

US BILLS \$14 BN INCENTIVE PACKAGE TO PROMOTE CIRCULAR TEXTILES



Strategies to achieve breathability in waterproof fabrics

More at... 13

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More at... 16

FabBRICK is transforming textile waste into eco-friendly bricks

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Content

March 2024

- | | | | | | |
|-----------|---|-----------|--|-----------|---|
| 5 | US bills \$14 bn incentive package to promote Circular Textiles | 18 | Gap & Ambercycle partner to apparel production with recycled materials | 28 | FabBRICK is transforming textile waste into eco-friendly bricks |
| 7 | Swedish textile recycling company Re:NewCell files for bankruptcy | 19 | PHAs: A biodegradable and recyclable alternative to polyester | 30 | Fashion trend for F/W 2024-25: Bohemian meets punk |
| 8 | Lefties vs. Shein: The battle for budget fashion | 21 | Turkish yarn manufacturer Uğurlular embraces automation with ROBOspin robots | 32 | AiDLab develops AI-powered color-shifting textiles to reduce textile waste |
| 10 | KERAjet's Multi-Head Printers redefines textile design | 22 | What factors led to Renewcell's bankruptcy? | 34 | MIT's FibeRobo: A shape-shifting, cost-effective fiber offers endless possibilities |
| 12 | Pashmina: Soft gold of Himalayas | 26 | Anti-greenwashing law calls for transparency and accountability | 36 | Men's fashion trend 2024 showcased at Paris & Mila |
| 15 | Strategies to achieve breathability in waterproof fabrics | 27 | Ukrainian military tests fabrics for an Anti-Thermal imaging cape | 39 | Arvin Goods, Recover™, and Ferre Yarns join forces for recycled socks |



US bills \$14 bn incentive package to promote Circular Textiles

■ M A Mohiemen Tanim

A recently introduced bill, the Americas Trade and Investment Act (Americas Act), prioritizes circularity within the textile sector, aiming to create a more sustainable and domestically robust industry.

The Americas Act, introduced by Senators Bill Cassidy and Michael Bennet, offers a compelling \$14 billion package to incentivize various aspects of circular fashion practices across apparel, footwear, and home textiles.

This includes:

“

“Essentially we have the opportunity for the US to reposition itself as a global leader through localised circular textile manufacturing.”

Senators Cassidy and Bennet on the bill

Boosting Domestic Innovation: Financial support targets American businesses engaged in circular endeavors, fostering a thriving domestic circular economy.

Reshoring and Nearshoring Production: Incentives encourage companies to bring production back to the US or closer to home, shortening supply chains and reducing environmental impact.

Sustainable Practices Take Center Stage: The bill

emphasizes responsible manufacturing processes, promoting environmental and ethical considerations throughout the textile lifecycle.



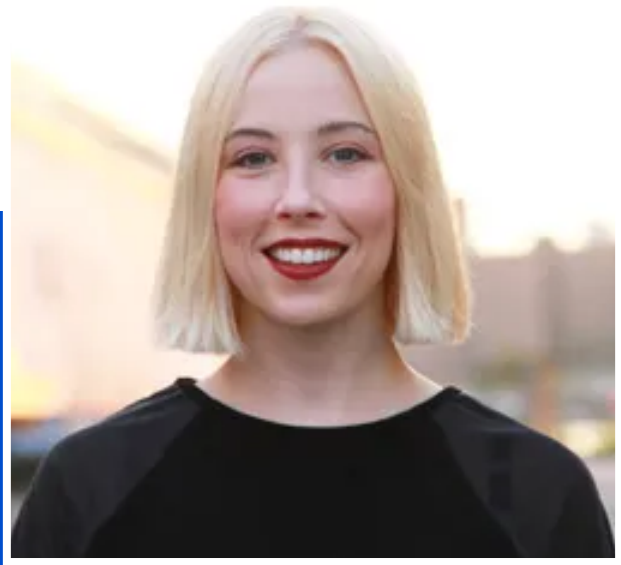
“No region has greater ties to the United States than the Western Hemisphere. Yet in recent years we have failed to offer the region a compelling economic alternative to China’s growing influence. This bill changes that. It creates an opportunity for the United States to renew our partnerships across Latin America and the Caribbean”

US Senator Michael Bennet (D-Colo.)



“We need to relevel the playing field between freedom-loving democracies and those who exploit the rules like China. We do that by refocusing on the Western Hemisphere to improve trade, bring manufacturing back to our shores, and end China’s growing influence. Our Americas Act will make economies across the hemisphere more resilient, governments more stable, and our hemisphere more prosperous.”

– US Senator Bill Cassidy (R-La.)



With the bold textile reuse and recycling incentive provisions in the Americas Act, organisations in our industry will be able to reinvest in jobs in the US and compete globally, while incubating innovation and R&D (research and development) and fostering an environment to cultivate private capital.

– Rachel Kibbe, CEO of Circular Services Group and American Circular Textile Group

Investment in Infrastructure: Measures are included to improve infrastructure for textile reuse and recycling, creating a more efficient circular system.

Consumer Power: Driving Change Through Choice

The success of this Act extends beyond legislation. A shift in consumer behavior is essential. Consumers have the power to influence the industry by supporting brands committed to circularity and ethical production practices.

Financial Muscle for a Circular Future

The Americas Act outlines a comprehensive financial package to support the transition to circularity:

Tax Breaks for Circular Businesses: A 15% net income tax exclusion is offered to businesses engaged in resale, repair, rental, fiber recycling, sorting, and reuse activities.

Loans and Grants for Innovation: \$10 billion in preferential loans and \$3 billion in grants are allocated for textile reuse and recycling, manufacturing support programs, machinery for processing and transportation, and components.

Investing in Research & Development: A dedicated \$1 billion is earmarked for research and development related to textile use and recycling technologies.

Public Education: \$100 million is set aside for a public education program to raise awareness about circular fashion practices.

Building a Sustainable Future: The Importance of Infrastructure

The recent bankruptcy of textile-to-textile recycling company Renewcell highlights the challenges faced by

“

“With its reshoring and nearshoring loans, tax benefits, and other targeted grant assistance for workers at home and in our Western Hemisphere partner countries, the Americas Act will bring jobs and investment back to our Hemisphere and stem the root causes of migration by putting more money into the pockets of working families.

Senators Cassidy and Bennet on the bill

startups in this evolving industry. Experts argue that a robust infrastructure supporting circular businesses is critical for long-term success.

Investing in the Future: The Power of Collaboration

Kibbe emphasizes the importance of building better infrastructure and providing access to low-cost capital for circular textile businesses. The Americas Act seeks to address these challenges by offering financial support with reduced interest rates and grants, paving the way for cost-

effective circular textile systems.

A Defining Moment for American Fashion

The Americas Act represents a significant turning point for the US textile industry. The bill aims to create a more sustainable and domestically thriving industry. However, its success hinges on a collaborative effort involving legislators, businesses, and consumers working together to usher in a new era of American fashion.

Swedish textile recycling company Re:NewCell files for bankruptcy

■ **Rahbar Hossain**

Re:NewCell AB, a pioneering Swedish company in textile recycling, announced today that it has filed for bankruptcy with the Stockholm District Court. Despite extensive efforts and negotiations, the company was unable to secure sufficient funding to complete its ongoing strategic review and ensure its future operation.

The company, known for its innovative “Circulose” recycled fiber, cited a lack of necessary support from the fashion industry as a contributing factor.

Re:NewCell had engaged in advanced discussions with its key stakeholders, including major shareholders like H&M and Girindus, existing lenders, and potential new investors. However, these negotiations ultimately failed to secure the necessary capital to sustain operations.

The company’s bankruptcy filing raises concerns for



its employees, shareholders, and the broader textile recycling industry. The future of the company and its Circulose technology remains uncertain while the bankruptcy process unfolds.



Figure: A Lefties store, an Inditex brand, is pictured in Istanbul, Turkey February 16, 2024. REUTERS/Dilara Senkaya

Lefties vs. Shein: The battle for budget fashion

■ Asif Iqbal

In the rapidly evolving landscape of fast fashion, the competition between industry giants like Zara and emerging e-commerce players such as Shein has intensified. To navigate this competitive terrain, Zara has strategically leveraged its brand strength by introducing Lefties, a new concept aimed at countering the growing

influence of Shein.

Fast fashion is like that friend who always shows up with the latest trends at a fraction of the cost. It's all about quickly churning out affordable, trendy clothes inspired by high-end designs. Think of it as the fast food of the fashion world – quick, convenient, and sometimes a guilty pleasure.

Concept and Launch of Lefties

Lefties is Zara's secret weapon in the battle against Shein. Launched as a more budget-friendly brand under the Zara umbrella, Lefties offers trendy clothes at even more affordable prices, targeting a wider range of fashion-conscious consumers.

Lefties is like that friend who's always there for you, offering stylish pieces at wallet-friendly prices without compromising on quality. By positioning itself as a more sustainable and ethical choice compared to Shein, Lefties aims to capture the hearts (and wallets) of fashion lovers looking for a guilt-free shopping experience.

Differentiation Between Lefties and Shein

While Shein may have a reputation for fast and cheap fashion, Lefties focuses on ensuring quality and ethical production practices. By emphasizing sustainability and responsible sourcing, Lefties aims to make a positive impact on the environment and the fashion industry as a whole.

When it comes to pricing, Shein may have the edge in terms of affordability, but Lefties is not far behind. By offering competitive prices without compromising on quality, Lefties presents itself as a more conscious choice for consumers who want to look good without breaking the bank.

If Zara were a family, Lefties would be that cool, laid-back cousin who effortlessly rocks thrifted finds. Lefties' target audience is all about style without breaking the bank, appealing to budget-conscious fashionistas who want to stay on-trend. Market segmentation? Lefties nails it by offering affordable yet trendy pieces that cater to a wide range of customers looking for a steal.

Lefties doesn't play by the traditional fashion rules when it comes to advertising. Its campaigns feel more like a cool hangout session with your stylish friends than a hard sell. With a focus on social media and influencer partnerships, Lefties keeps things fresh and relatable, drawing in customers with its laid-back vibe and budget-friendly prices.

Lefties isn't just a sidekick to Zara; it's a secret weapon in the fast fashion battle against giants like Shein. With Lefties in its arsenal, Zara has seen a boost in market share and revenue growth, solidifying its position as a top player in the fashion game.

Lefties has proven to be a game-changer for Zara, helping



the brand increase its market share and revenue growth. By tapping into the affordable fashion market, Zara has been able to reach a broader audience and solidify its position as a go-to destination for trendy yet budget-friendly fashion.

Competitors have taken notice of Zara's strategic move with the Lefties. With its combination of style, affordability, and accessibility, Lefties poses a threat to other fast fashion brands, forcing them to step up their game or risk being left behind in the race for budget-conscious shoppers.

Lefties might be Zara's budget-friendly sibling, but it's making waves in the fashion world with its unique approach and customer-centric focus. From glowing customer feedback to impressive sales performance, Lefties is proving that style doesn't have to come with a hefty price tag.

Customers can't get enough of Lefties' affordable yet stylish offerings. From rave reviews about the quality of its products to praise for its inclusive sizing, Lefties is winning over hearts and closets with its budget-friendly approach to fashion.

Lefties isn't just a trendy addition to Zara's lineup; it's a sales powerhouse. With its savvy marketing strategies and on-point fashion selections, Lefties is setting the trend for budget-friendly style and reshaping the fast fashion market landscape.

Future Outlook and Conclusion

The future looks bright for Zara with Lefties by its side. As the brand continues to expand its reach and offerings, it's clear that Lefties is here to stay and shake up the fast fashion scene. With its winning combination of affordability, style, and accessibility, Lefties is a force to be reckoned with, proving that fashion doesn't have to come with a high price tag to make a statement. In conclusion, the emergence of Lefties as Zara's response to the rise of Shein exemplifies the ever-changing landscape of the fast fashion industry.

