figures include raw material supply, transportation of raw materials, and manufacturing of the product (cradle-to-gate).

For registration please contact

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eBay expands circular fashion fund & introduces innovator award



eBay has expanded its Circular Fashion Fund (CFF) globally, adding the United States, Germany, and Australia to its reach, alongside the UK, where the initiative is now in its third year. The CFF is designed to invest in innovative solutions that contribute to a more circular economy in fashion. As part of its new initiatives, eBay will also present the “Circular Fashion Innovator of the Year” award, granting the winner a \$300,000 investment to accelerate their growth.

With a focus on fostering environmentally responsible fashion, the CFF will award £50,000 (\$65,000) to the top innovator in the UK, with two runners-up receiving £25,000 each. All three finalists will benefit from bespoke

mentoring, educational workshops, and networking opportunities, gaining insights from industry leaders. The fund, which has already invested \$1.2 million since its inception in 2022, aims to reach \$1.2 million in support by 2025. In addition to financial backing, eBay has pledged over 200 hours of mentoring and networking for these circular fashion start-ups, helping drive innovative, sustainable approaches to fashion production, consumption, and disposal.

eBay’s CFF works closely with leading fashion councils to maximize its impact. The British Fashion Council, Fashion Council Germany, the Australian Fashion Council, and the Council of Fashion Designers of America (CFDA) all



Photo: Caroline Rush has been appointed the title of CBE.

contribute to eBay's goal of advancing the circular economy in fashion by championing innovation and guiding small businesses toward scalable, impactful solutions. eBay has expanded its Circular Fashion Fund (CFF) globally, adding the United States, Germany, and Australia to its reach, alongside the UK, where the initiative is now in its third year. The CFF is designed to invest in innovative solutions that contribute to a more circular economy in fashion. As part of its new initiatives, eBay will also present the "Circular Fashion Innovator of the Year" award, granting the winner a \$300,000 investment to accelerate their growth.

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Applications for this year's CFF are open through November 15, 2024, with eBay encouraging circular fashion start-ups and small businesses to apply and help transform the fashion industry's future.

Zara launches US 'Pre-owned' program to promote circularity



Zara has launched its “Pre-Owned” platform in the U.S., marking a major expansion of the circularity initiative outside Europe. Originally launched across 16 countries, including Italy, the U.K., and France, the U.S. debut reflects Inditex’s ambitious circularity goals aimed at net-zero emissions by 2040. The “Pre-Owned” program focuses on repair, resell, and donation, enabling U.S. customers to extend the life of their Zara garments through these options. Accessible via Zara’s website, app, and

stores, the platform provides a range of services. For repairs, customers can request fixes for any Zara garment, from any season, covering everything from replacing buttons to mending seams. The resell option is organized by product category, allowing sellers to include detailed information on each item, with Zara’s AI-powered system auto-populating original product images. Customers simply need to specify item sizing and condition before listing.

Through the donation option, Zara collaborates with more than 90 community organizations, including the Salvation Army in the U.S., to support vulnerable groups and community projects. The program promotes reuse wherever possible, with worn items converted into new textile fibers or industrial materials if beyond wearable condition. Notably, customers in New York City can also arrange item pickups with online orders, furthering ease of participation. Paula Ampuero, Zara’s head of sustainability, shared that this U.S. launch is part of Inditex’s broader commitment to responsible consumption and circularity. “We

envision a world where every Zara garment is reused or recycled,” she said, underscoring the company’s dedication to reducing waste and environmental impact.

In line with these initiatives, Inditex is also investing in sustainable fiber development, lab-grown cotton, and textile recycling tech partnerships, all aimed at decreasing emissions by 50% by 2030.

By advancing the Pre-Owned program, Zara aims to lead in promoting a sustainable fashion cycle while enabling consumers to make eco-conscious choices.



Photo: Zara's "Pre-Owned" program.



Photo: Textile recycler Circulose has named McKinsey partner Jonatan Janmark CEO and appointed former H&M Group chief Helena Helmersson to chair its board. (Circulose)

Circulose appoints Helena as chair, Jonatan as CEO

Textile recycler Circulose has announced two high-profile leadership appointments as it looks to regain its footing following a recent bankruptcy. Former H&M Group CEO Helena Helmersson will chair the board, while McKinsey partner Jonatan Janmark has been named CEO, effective December 2024.