KERAjet's Multi-Head Printers redefines textile design

■ SAS Enterprise



Figure: Developed product using KERAjet's Multi-Head Printer

The digital textile printing industry has undergone a significant transformation with the introduction of multi-head textile printers. KERAjet, a manufacturer of state-of-the-art textile printing machines, stands at the forefront of this revolution, offering versatile and efficient solutions for printing on a wide range of fabrics. This article delves into the numerous advantages of KERAjet's multi-head technology, exploring how it empowers businesses and unlocks new creative possibilities.

A Paradigm Shift in Printing: The Multi-Head Advantage

Traditional fabric printing methods often pose limitations in terms of flexibility, cost-effectiveness, and environmental impact. KERAjet's multi-head textile printers address these concerns by offering a multitude of benefits:

- **Unmatched Versatility:** Unlike single-head printers restricted to a specific ink type, KERAjet's innovative design allows for the installation of multiple ink types on a single machine. This translates to remarkable flexibility, enabling printers to cater to diverse printing needs without needing separate machines for each ink type.
- **Enhanced Customization:** The multi-head system empowers printers to tailor their printing processes to individual project requirements. Imagine seamlessly switching between pigmented inks for superior color vibrancy on cotton fabrics and dye-sublimation inks for polyester sportswear – all within the same machine. This level of customization fosters a more responsive printing approach, allowing businesses to cater to a wider clientele.
- **Cost-Effective Production:** Investing in multiple single-head printers for different ink types can be a significant

financial burden. KERAjet's multi-head technology eliminates this need, consolidating various printing capabilities into a single machine. This translates to reduced upfront costs, streamlined maintenance processes, and overall operational efficiency.

- **Eco-Friendly Printing:** The textile industry has faced criticism for its environmental impact. KERAjet's multi-head system promotes eco-conscious printing practices. By minimizing the number of machines required, it reduces energy consumption and waste generation associated with traditional printing methods. Additionally, KERAjet offers inks that comply with environmental regulations, further solidifying their commitment to sustainability.

State-of-the-Art Technology: The KERAjet Difference

KERAjet takes pride in its 100% Spanish-manufactured digital textile printing machines, renowned for their cutting-edge technology and commitment to quality. Here's a closer look at what sets KERAjet apart:

- **Advanced Engineering:** Each KERAjet model is meticulously designed to deliver exceptional performance. High-precision print heads, robust build quality, and user-friendly controls ensure consistent, high-quality results across various printing projects.
- **Tailored Solutions:** KERAjet understands that every textile printing business has unique needs. They offer a range of models with varying printing widths, resolutions, and speeds to cater to diverse production volumes and fabric types. This ensures businesses can select the ideal machine to optimize their workflow.
- **Unwavering Quality:** KERAjet prioritizes exceptional print quality. Their machines deliver vibrant colors, sharp details, and consistent color reproduction across the entire printing surface. This unwavering commitment to quality ensures that businesses can produce visually stunning textiles that meet the highest standards.

Unleashing Creativity: The Power of Multi-Head Printing

The multi-head technology offered by KERAjet goes beyond mere efficiency. It opens doors to a world of creative possibilities for designers and manufacturers:

- **Experimentation with Inks:** The ability to combine different ink types within a single print run fosters creativity. Imagine incorporating reactive inks for a luxuriously soft feel alongside pigmented inks for vibrant color accents – the possibilities are endless. This allows designers to explore unique visual effects and develop

innovative textile products.

- **Unmatched Design Flexibility:** With the ability to print on various fabrics, from natural fibers like cotton and silk to synthetic materials like polyester and nylon, KERAjet printers cater to a vast range of applications. This empowers designers to create textiles for fashion apparel, homeware, upholstery, and more, all within the same machine.
- **Streamlined Production Workflow:** The multi-head system simplifies the production process by eliminating the need to switch between multiple printers for different ink types. This reduces setup times and streamlines workflow, allowing businesses to focus on what matters most – creating exceptional textile products.

A Sustainable Future for Textile Printing

The textile industry is constantly evolving, and KERAjet is at the forefront of this change. Their multi-head technology offers a glimpse into a future of sustainable and efficient textile printing. Here's how KERAjet is shaping the future:

- **Reduced Environmental Impact:** By consolidating printing capabilities into a single machine, KERAjet minimizes energy consumption and waste generation. Additionally, their commitment to eco-friendly inks further reduces the industry's environmental footprint.
- **Optimizing Resource Utilization:** The multi-head system eliminates the need for multiple specialized printers. This not only translates to cost savings but also minimizes resource consumption in terms of manufacturing and ongoing maintenance. KERAjet's commitment to resource efficiency contributes to a more sustainable future for the textile industry.
- **Empowering Innovation:** KERAjet's technology fosters a culture of innovation within the textile space. As printing capabilities become more versatile and adaptable, designers and manufacturers are empowered to develop new and exciting textile products. This continuous innovation pushes the boundaries of what's possible, leading to a more dynamic and sustainable textile industry.

Beyond Efficiency: The Human Touch

While KERAjet prioritizes technological advancements, they recognize the importance of human expertise in the printing process. Their machines are designed to be user-friendly and intuitive, allowing skilled operators to maximize their potential. KERAjet also offers comprehensive training and support services, ensuring businesses can leverage their technology to its fullest potential.

Pashmina: Soft gold of Himalayas

■ Homayra Anjumi Hoque



Figure: A karigar embroiders a shawl (Source: Pashmina.com, shared by Varun Kumar)

Pashmina is a kind of fine cashmere wool known for its softness, warmth, and durability. It is obtained from the undercoat of the Himalayan goat, also known as the Changthangi or Pashmina goat, which lives at high altitudes in Nepal, India, and Pakistan. Pashmina is derived from the Persian word pashm, which means “wool”.

Pashmina is a luxurious fabric that demands painstaking artistry and talent to create. This finely crafted and buttery soft woolen fabric is sometimes considered the symbol of timelessness, meticulous craftsmanship, and cultural aristocracy. From heirlooms to luxury attires, this fabric is often found in a part of the luxury wedding trousseau.

An ancient story of the craftsmanship

The name of Mir Sayed Ali Hamdani was found in ancient history he was a sage from the Middle East, who came to Kashmir with 700 craftsmanship to adorn the Kashmiri beauty and spread holy messages. While traveling Changthangi mountains in Ladakh, he was awestruck by the amazing wool of the goats for its fineness. He made a pair of socks from the wool to give to the Kashmir's Sultan then. Thus the practice of this craftsmanship commenced from there which reigned in Kashmir since 13th century. After years, the people of the craftsmanship got scattered around the world including Armenian merchants and European aristocrats and this

legacy proved itself. For centuries, Europe was the largest owner of Pashmina accessories. French empress Josephine owned more than 400 Kani Shawls from Kashmir to supplicate her beauty with luxury. The Mughals from India had a great affinity with the Craft. Emperor Akbar had such a fondness for the Pashmina shawl that he gave it an admirable nickname, “parm-narm” meaning “supremely soft”.

Extracting the art of legacy from the Valley

The original pashmina wool is extracted from Changra goats, a rare breed of goats living below zero temperature in the valley. They develop thick wool on their bodies to combat the harsh winter. When summer comes, these goats shed off the thick wool against rocks and trees due to the heat in the air. Also manually combed out by the herders. The herders of the Changpa tribe manually combed out the wool. The wool is called ‘Cashmere Wool’. Then the wool is taken for the next procedure.

The first step is cleaning the Cashmere wool. There is a thorough cleaning of the wool to get all sorts of dirt out. After the process of cleaning, the next step is the procedure of Spinning. The womenfolk of the valley mainly spin Cashmere wool. The process is done on the wooden wheel/charkha called tinder in the local



Figure: Goats from Chanthangi Valley at Leh Ladakh Source: Pashmina.com

language. Here, the finest types of yarns are produced. The spun Cashmere yarn is taken to the local workshops/karkhanas to move ahead in the Pashmina Art. The next process is the weaving process. The weaving is the conversion of Cashmere yarn to fine Cashmere fabric.

Traditionally, spinning and weaving were done by hand, today fast looms are replacing that place. The intricate warps and wefts create the beautiful woven Cashmere fabric. Therefore, the most common pattern in weave is Chashm_e_Bulbul or the diamond weave. The weave is exclusively a masterpiece in itself.

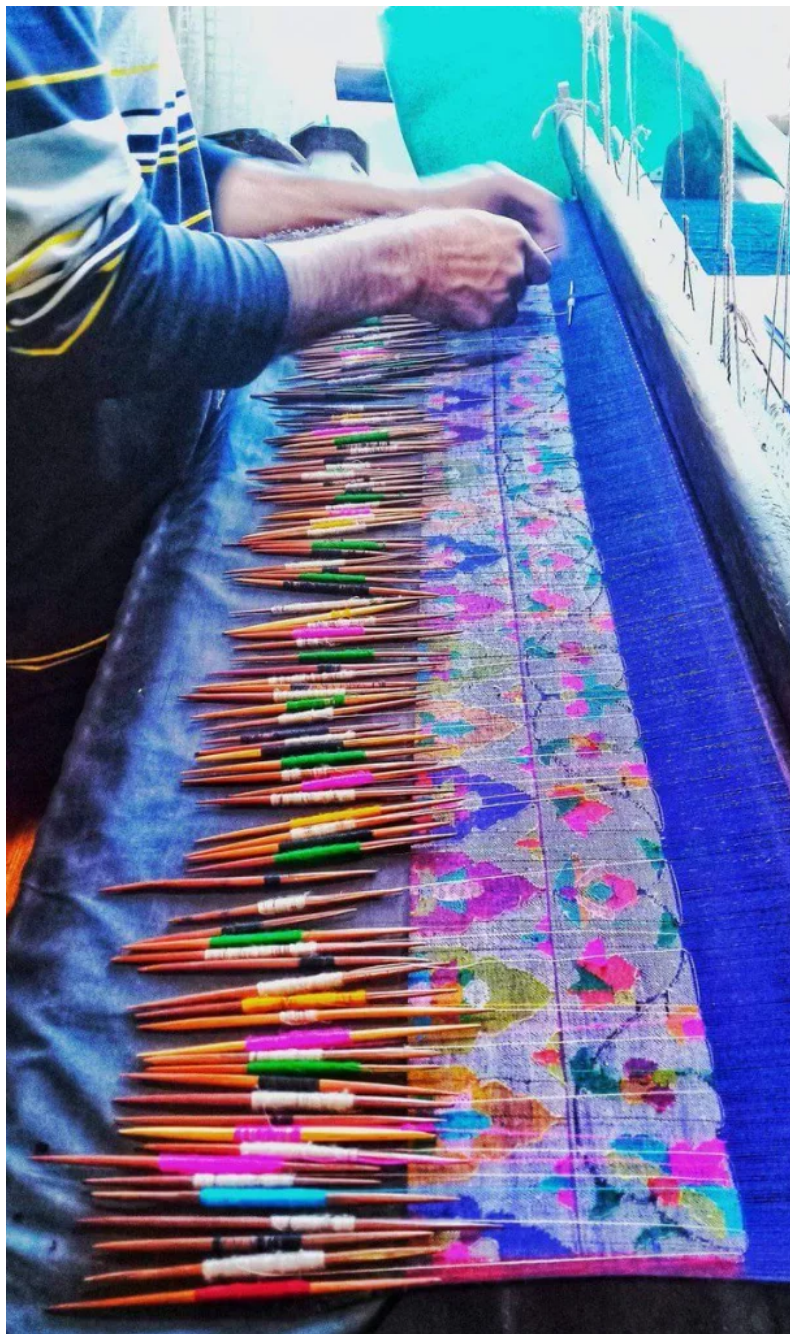


Figure: Weaving of pashminas Source: Fashion stories

The magic behind the aristocracy of weaving

Pashmina weaving is a complex and labor-intensive technique that involves numerous phases, each requiring a significant amount of talent and devotion. From harvesting the Changthangi goats' fleece to the final delicate stitching, the entire route takes an incredible amount of man-hours.

The first stage is combing the fleece from the whole Changthangi goat herd over a few months. This fleece, which consists of fine fibers, filth, coarse outer hair, and other organic components like perspiration and dandruff, is meticulously separated. Hand detailing the Pashm fiber is very time-consuming, with 50 grams requiring up to 8 hours to separate. After cleaning, natural oils and impurities are removed from the Pashm wool, which is then straightened. The spinning method uses a spinning wheel to turn Pashm into Pashmina yarn. The spun yarn is doubled, twisted again using the spinning wheel and wrapped on a big reel. These reels, with the coiled yarn, are used to make hanks from wooden blocks with huge dowels embedded in them. The hanks are then sent to the weavers. Weavers lay the warp with continuous strands of yarn. After determining the appropriate number of warp threads, they are raised, spread, and smoothed before being fitted to the warp beam. Each of these procedures necessitates the skills of professional artisans since any



Figure: Pashmina; a symbol of aristocracy Source: Times of India

error might affect the final product's fineness and delicate feel. The attention and accuracy required in each stage of Pashmina weaving help to create these stunning, sumptuous shawls.

This process unfolds across 12-15 stages, commencing with the collection of Pashm fiber and culminating in the creation of hand-woven Pashmina shawls. Once the Cashmere fabric is woven, it undergoes the delicate art of hand-dyeing. Subsequently, skilled embroiderers employ their expertise to elevate the plain shawl into a mesmerizing piece of delicate beauty, captivating all who behold it. It is the adeptness of craftsmen in these specific stages that imparts superior quality to hand-woven Pashmina shawls.

The best grade yarn is made from longer and finer Pashm fibers, with a desired fiber length of more than 5 cm for hand-spinning Pashm into Pashmina yarns. Yarn spun from longer strands is less prone to pilling, making it very desirable for weaving elegant Pashmina fabrics. Skilled artisans pay great attention to every stage of the process, resulting in Pashmina shawls known for their extraordinary quality and timeless elegance. Delve further into Pashmina's creativity and workmanship, as well as its significance in the luxury textile industry.

Why does a shawl require wool from 3 goats?

The extraction of the highest-grade Pashmina fiber typically yields approximately 35% of the total wool weight. For instance, if a goat produces 100 grams of pashm wool, only 35 grams of it can be utilized for spinning the exceptionally fine-quality yarn.

The shorter fibers, constituting roughly 50% of the total weight of the original wool, are categorized as second quality. These shorter fibers are employed in spinning slightly coarser yarns, which are subsequently dyed and utilized in the creation of intricate patterns on the shawls. This meticulous utilization of different fiber qualities contributes to the diverse textures and patterns found in exquisite Pashmina shawls.

Pashmina's most exquisite embroideries

Pashmina, known for its beautiful embroidery, has a variety of decorations that add to its elegance and value. Sozni stitching is the defining art of Kashmir and Pashmina, with other prominent embroideries including Tilla, Papier Mache, and Kantha.

“

Investing in design, adding contemporary touch to traditional designs, and incorporating motifs that resonate with today's generation is the way to push pashmina ahead as a craft. The process of making a GI pashmina shawl is local, slow, and sustainable – it's a luxury.

Varun Kumar

Strategies to achieve breathability in waterproof fabrics

■ Homayra Anjumi Hoque

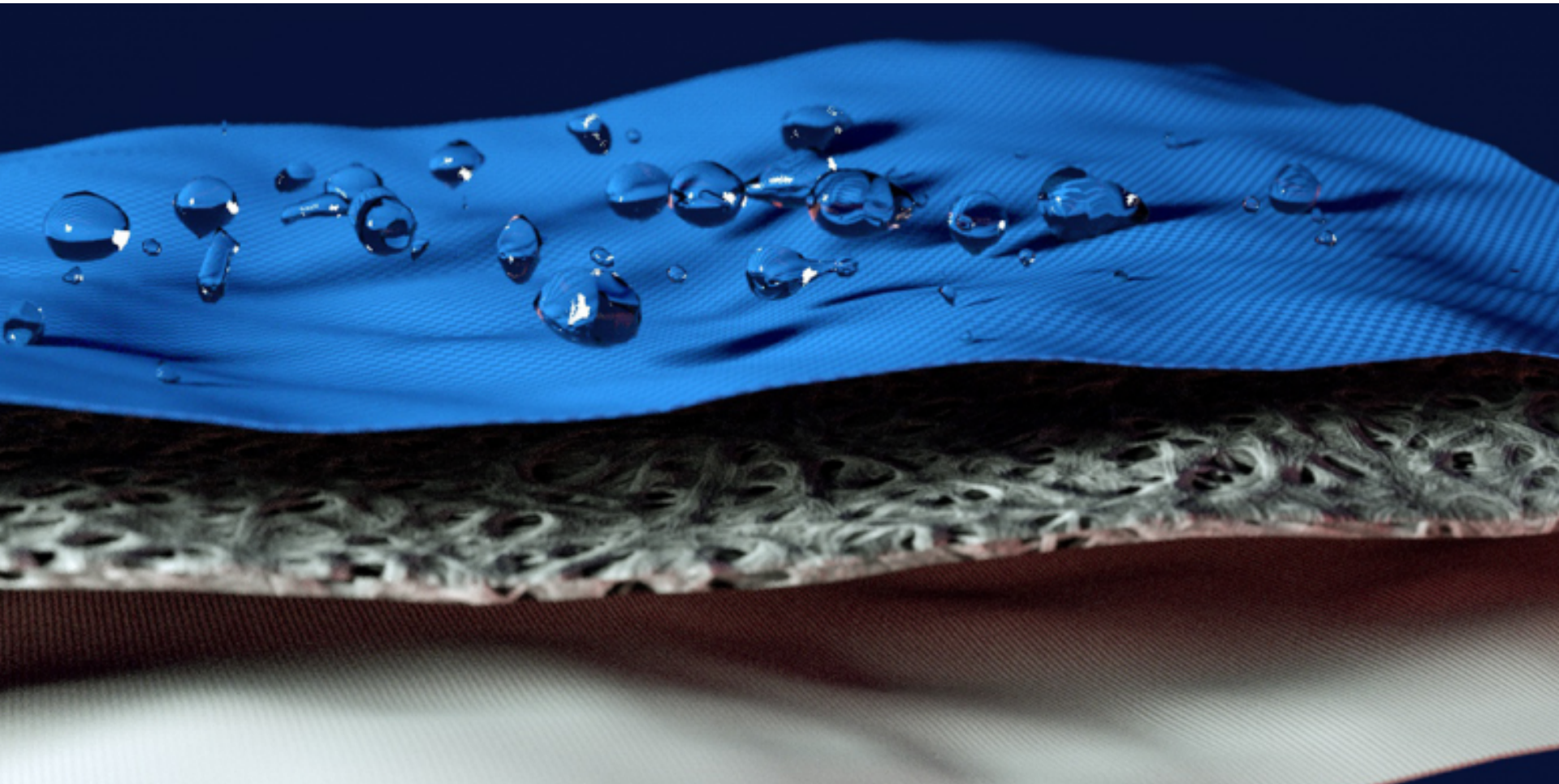


Figure: Breathable and waterproof fabric Source: eVent fabrics

Waterproof fabrics are essential for many outdoor activities, such as hiking, skiing, cycling, and more. They protect the wearer from rain, snow, wind, and cold, while also allowing the body to regulate its temperature and moisture. Most of the waterproof fabrics aren't equally breathable, some may cause discomfort, overheating, or dampness. Nowadays, fabric manufacturers are diving into exploring new techniques and methods of developing fabric waterproof and breathable at the same time.

Clothing and accessories have evolved significantly in today's health and fitness-conscious world. People are eager to devote their money to attain a highly efficient, well-toned physique that can work at high heart rates without endangering organs such as the lungs and heart.

This trend can be seen on social media platforms, where there is a rising interest in fitness-related material and education among all age groups. Beyond fitness, breathable waterproof materials have a wide range of

uses in professional gear, including clean rooms, military, firefighting, and agricultural wear. In the medical area, this technology may be used to create wearables like surgical gowns, dressings, and hygiene items.

To fulfill these demands, the fabric industry has advanced its technology by developing lightweight, breathable textiles that are also waterproof, allowing people to participate in physical activities for longer periods without changing their clothes.

Among the various materials used in these wearables and textiles, perfluoroalkyl substances (PFAS) have been extensively employed. This substance is a concern of the environment and human body. Organizations around the world like the UN, the Organization for Economic Co-operation and Development, Human Biomonitoring for Europe (HBM4EU), the European Environment Agency have raised alarms about PFAS pollutants. Brands like Gore-Tex®, The North Face®, and Sympatex® are

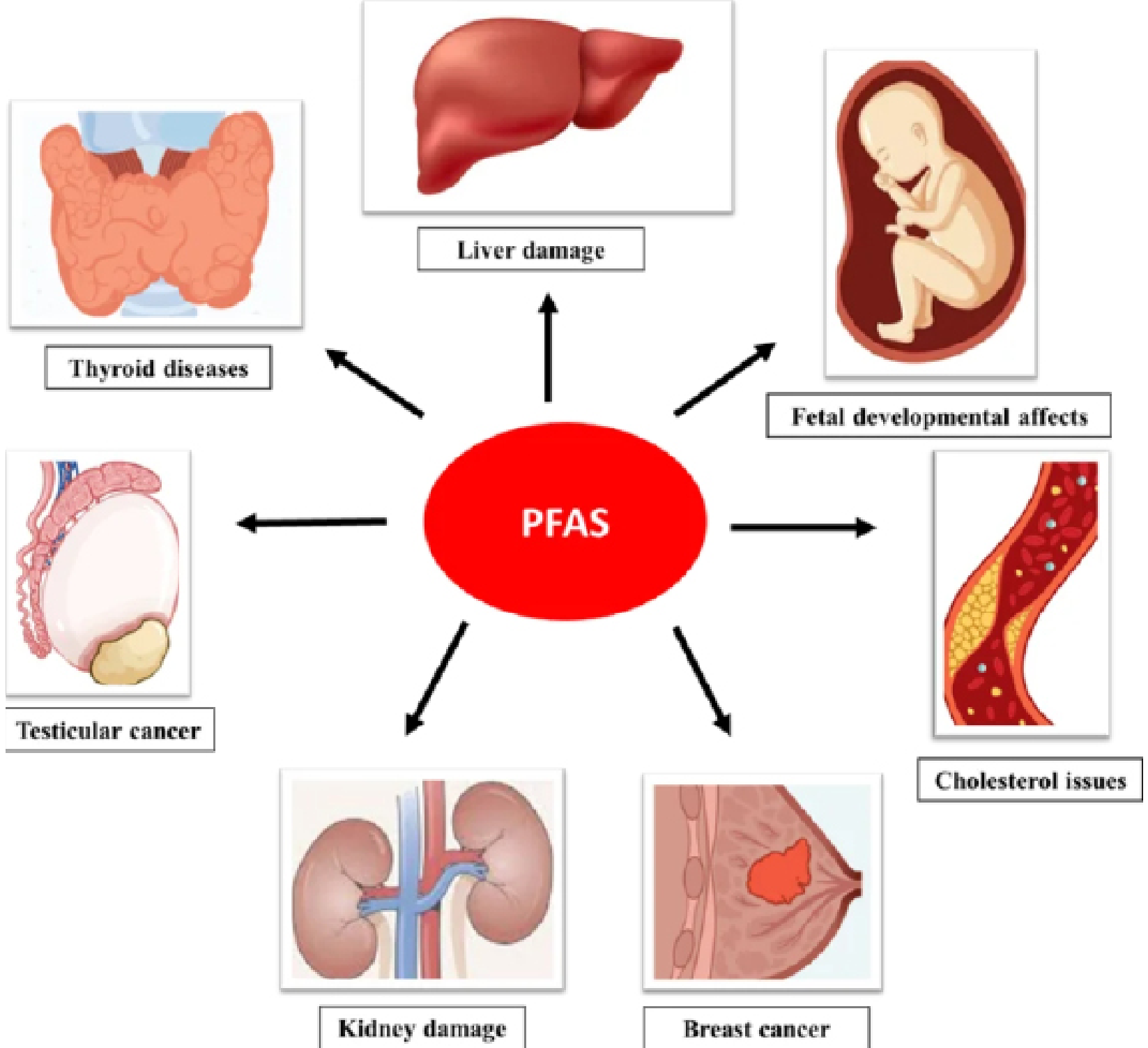


Figure: Health concern of PFA's Source: AZoM

offering a range of products considering this issue.