Circulose, previously known as Renewcell, was a pioneer in textile-to-textile recycling, attracting significant backing from industry giants like H&M. However, the company faced financial struggles due to a mismatch between its increased production capacity and slower-than-anticipated market demand for recycled textiles. In June 2024, it was acquired out of bankruptcy by private equity firm

Altor Equity Partners.

Janmark emphasized the company's renewed mission to drive a transition from a linear to a circular textile economy. "The shift won't happen overnight, but we are fully committed to seeing it through," he said in a statement.

The appointments come amid a challenging landscape for recycling innovators, who face competition from the established material supply chain's affordability and reliability. Helmersson's industry experience and Janmark's strategic expertise are expected to help Circulose navigate these hurdles and re-establish itself as a leader in the sustainable textiles market.

Fashion for Good launches 'World of Waste' to map global textile waste hotspots

Fashion for Good has unveiled the World of Waste, a free online tool that provides crucial data on global textile waste hotspots. This platform, funded by the Laudes Foundation and IDH, aggregates regional information on textile waste volume, type, and composition, offering recyclers and innovators valuable insights for turning waste into resources.

In collaboration with Reverse Resources, Global Fashion Agenda, Circle Economy, and Accelerating Circularity, World of Waste aims to bridge the data gap in global textile waste management, enabling stakeholders to make more informed decisions and fostering circularity in the fashion industry.

With textile waste data often fragmented across various platforms, World of Waste provides a centralized view of waste quantities, attributes, and research findings. By consolidating this information, the platform empowers users to streamline feedstock sourcing, improve recycling processes, and create sustainable waste strategies. The platform offers a foundation for policy development for governments that supports sustainable waste management and addresses regulatory needs.



Katrin Ley, Managing Director of Fashion for Good, expressed enthusiasm about the platform's potential: "World of Waste provides insights into waste volumes and compositions, helping recyclers and innovators transform waste into resources and advancing the shift toward a circular fashion industry." The tool's initial rollout includes a lens on textile waste hotspots and links to resources by region. Over time, it will cover more regions and waste types, offering deeper insights into waste economics, composition, and policies. As it grows, World of Waste aims to strengthen connections between stakeholders worldwide, fostering a more transparent, collaborative, and circular approach to textile waste.

This initiative marks a significant milestone in fashion's journey toward sustainability, addressing textile waste challenges, and unlocking its potential as a resource.

Top 10 energy management best practices for garment manufacturers

■ M A Mohiemen Tanim



Photo: MAS Holdings in Sri Lanka is generating 23.7 MW of solar power across 18 locations under its 'Project Photon.'

As the apparel industry strives for sustainability and cost efficiency, energy management has emerged as a critical focus area. With rising energy costs and increasing environmental regulations, adopting best practices in energy management is essential for manufacturers aiming to enhance productivity, reduce costs, and minimize their carbon footprint.

1. Conducting Comprehensive Energy Audits

Energy audits are foundational to effective energy management. By

evaluating energy consumption patterns across production processes, manufacturers can identify inefficiencies and prioritize improvement areas. Audits often reveal hidden energy drains, such as poorly maintained equipment, outdated lighting systems, and suboptimal HVAC performance.

Case Study: DBL Group, a leading apparel manufacturer in Bangladesh, reduced its energy use by 20% by conducting regular energy audits. Insights from the audits led to investments in energy-efficient motors

and process optimization in dyeing units.

2. Leveraging Smart Technology for Energy Monitoring

The adoption of smart meters and IoT-enabled devices allows real-time monitoring of energy consumption at granular levels. These systems provide actionable insights, enabling manufacturers to optimize operations based on energy usage patterns.

Implementation Example: MAS Holdings in Sri Lanka installed IoT sensors across its factories to monitor energy use in sewing and cutting units. This initiative helped them identify peak energy consumption periods and adjust production schedules, leading to significant cost savings.

3. Optimizing HVAC Systems

Heating, ventilation, and air conditioning (HVAC) systems often account for a significant portion of energy consumption in apparel factories. Maintaining optimal indoor conditions for fabric and garment production while reducing energy use requires a balance of technology and regular maintenance.