How do Breathability and waterproofness work on a fabric at a time?

There are three techniques for making a breathable and waterproof fabric:

- High-density woven textiles
- Coated fabrics and
- Laminated fabrics

The three-layered laminated fabric consists of a layer of liner fabric in direct contact with the porous/fibrous membrane, which serves as a barrier for bigger molecules (vapors) while allowing smaller molecules (air) to pass through.

The liner fabric acts as an internal garment, allowing tiny, aerated vapors to reach the membrane interface during sweating. The membrane's porous structure allows particles of varying sizes to permeate. The third layer of waterproof cloth keeps external water vapors out while enabling interior vapors to infiltrate and depart.

Material hydrophilicity/hydrophobicity, permeability,

porosity, mechanical strength, temperature resistance, and, finally, the attachment/lamination of each layer to the next are all important criteria to consider while designing these textiles.

Developing nano-fibrous membranes by electrospinning process:

When conventional membrane materials such as polytetrafluoroethylene (PTFE) and thermoplastic polyurethane (TPU) are layered, they have several disadvantages over one another. These include PTFE's expense and recycling problems, as well as TPU's lack of porosity, which results in poor water permeability and discomfort. The negative link between defensive capabilities and comfort makes it difficult to achieve both simultaneously.

To overcome the limitations of existing approaches, electrospinning has presented a revolutionary way for producing nanofibrous and porous membranes with higher efficiency, tailored nanostructures, and lower weight. The procedure is simple: it entails applying high voltage from a charged spinneret to a polymeric solution,

which deposits the polymer directly into a substrate, such as liner fabric.

With modern electrospinning technologies, large-scale continuous manufacturing of membranes laminated with textiles is possible. Recent research has concentrated on improving membrane features, such as vapor transfer and hydrostatic pressure (while avoiding ecologically toxic fluorine-based compounds) and increasing the producibility of very hydrophobic resistant membranes.

This entails controlling processing parameters (voltage, deposition distance, injection flow rate, spinneret diameter), environmental variables (relative humidity, temperature), and solution properties (viscosity, conductivity, surface tension). This allows for a mix of breathability and waterproofing qualities.

Features of the fabric integrating Breathability:

Breathability in textiles refers to the ability of water vapors to efficiently infiltrate through diffusion, allowing cooling through evaporation.

- Enhanced breathability allows more sweat from the skin to reach the fabric's surface, minimizing moisture accumulation within and guaranteeing user comfort.
- The moisture vapor transmission rate, which represents the rate at which vapors may penetrate through a square meter of fabric in 24 hours and is measured in grams per square meter per day, can be used to assess breathability.
- The breathability grade of a cloth determines its usefulness for specific applications. For example, while a low breathability level of 5000 g/m²/day may be suitable for fishing, climbing requires a minimum of 20000 g/m²/day.

Features of the fabric integrating Waterproofness:

Waterproofness refers to a fabric's capacity to keep water out. This denotes that the fabric should have enough porosity to reject water droplets or bulk while yet enabling water vapors to flow through.

Waterproofness is determined by hydrostatic pressure, which is measured in millimeters. The waterproof ratings also define the fabric's use. For example, materials with a rating of up to 10000 mm can endure mild rain, moderate snow, and pressure. Fabrics with values greater than 20,000 mm can withstand heavy rain, snow, and high pressure.

Materials that can be mostly used:

- Polyurethanes (PU)

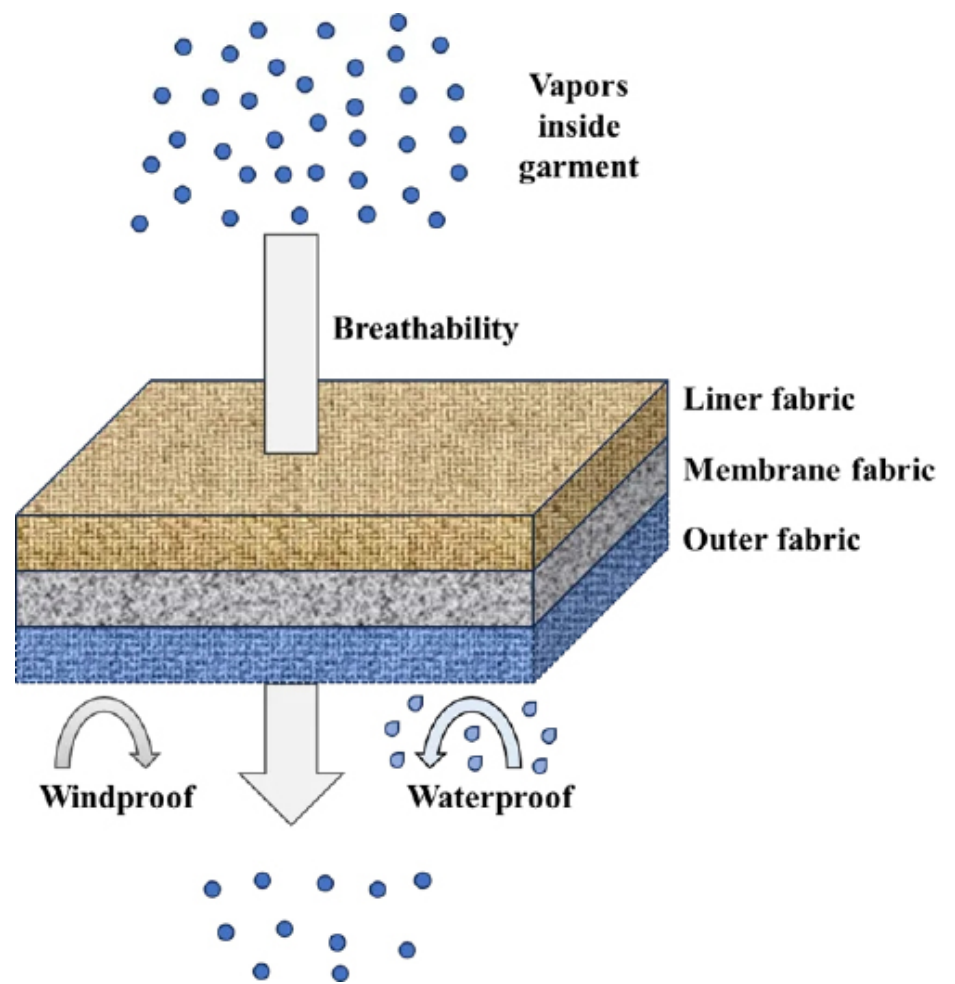


Figure: Scheme of a three-layered, breathable, waterproof fabric. Source: Inovenso

- Polyacrylonitrile (PAN)
- Polyvinylidene fluoride (PVDF)
- Polyethersulfone (PES)
- Polyimide (PI)
- Polypropylene (PP)
- Polymethyl methacrylate (PMMA)
- Nylon 6

Each of these polymers possesses unique capabilities that contribute to fabric formation. They are either combined among themselves or with other agents like carbon nanotubes (CNTs), silicon dioxide (SiO₂), and functional fluorine.

Applications:

- Hats, gloves, umbrellas, drysuits, tents, and other outdoor items.
- Construction materials, such as roofing materials, are lightweight, resistant to water and UV rays, and provide acoustic insulation.
- Medical uses include hygiene items, pillow coverings, bed covers, surgical garments, wound dressings, and others.
- Agricultural applications include tree shelters, packing for product transportation, and more.

Professional uses include protective military wear, utilitarian heavy-duty wear, cleanroom clothes, fireman gear, farmer apparel, and others.

Jackets, trousers, raincoats, swimsuits, rainwear, skiwear, footwear, trekking shoes, and camping boots are all examples of sportswear.

Gap & Ambercycle partner to apparel production with recycled materials

■ Hasan Mia

Gap Inc. (NYSE: GPS), a leading global apparel retailer, today announced a collaboration with Ambercycle, a circular materials science company, to incorporate recycled materials into its Athleta brand apparel. This partnership marks a significant step towards Gap Inc.'s commitment to reducing its environmental impact and advancing a more circular fashion industry.

Ambercycle's innovative technology transforms discarded polyester textile waste into cycora® regenerated polyester, a high-quality material that offers the same performance and durability as virgin polyester. This collaboration will enable Athleta to incorporate cycora® into its product line, reducing its reliance on virgin materials and lowering its overall environmental impact.

The Gap Inc. and Ambercycle collaboration is a testament to



Figure: Image courtesy of Athleta

the growing momentum behind sustainable fashion practices. As consumers become increasingly conscious of the environmental impact of their clothing choices, brands are under pressure to develop more sustainable products and manufacturing processes.

This partnership is a positive step towards a more sustainable future for the fashion industry. By working together, Gap Inc. and Ambercycle can help to reduce textile waste, conserve resources, and create a more circular fashion economy.

“

“As the demand for circular materials rises, we are delighted to collaborate with like-minded brands in the performance sector such as Athleta. Together, we are not only creating high-quality garments but also driving forward the circular fashion movement.”

Shay Sethi, CEO of Ambercycle

“

“Gap Inc. is committed to evolving our supply chain and product development process in ways that help us deliver innovative products for our customers while reducing our environmental footprint.”

Dan Fibiger,
Head of Global Sustainability
at Gap Inc.

“

“As a mission-driven, B Corp-certified brand, Athleta is committed to reducing our environmental footprint by using recycled materials like cycora®, which not only aligns with our values but also meets our uncompromising quality standards.”

Athleta CEO, Chris Blakeslee

PHAs: A biodegradable and recyclable alternative to polyester

■ M A Mohiemen Tanim



Figure: Polyhydroxyalkanoates (PHA) ©PhaBuilder

The textile industry, while a vital source of clothing and other necessities, faces a growing challenge – its environmental impact. Conventional polyester, a dominant material, is derived from fossil fuels and contributes significantly to plastic pollution. Polyhydroxyalkanoates (PHAs), a class of bio-based and biodegradable polymers, offer a promising solution for a more sustainable textile future.

The Environmental Woes of Polyester

Polyester is a versatile and durable synthetic fiber widely used in clothing, footwear, and other textiles. However, its environmental footprint is concerning:

- **Fossil Fuel Dependence:** Polyester is derived from petroleum, a non-renewable resource.
- **Microplastics:** Synthetic clothing sheds microplastics during washing, polluting waterways and harming ecosystems.

- **Landfill Accumulation:** Discarded polyester garments take centuries to decompose in landfills.

PHAs: Nature's Biodegradable Plastic

PHAs are a class of natural polyesters produced by a variety of bacteria. These microorganisms store PHAs as intracellular carbon and energy reserves.

Key Advantages of PHAs for Textiles:

- **Biodegradability:** PHAs decompose completely under appropriate conditions (industrial composting facilities or specific environments).
- **Renewable Resources:** PHAs are produced by fermenting sugars derived from plant sources like corn or sugarcane, making them renewable.
- **Versatility:** Different types of PHAs offer a range of properties, allowing for customization for specific textile applications.

Comparison of Properties between Polyester & PHAs

Feature	Polyester	PHAs
Source	Fossil fuels	Renewable resources (bacteria)
Biodegradability	No	Yes
Microplastics	Significant shedding	Minimal shedding
Recyclability	Limited	Potentially recyclable (research ongoing)
Strength & Durability	High	Can vary depending on PHA type
Water Resistance	High	Can vary depending on PHA type

Addressing Challenges and Advancing PHA Adoption

While PHAs hold immense potential, challenges are hindering their widespread use:

- **Production Cost:** Currently, PHA production is expensive compared to polyester.
- **Scalability:** Scaling up fermentation processes for large-scale PHA production needs optimization.
- **Material Properties:** Tailoring specific properties like strength and water resistance for different textile applications needs further research.

Despite these challenges, significant efforts are underway to overcome them:

- **Research:** Scientists are exploring ways to optimize fermentation processes, utilize cheaper feedstocks, and improve PHA properties through genetic engineering of bacteria.
- **Industry Collaboration:** Brands and manufacturers are collaborating with researchers to develop cost-effective PHA production methods and explore their integration into textile manufacturing processes.

The Future of PHAs in Textiles

The textile industry is gradually shifting towards more sustainable practices. PHAs offer a significant step forward, with the potential to replace a significant portion of polyester usage.

Here's a glimpse into the future possibilities:

- **Cost Reduction:** As research advances and production scales up, PHA prices are expected to decrease, making them more commercially viable.
- **Improved Properties:** Through targeted research, PHAs can be tailored to meet the specific needs of various

textile applications.

- **Circular Economy:** Developing efficient PHA recycling methods can further reduce environmental impact and create a circular economy for textiles.

Pioneering Brands: Embracing PHAs for a Sustainable Future

Several forward-thinking brands are actively exploring PHAs for their textile lines, demonstrating a shift towards eco-conscious practices. Here are a few examples:

- **Patagonia:** The renowned outdoor apparel brand has partnered with innovators like Genomatica to develop PHA-based materials for their products.
- **Marmot:** This outdoor gear manufacturer has incorporated PHA insulation into some of their jackets, showcasing the potential of PHAs for warmth retention.
- **Adidas:** The sportswear giant has collaborated with companies like BASF to explore the use of PHAs in their footwear, aiming to reduce their dependence on fossil fuels.

Ethical Considerations: Balancing Sustainability and Responsibility

While PHAs offer a promising solution, large-scale production requires careful consideration of its ethical implications. Here are some key areas to consider:

- **Land-Use Changes:** Conventional feedstocks for PHA production, such as corn or sugarcane, require significant land use. This could potentially lead to deforestation or competition with food production.
- **Sustainable Feedstocks:** Research into utilizing alternative feedstocks like waste materials or non-food crops can minimize land-use impact.
- **Biodiversity:** Large-scale cultivation of feedstocks can disrupt ecosystems and biodiversity. Sustainable farming practices and diversified crops can mitigate this risk.

Turkish yarn manufacturer Uğurlular embraces automation with ROBOspin robots

■ Akhi Akter



Figure: Uğurlular Textile Industry and Trade Inc. placed a major order for ROBOspin for their ring and compact-spinning machines.

Uğurlular Textile Industry and Trade Inc., a leading yarn manufacturer in Turkey, has placed a significant order for ROBOspin, the industry's first fully-automated piecing robot designed for ring and compact-spinning machines.

This move underscores the growing importance of automation in the textile industry, as companies like Uğurlular seek to enhance their competitiveness in a dynamic and cyclical market. By deploying over 30 ROBOspin units, Uğurlular aims to optimize production efficiency and gain a strategic edge.

What is ROBOspin?

ROBOspin is the name of a fully-automated piecing robot specifically designed for ring and compact-spinning machines used in the textile industry. It's manufactured by Rieter, a leading supplier of textile machinery.

Here are the key points about ROBOspin:

Function: It automatically repairs yarn breaks (also known as “ends down”) that occur during the spinning process, both while the machine is running and during doffing (removing full bobbins).

Benefits:

- **Increased productivity:** Operates 24/7, maintaining consistent machine performance and reducing downtime due to yarn breaks.
- **Reduced labor costs:** Lowers manpower requirements by up to 50% as it efficiently handles piecing tasks

previously done by human workers.

- **High piecing efficiency:** Achieves up to 95% success rate in repairing yarn breaks, minimizing production losses.
- **Preserved yarn quality:** Minimal contact between the robot and yarn ensures the yarn maintains its high quality.

Uğurlular, known for its commitment to innovation and technology integration, views this investment as a strategic step towards a successful future. Their sizeable order reflects the growing adoption of ROBOspin by spinning mills worldwide, signifying the transformative potential of automation in the textile industry.

“

Automation is increasingly becoming a decisive business factor for spinning mills. We are confident that Rieter's ROBOspin solution will significantly support our growth while maintaining the exceptional quality of our yarn.

Osman Uğurlu,
Member of the Board of
Directors at Uğurlular



What factors led to Renewcell's bankruptcy?

■ M A Mohiemen Tanim

The recent bankruptcy of Renewcell, a pioneering company in textile-to-textile recycling technology, sent shockwaves through the sustainability community. While the company's technology was lauded for its potential to revolutionize the textile industry, it ultimately succumbed to financial pressures. Renewcell's story serves as a crucial case study, offering valuable lessons for innovators, investors, and stakeholders in the realm of sustainable development.

A Promising Technology, Hindered by Business Model Shortcomings

Renewcell's technology addressed a critical challenge in the textile industry: textile waste. Their innovative process offered a way to transform used textiles into new, high-quality fibers, reducing reliance on virgin materials and mitigating environmental impact. However, despite the undeniable value proposition of its technology, Renewcell faced several hurdles in translating its environmental promise into financial success.

1. Misplaced Reliance on Fashion Brands:

One of the key shortcomings of Renewcell's business model was its focus on fashion brands as its primary customers. The company aimed to sell its recycled "Circulose" fibers to brands who would then incorporate

them into their garment lines. However, this approach proved problematic for a few reasons:

- **Brands are not directly involved in fiber sourcing:** Most fashion brands do not have expertise in sourcing raw materials. They typically rely on garment manufacturers to handle material procurement and cost optimization. This meant that Renewcell's product landed outside the decision-making sphere of its target audience.
- **Focus on Cost over Sustainability:** Within the competitive and cost-driven fashion industry, the higher price of recycled fibers compared to their virgin counterparts presented a significant barrier. Brands, often pressured to maintain low costs, were hesitant to adopt Renewcell's solution unless it offered a clear economic advantage.
- **Lack of Control in the Supply Chain:** By relying on brands, Renewcell lost control over the integration of its technology into the existing textile supply chain. This made it difficult to optimize logistics, track sustainability claims, and ensure the environmental benefits of their product were fully realized.

2. Geographical Misplacement:

Another strategic misstep was the location of Renewcell's facilities in Sweden. While offering access to renewable



I regret to inform that we have been forced to take this decision to file for bankruptcy. As we have a strong belief in the company's long-term potential, we have together with our advisors spent very substantial time and efforts into trying to secure the necessary liquidity, capital and ownership structure for the company to secure its future. As part of the negotiations, we have had intense dialogues with both current main owners, new investors and our banks, as well as other stakeholders. However, these discussions have not been successful. This is a sad day for the environment, our employees, our shareholders, and our other stakeholders, and it is a testament to the lack of leadership and necessary pace of change in the fashion industry.

Osman Uğurlu,
Member of the Board of Directors at Uğurlular

energy, this choice placed them far from the heart of the textile industry – Asia. This distance created several challenges:

- **Limited Access to Feedstock:** Renewcell's technology required a specific type of high-quality waste stream, primarily pre-consumer textile scraps generated during manufacturing. This type of waste was readily available in Asian manufacturing hubs, but less so in Europe. This limited their access to a consistent and reliable supply of their key input material.
- **Logistical Costs and Complexities:** Transporting both waste materials to Sweden and the finished "Circulose" fiber back to Asian manufacturers for integration into clothing production added significant logistical costs and complexities to the process. This further hampered their ability to compete with conventional virgin materials on price and efficiency.

Learning from Renewcell's Challenges: Building Sustainable Business Models

Renewcell's story, while unfortunate, offers valuable lessons for future endeavors in sustainable innovation. Here are some key takeaways:

- **Integration is crucial:** Sustainable solutions need to be integrated seamlessly into existing industries and economies. This requires understanding the existing business models, decision-making processes, and challenges faced by various stakeholders within the system.

- **Financial viability is paramount:** While environmental benefits are critical, sustainable innovations cannot solely rely on goodwill and philanthropy to succeed. They need to be financially viable, offering clear economic value propositions to all stakeholders involved.
- **Focus on the entire value chain:** A holistic approach is essential. Sustainable solutions should be designed with the entire value chain in mind, from sourcing to production, consumption, and end-of-life management. This ensures the environmental benefits are maximized and potential pitfalls are addressed proactively.
- **Collaboration is key:** Successful sustainable innovation often thrives on collaboration. Fostering partnerships with various stakeholders, including manufacturers, investors, and policymakers, can help navigate complex challenges and create a supportive ecosystem for new technologies.

The Way Forward: A Future for Textile Recycling in Asia

Renewcell's story doesn't negate the potential of textile-to-textile recycling. It highlights the need for a different approach. The future of this technology might lie in its integration within the existing textile supply chain in Asia. This offers several advantages:

- **Readily available feedstock:** Access to a consistent and plentiful supply of the required waste stream, readily



Renewcell textiles Credits: Renewcell by Alexander Donka

available in Asian manufacturing hubs, would significantly improve resource efficiency and potentially reduce costs.

- **Existing infrastructure:** Integrating with existing recycling infrastructure and expertise in these regions can leverage existing knowledge and skills, accelerating adoption and reducing the need for large-scale new infrastructure investments.
- **Market proximity:** Locating facilities closer to garment manufacturers can streamline logistics, minimize transportation costs, and improve communication and collaboration within the supply chain.

However, focusing solely on Asia comes with its own set of challenges:

Addressing social and environmental concerns: The textile industry in Asia, particularly in certain regions, faces criticism regarding labor rights and environmental practices. Integrating new technologies must occur within a framework that addresses and improves these aspects to ensure the overall sustainability of the solution.

Policy and regulatory frameworks: The effectiveness of sustainable interventions can be significantly influenced by government policies and regulations. Encouraging policies that incentivize and support the adoption of circular economy practices, such as tax breaks for recycled materials or extended producer responsibility schemes, can play a crucial role in creating a supportive environment for innovation in this region.

Emerging Solutions and a Call to Action

Despite Renewcell's struggles, the journey towards sustainable textiles continues. Several other companies are exploring similar technologies and approaches. Additionally, the concept of "extended producer responsibility" (EPR) is gaining traction, where brands are held accountable for the entire life cycle of their products, including their end-of-life management and potential for recycling. This shift in responsibility could incentivize brands to actively seek and utilize sustainable solutions like textile-to-textile recycling.

Moving forward, stakeholders need to learn from the lessons of Renewcell. Investors and innovators in the sustainability space must prioritize financially viable and scalable solutions that integrate seamlessly within existing systems. Collaboration across the entire supply chain, from fiber producers to garment manufacturers and brands, is crucial for success. Additionally, policymakers have a role to play in creating an enabling environment for sustainable practices through supportive regulations and incentives.

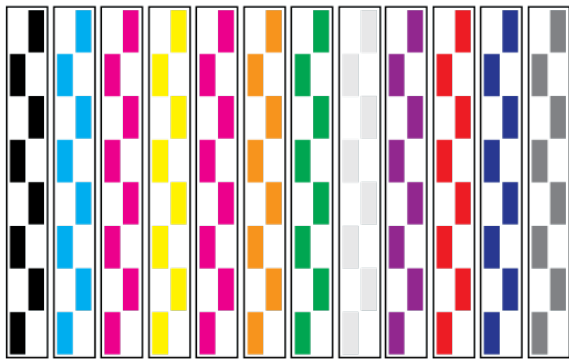
Renewcell's story serves as a potent reminder that while technological advancements are vital for a sustainable future, a holistic approach and a deep understanding of the existing economic and social landscape are equally crucial. By learning from their challenges and forging new pathways, we can pave the way for a future where sustainability and economic viability go hand-in-hand, not at odds, ultimately leading to a more responsible and circular textile industry

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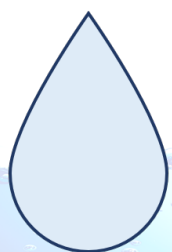
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Anti-greenwashing law calls for transparency and accountability

■ Shafiun Nahar Elma

Apparel sector-related buzzwords like environmentally friendly, natural, biodegradable, sustainable, or organic will no longer be approved without any legal documents and certified proof. Worldwide customers are aware of sustainability, are concerned about sustainability, and seeking ethically sourced products, manufacturers need to be secure about the quality and ensure their loyalty to the consumer.