Best Practice: Shahi Exports, India’s largest apparel exporter, implemented variable frequency drives (VFDs) on its HVAC systems to reduce motor speeds during low-demand periods. This upgrade, combined with regular filter cleaning, cut their HVAC energy costs by 15%.

4. Adopting Energy-Efficient Machinery

Energy-efficient machinery not only improves productivity but

also significantly reduces energy consumption. Modern sewing machines, dyeing equipment, and cutting systems are designed to operate with minimal energy requirements.

Example: Crystal International Group in Hong Kong upgraded its dyeing machines to energy-efficient models, reducing water and energy usage by over 30% per production cycle.

5. Implementing Renewable Energy Solutions

Renewable energy sources such as solar, wind, and biomass offer sustainable alternatives to traditional energy systems. Integrating renewable energy reduces dependency on fossil fuels, cuts costs, and enhances brand reputation.

Case in Point:

Pacific Jeans Group in Bangladesh installed rooftop solar panels across its production facilities, offsetting up to 40% of its electricity needs and reducing its carbon footprint significantly.

6. Enhancing Energy Recovery Systems

Energy recovery systems capture and reuse waste heat from processes like dyeing, drying, and finishing. This reduces the demand for additional heating or cooling and enhances overall energy efficiency.

Example: Hirdaramani Group in Sri Lanka installed heat recovery systems in its dyeing units to reuse hot water for preheating. This practice reduced its energy consumption in dyeing processes by 25%.

7. Promoting Employee Awareness and Engagement

Energy management isn’t just about

technology—it also involves behavioral change. Training employees on energy-saving practices and incentivizing energy-conscious behavior can have a lasting impact.

Initiative: At Esquel Group’s manufacturing sites, employee energy-saving campaigns encourage simple actions like shutting down idle machines and optimizing shift patterns. The company reports significant cumulative savings from these initiatives.

8. Utilizing Advanced Building Design

Factory infrastructure plays a crucial role in energy efficiency. Incorporating energy-efficient designs, such as better insulation, natural lighting, and optimized airflow, reduces energy requirements.

Green Building Practice: Arvind Limited, a leading textile manufacturer in India, designed its production facilities with green building principles, incorporating solar chimneys and energy-efficient windows to reduce HVAC loads.

9. Switching to Energy-Efficient Lighting

Replacing traditional lighting with energy-efficient options like LED lights is one of the simplest and most cost-effective ways to reduce energy consumption.

Impact: The Coats Group, a global

thread manufacturer, replaced conventional lighting with LED systems in its production facilities. This shift resulted in a 60% reduction in lighting-related energy consumption.

10. Collaborating With Utility Providers

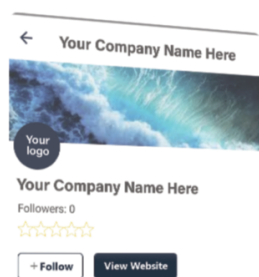
Working closely with utility providers to negotiate energy contracts, participate in demand response programs, and gain access to rebates for energy-efficient upgrades is another effective strategy.

Example: TAL Apparel, a leading garment manufacturer in Hong Kong, participates in demand response programs to reduce energy consumption during peak grid hours, lowering energy costs and contributing to grid stability.

Conclusion

Effective energy management in apparel production is no longer optional; it is a necessity for staying competitive in a rapidly evolving industry. By implementing best practices such as energy audits, smart monitoring, renewable energy adoption, and employee engagement, manufacturers can achieve significant cost savings and enhance sustainability. These practices not only improve operational efficiency but also contribute to broader environmental goals, reinforcing the industry’s commitment to a sustainable future.

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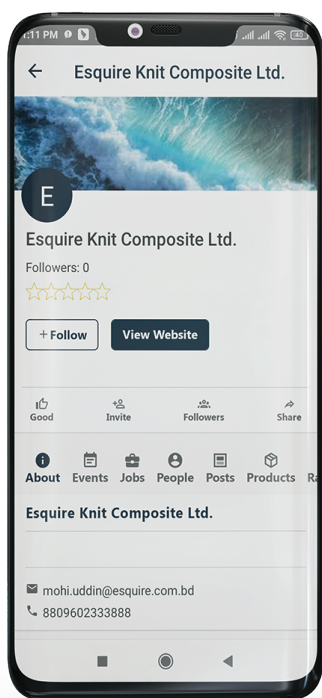
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