Now the bright side is the EU parliament has voted overwhelmingly for a new law banning greenwashing and misleading product information, putting a stop to generic and unsubstantiated environmental claims. In January 2024, the Truth in Labelling for Recyclable Materials, signed by Gavin Newsom 2021, the governor of California, will come into effect. This legislation aims to prevent misleading recycling claims on non-recyclable products and packaging.

Purpose & Goal

European Union drives away a vision for Eco-friendly, organic, authentic, sustainable product manufacturing and contributes to the global circular economy, the consumption of limited resources. European Union leading the way with its strategy for sustainable and circular textile products which was established in March 2022, it includes the starting of eco-design requirements under the Eco-design for Sustainable Product Regulation (ESPR), and sustainable product design, which was agreed in December 2023. EU has 230 sustainability labels and 100 green energy labels, each having individual degrees of transparency, it is very difficult to develop and maintain standardized and transparent labeling practices to assist the consumer.

Data & Report

European consumers, particularly in countries like Germany and France, are increasingly inclined towards sustainable products. Although major brands like H&M invest heavily in eco-conscious lines, the Fashion

Revolution report of 2023, reveals a just 2% of fast fashion brands use 100% recycled materials, highlighting the need for stringent regulations. The EU takes a proactive stance with the Strategy for Sustainable and Circular Textiles, striving for eco-friendly and authentic manufacturing. Despite progress, challenges persist, with 53% of green claims deemed misleading and 40% lacking concrete data.

Greenwashing Directive

Will Troutman, a partner at Norton Rose Fulbright; states that this is a deliberate action taken in California to combat deceptive advertising practices related to environmental claims and also added that they are currently anticipating the release of state guidelines that will clarify which materials can be recycled. On January 17, 2024, the European Parliament formally endorsed their provisional agreement with the Council on the Directive Empowering Consumers for the Green Transition through Security and Protection against Unfair and Unethical Practices which known is “Greenwashing Directive”.

CSR & Others

The SEC, UK FCA, and EU make substantial amendments to regulations, with the US Federal Trade Commission set to update their Green Guides in 2024. The EU Strategy for Sustainable and Circular Textiles aims to promote long-lasting, recyclable goods by 2030, emphasizing social and environmental justice. The Greenwashing Directive, endorsed by the European Parliament, reinforces consumer protection by curbing unfair and unethical practices.

The good news is That European legislation aimed to regulate the “Digital Product Passport” for garments products expected to be implemented in the year 2026, would provide information with greater transparency regarding product materials, Green labeling helps to meet consumers’ demand.



Ukrainian military tests fabrics for an Anti-Thermal imaging cape

■ M A Mohiemen Tanim

The Ukrainian Ministry of Defense is developing an anti-thermal vision cape to improve soldier invisibility against enemy night vision and thermal detection.

The Ukrainian Ministry of Defense is testing fabrics for a revolutionary new piece of equipment: an anti-thermal imaging cape (poncho). This innovative garment is designed to absorb infrared radiation, making soldiers virtually invisible to enemy night vision and thermal imaging devices.

Developed by the Central Department of Development and Material Support,



Figure: "The goal is to disguise military": Ukraine tests fabrics for anti-thermal imaging poncho

Key points:

- » The cape is designed to absorb infrared radiation emitted by the body, making soldiers invisible on thermal imaging devices.
- » Five fabric samples are undergoing testing, to find a material that is flexible, durable, and effective in various environments.
- » The cape needs to be resistant to weather conditions, and sunlight, and blend in with the surrounding terrain.
- » This development is part of ongoing efforts by the Ministry to improve the clothing and equipment provided to the Ukrainian military.

the cape holds the potential to significantly improve the camouflage capabilities of Ukrainian troops. Five different fabric samples are currently undergoing rigorous testing, to find a material that is:

Infrared-absorbent: This is crucial for masking the wearer's body heat signature, which is what thermal imagers detect.

Low thermal conductivity: This prevents heat transfer from the body to the environment, further reducing the wearer's thermal footprint.

Durable and adaptable: The material needs to be flexible, weatherproof, and resistant to wear and tear from various environmental conditions. Additionally, it should not degrade under sunlight exposure.

Effective camouflage: The fabric needs to blend in with the surrounding terrain, providing visual concealment in addition to its thermal masking properties.

Deputy Minister of Defense Vitaly Polovenko highlighted the project's significance, stating, "Our goal is to disguise the military and equipment from the enemy as reliably as possible."

This development is part of a larger effort by the Central Department to improve the quality and functionality of Ukrainian military clothing. Since the beginning of 2024, they have already approved six improved clothing items, including winter gloves, jackets, insulated pants, and thermal wear.

The testing of the anti-thermal imaging cape is ongoing, and its successful completion could provide a significant advantage to Ukrainian soldiers in the field.

FabBRICK is transforming textile waste into eco-friendly bricks

■ Asif Iqbal

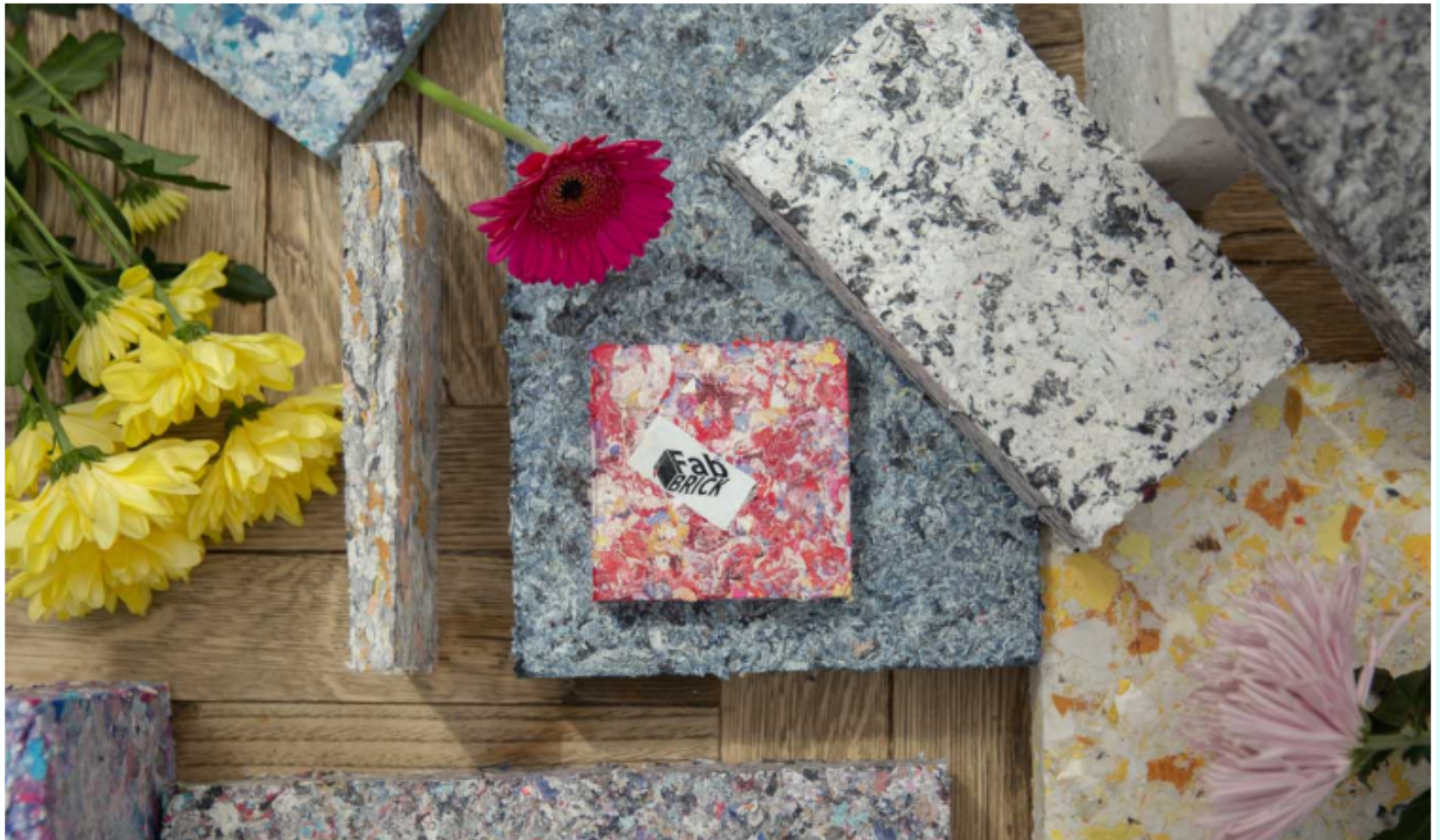


Figure: Clarisse Merlet, founder of FabBRICK demonstrates the potential of waste coming from the textile industry - ©Joséphine Brueder

The world is changing, and so is the way we build things. Traditional construction materials have been causing environmental and resource problems, but now there are new, exciting alternatives on the rise. One of these innovative materials is FabBRICK, a brick made from waste fabrics. Let's take a closer look at this game-changing product and how it's making a positive impact on the construction industry.

FabBRICK was created by a young architect named Clarisse Merlet in 2019. But the idea for this revolutionary product started back when she was still a student. In 2017, Clarisse realized that the construction industry was harming the environment and using up a lot of energy. She decided to explore different ways of building, focusing on materials like plastic bottles, cardboard, and plastic cups that are often thrown away but could be used in construction. As she researched, she discovered that the textile industry was also producing a lot of waste. This led her to the idea of using textile materials in construction, starting with cotton because of its great acoustic and thermal insulation properties.

FabBRICK works with other businesses to tackle textile

waste. Their main aim is to show the importance of recycling waste and challenge companies to cut down on their waste production. By taking textile waste from these businesses, FabBRICK creates new design products and sends them back. This helps the companies understand the amount of waste they generate each year and encourages them to make positive changes in how they handle their waste.

In simple terms, FabBRICK is a type of brick that can be used not only as standalone units and partition walls but also as integrated components in various products like chairs and tables. These bricks are made through a detailed process that starts with discarded clothes being brought to a Parisian studio. The clothes are sorted by colour, and the customer gets to choose from a range of sizes and hues for their project. The studio doesn't use traditional dyeing methods, instead relying on the natural colors of the textiles themselves.

From Textiles to Bricks

Imagine a world where old textiles are transformed into sturdy bricks for construction projects. This is exactly what happens at FabBRICK. The process begins with

shredding textiles into fibres of different lengths – 7mm, 20mm, and 40mm. These fibres are carefully chosen based on the specific needs of each project.

Next comes the crucial step of creating 100% ecological glue. This glue is mixed by hand with the fibers to ensure that each resulting brick has a uniform density. This step is important to make sure the bricks are strong and durable.

Once the glue-fibre mixture is ready, it is manually incorporated into a special machine. This machine then compresses the mixture for 30 minutes inside a mould. After this, the bricks are left to dry for 10 to 15 days in the open air. This drying process is essential to make sure the bricks are solid and ready for use.

After the drying process is complete, the bricks are ready to be used for construction. FabBRICK offers different models of these eco-friendly bricks for various projects.

Wall covering: Looking to add a unique touch to your walls? FabBRICK has got you covered with their handmade coating products that measure 20 x 10 x 2.5 cm. These products not only create a different atmosphere in your interior space but also highlight the potential of waste textile products.

Collaborations to utilise waste: Aside from selling and marketing their products, FabBRICK also offers a service to procure textile waste needed for their projects from collaborating brands. By doing so, these brands show their commitment to sustainability by utilising leftover fabrics

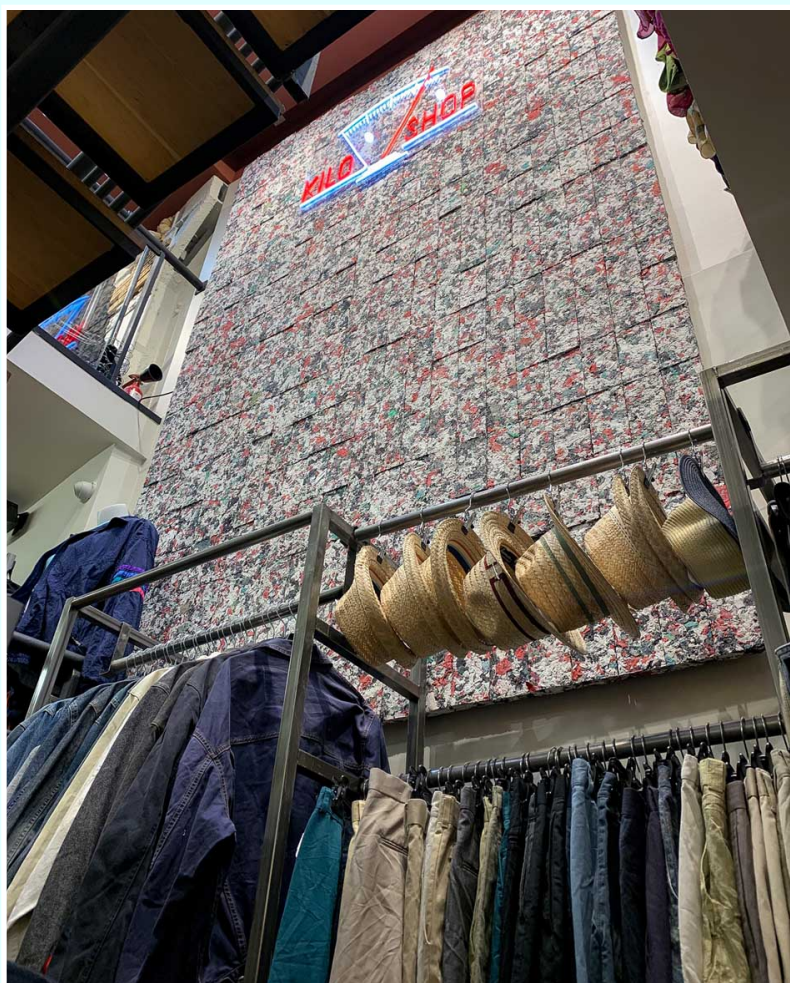


Figure: Kilo Shop: 90 kg of recycled textiles to create a wall in the brand's colors in the staircase of their new boutique on Boulevard Saint Germain in Paris.



FabBRICK

and also benefit economically from these collaborations.

Furniture and design products: Using recycled textiles, FabBRICK offers a range of design products for interiors. From lamps to tables, seats to decorative objects, FabBRICK has an e-shop where you can make individual purchases based on your desired texture and design preferences.

FabBRICK is on a mission to reduce waste and save resources by using textile waste to create eco-friendly bricks. They are working towards becoming a sustainable alternative to traditional building materials and are already making waves in the industry.

One of FabBRICK's goals is to establish factories in different regions to make their products more accessible. By using textile waste that is abundant in each area, they can create bricks while minimizing energy use and preserving regional resources.

Big names in the fashion industry, like Levis and Decathlon, have taken notice of FabBRICK's environmentally friendly approach. These companies are not only customers but also suppliers of raw materials for the bricks. This collaboration is helping to reduce textile waste and promote sustainability.

Impact and Solutions

Europe produces millions of tons of textile waste each year, with only a small percentage being recycled. FabBRICK is tackling this issue by reintegrating textile waste into daily life through their brick production. Since 2018, they have created over 40,000 bricks, representing 12 tons of recycled textiles.

FabBRICK offers workshops to meet the demands of customers and continue to diversify their production. This hands-on approach allows them to cater to a variety of customer profiles and materials, further



Figure: Lurex mesh boots and spectacles chrome frame at F/W 24-25 Source: PureWow

Fashion trend for F/W 2024-25: Bohemian meets punk

■ Homayra Anjumi Hoque

The fashion world always evolves, but some styles never go out of fashion. For the fall/winter 24-25 season, women's wear welcomes fresh takes on bohemian and punk, two iconic movements that have influenced generations of designers and consumers. From floral prints and fringe details to leather jackets and metal studs, these trends offer a mix of romance and rebellion, nostalgia and innovation, comfort and edge. These trends are interpreted by different brands, celebrities, and influencers, now these trends are going like everyone can incorporate them into their wardrobe.

A recent trend forecasting firm brought an analysis into the spotlight about this season. Melissa Moylan, Fashion Snoops VP and creative director of women's wear, described the drivers of the forecasting in a webinar hosted by MMGNET Group (formerly known as Informa Fashion Markets).

According to this webinar, the season can be broken down into three main themes: Sentimental

- Immersive
- Sentimental
- Chaos and fragile

Sentimental; Sensational comfort with vibrancy

One of the emerging trends for the fall/winter 24/25 women's fashion is sentimental, a mood that evokes nostalgia, romance, and comfort. This trend reflects the desire for emotional connection and self-expression in a turbulent world.

"We've seen indications of this in the post-pandemic reality with more interest in upcycling," Moylan said. "We also see an interest from consumers wanting to extend the value and lifespan of their goods by wanting to repair them, and additionally using or leveraging recycled materials." Meanwhile, brands are looking back to the origins of everything from the raw materials they source to artisan techniques that bring a sense of charm to fashion. "We're embracing some of the richness and skills of the past to carve our way forward," Moylan said.

Core concepts of this theme

- These sentiments have resulted in a new type of bohemian maximalism, characterized by ornamented surfaces, fresh takes on classics, and a concentration on craftsmanship.

- Warmer tones such as baked pear, rose, and oxblood balance out saturated colors like dusk, purple, indigo, and inky blue.
- Embellishments and appliques enhance the originality of a garment.
- Tapestry jackets, intarsia sweaters, and patterned blazers are all key products.
- According to Moylan, the movement creates opportunities for designers to integrate deadstock or recycled materials. So, Patchwork denim is a simple way for manufacturers to get into upcycling.

Immersive; Imagination is check-marked into reality

Immersive gives fashion a sleeker tech tone, inspired by artificial intelligence and how technology pushes imaginations into new dimensions.

“It’s about a new state of existence that’s neither physical nor abstract,” Moylan said. “There is more flexibility in our design.”

Core concepts of this theme:

- Denoted by “bizarre fantasy”, this theme is shaped by a color palette of hyper-bright greens and pinks, darker cosmic blues or deep bottle greens.
- Highlight products include slinky column dresses, glittering leggings, and scuba-inspired crop tops with surreal fabrics and patterns.
- The fashion also includes Y2K mainstays like tie-



Figure: F/W 24-25 Women’s Wear Welcomes Fresh Takes on Bohemian and Punk Source: Yahoo



Figure: Punk vibe in scuffed denim and glittering shoes Source: Sourcing.

front shirts with bell sleeves, low-rise cargo pants, and bomber jackets with practical elements.

- Accessories such as Lurex mesh boots, spectacles with chrome frames, and jewelry with sphere-shaped pendants complete the futuristic look.

Chaos and fragility; where consumers live in uncertainty:

A theme that reflects “ongoing ambiguity” and how consumers are supposed to live with uncertainty- is the mindset that inspires “Chaos”.

“As the world pushes us to be more comfortable with the unknown, it cultivates a never-ending transformation and innovation,” Moylan said. “The anarchy of the universe could be something that we find unnerving but also liberating. So, it almost expands our point of view and disrupts our outlook,” she added. Core concepts of this theme:

Chaos’ style is represented in mended surfaces, ruptured textures, fractured structures, and a more industrial approach to crafting than Sentimental’s.

Distressed denim, scuffed leather, and plaid provide a punk vibe to the motifs.

Key pieces include leather and denim maxi skirts, cropped turtleneck shirts, and cropped jackets, particularly denim-inspired versions.

Openwork sweaters, cargo trousers made of grittier materials like leather, and moto jackets are also present, giving the tale a cool ’90s vibe.

The cool-girl vibe carries into accessories like acid-treated denim boots, glasses with red-tinted lenses, and oversized belts adorned with grommets.

AiDLab develops AI-powered color-shifting textiles to reduce textile waste

■ Saiful Islam Saad



Figure: Colour-changing AI textile used in fashion brand's Milan show

A research team of Hong Kong-based Laboratory for Artificial Intelligence in Design (AiDLab) has developed a colour-changing textile embedded with a tiny camera and making use of artificial intelligence. This innovative technology has the potential to significantly reduce clothing waste by offering consumers a wider range of colour choices.

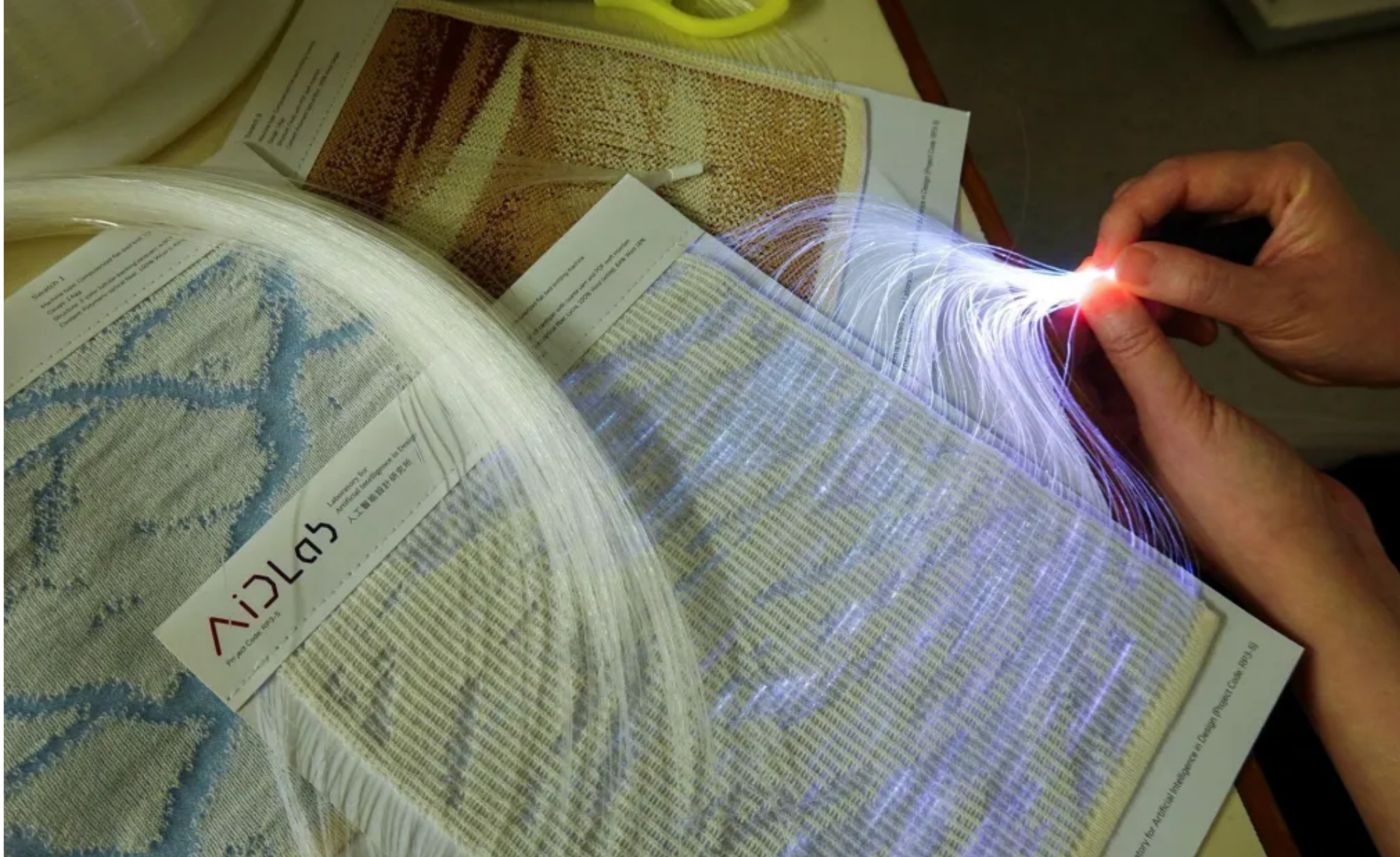
Artificial intelligence (AI) has taken off in a number of industries, with the potential to upend companies through innovative technology, more efficient operational processes, and access to industry and consumer insights that could give them a competitive advantage. Fashion waste has many different and significant effects. Garbage disposal of clothing in landfills causes pollution of the soil and water, as well as greenhouse gas emissions. In addition, the manufacturing of textiles uses a lot of energy, water, and chemicals, which further depletes natural resources and increases pollution.

The fashion business produces up to 100 billion clothes annually. And every year, landfills get up to 92 million tons of clothes. Globally, only 20% of textiles are collected for

recycling or reuse. Plastic really makes up about 60% of all garment materials. The US generates just over 17 million tons of textile MSW (Municipal Solid Waste) per year, according to the most recent EPA data. That is around 112lb per person, according to the latest census statistics. In the US, 66% of all unwanted clothes and textiles are landfilled. Less than 15% are recycled. The rest (19%) are burned.

This AI integration with the futureproof modules can effectively try to reduce fashion waste and environmental clutter.

With a few simple movements, consumers will be able to effortlessly change the color of their clothing in the future, promoting sustainability by increasing the usefulness and lifespan of wardrobe pieces. The material, which is made of strands derived from textiles and polymeric optical fibers (POFs), has the amazing capacity to light up in a variety of hues. A thumbs-up in front of the fabric, for example, causes it to appear vivid deep blue; a heart shape causes it to appear pretty pink. An “OK” sign produces a soothing green glow in a similar manner.



Not only may users alter the hue of predetermined motions, but they can also do it through a smartphone app. The camera's ability to recognize and react appropriately to each user's motions is made possible in large part by artificial intelligence algorithms.

The head of the Polytechnic University's School of Fashion and Textiles research team, Professor Jeanne Tan, emphasizes the POFs' recyclable nature. These fibers, which are made of polymethyl methacrylate, are easily removed from the textile's yarn structure, making recycling procedures more effective. This emphasis on recyclable materials is in line with textile technology's rising emphasis on sustainability.

According to Professor Jeanne Tan of AiDLab, the fabric also has a pleasant hand feel and a soft, comfortable texture that is similar to traditional knitted materials. The effective soft feel of the fabric is important for the longer use of the product with retaining a higher value proposition.

Apart from the stated benefit about environmental hazard minimization, these innovative textiles can also be used in several other major areas for a minimalistic standpoint. A distinctive and dynamic experience is provided by the ability for users to change the color or pattern of their clothes or accessories to fit their mood, preferred look, or the situation.

As an example, they can function as temperature indicators, warning wearers of changes in their environment. They can be used in healthcare to regulate the temperature in medical garments or to monitor

wounds. Color-changing textiles provide a unique selling proposition and a means for businesses and designers to set their products apart in a crowded market. They have the power to draw in customers, pique their interest, and produce unforgettable moments. Engaging design experiences are made possible by these textiles. Users can actively interact with the cloth by adjusting its color or pattern in real-time via embedded sensors or control systems, encouraging creativity and engagement.

With hopes of going public, AiDLab sees a time when this cutting-edge technology is available to a larger audience. The technology is currently on display in exhibits at a number of locations in Hong Kong, including malls. It is progressing toward useful uses that have the potential to completely change how we engage with and view textiles in our daily lives. Although there has always been debate over the application of AI in creative industries like textiles, it is crucial to approach these breakthroughs cautiously and balance any potential drawbacks against their advantages.

AiDLab envisions a day when this state-of-the-art technology will be accessible to a wider audience, with the goal of going public. Currently, the technology is on show at exhibits at several Hong Kong locales, including shopping centers. It is progressing toward useful uses that have the potential to completely change how we engage with and view textiles in our daily lives. Although there has always been debate over the application of AI in creative industries like textiles, it is crucial to approach these breakthroughs cautiously and balance any potential drawbacks against their advantages.



Figure: MIT's FibeRobo

MIT's FibeRobo: A shape-shifting, cost-effective fiber offers endless possibilities

■ Saiful Islam Saad

A programmable, actuating fiber developed by an interdisciplinary team of MIT researchers known as 'FibeRobo', the fiber contracts in response to an increase in temperature, then self-reverses when the temperature decreases, without any embedded sensors or other hard components. As such it could enable designers to easily incorporate actuation and sensing capabilities into a wide range of fabrics for numerous applications.

Materials that form shapes at room temperature, melt away when heated, and then resurface when cooled are known as morphing materials. Scientific research on materials that may autonomously undergo reversible shape changes in response to environmental stimuli is expanding quickly. These materials may find use in a wide range of industries, including flexible electronics, soft robotics, clean energy harvesting, and sensors. These morphing materials hold great promise for biological applications by enabling the creation of materials that, at body temperature, take on preprogrammed shapes.

The goal of the MIT researchers' project was to create a fiber that would be able to function silently, undergo significant morphological changes, and work with

standard textile production processes. They employed a liquid crystal elastomer (LCE) to do this. Liquid crystal elastomers (LCEs) are active soft matter-based materials with strong stimulus responsiveness and reversible, large-shape morphing capabilities. LCEs have demonstrated broad and growing applications in soft robotics, wearable devices, artificial muscles, and optical machines.

As the LCE material heats up, the crystal molecules fall out of alignment and pull the elastomer network together, causing the fiber to contract. When the heat is removed, the molecules return to their original alignment, and the material to its original length, Forman explains. By carefully mixing chemicals to synthesize the LCE, the researchers can control the final properties of the fiber, such as its thickness or the temperature at which it actuates. 'What we're doing here is we're taking the same idea of what happens when a textile can change shape, but trying to see if we can find new utility in it. And so what we've developed here is a reconfigurable fiber. So this fiber shrinks when heated, but when you cool it down, it reverses back to the original length.' This is taken from the video of the FibeRobo introduction. The resulting fiber can shrink up to 40% without bending, act at skin-

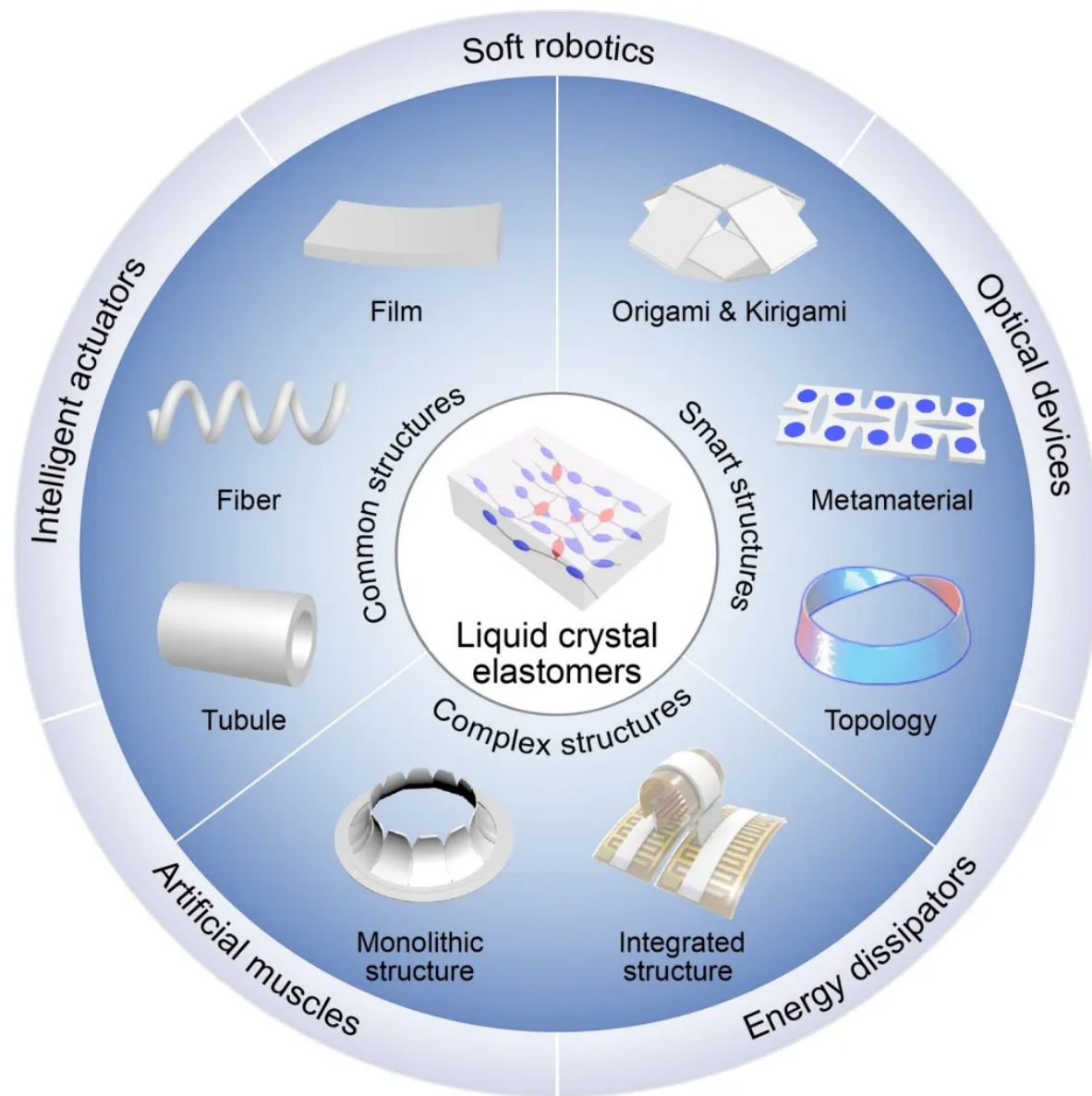


Figure: Liquid Crystal elastomer structures and a topological figure of understanding. Credit: Structure-induced Intelligence of Liquid Crystal Elastomers, Zhen-Zhou Nie, Dr. Meng Wang, Prof. Hong Yang.

safe temperatures (the skin-safe variant contracts up to about 25%), and be manufactured for 20 cents per meter with a low setup cost—roughly 60 times less expensive

than shape-changing fibers on the market today. The fiber can be utilized in nonindustrial activities such as hand weaving or manual crocheting, as well as industrial sewing and knitting machines, without the need for any process adjustments.

MIT researchers presented a variety of FibeRobo applications, including an embroidered sports bra that tightens when the wearer begins to exercise. The researchers hope to modify the fiber’s chemical makeup in the future to make it recyclable or biodegradable. Additionally, they aim to simplify the polymer synthesis procedure so that anyone lacking experience in wet labs can complete it independently.

A lot of future applications can be generated in the huge world of textile industry in this fourth industrial revolution era. Such innovative textiles can try to help mitigate fashion intelligence throughout the world. Shape-shifting fibers and morphing fabrics offer designers opportunities to explore innovative design concepts and push the boundaries of traditional materials and techniques. They enable the creation of products with unique functionalities, aesthetics, and user experiences. Hoping to see more collaborations of such innovative fusion between technology and the fashion world.

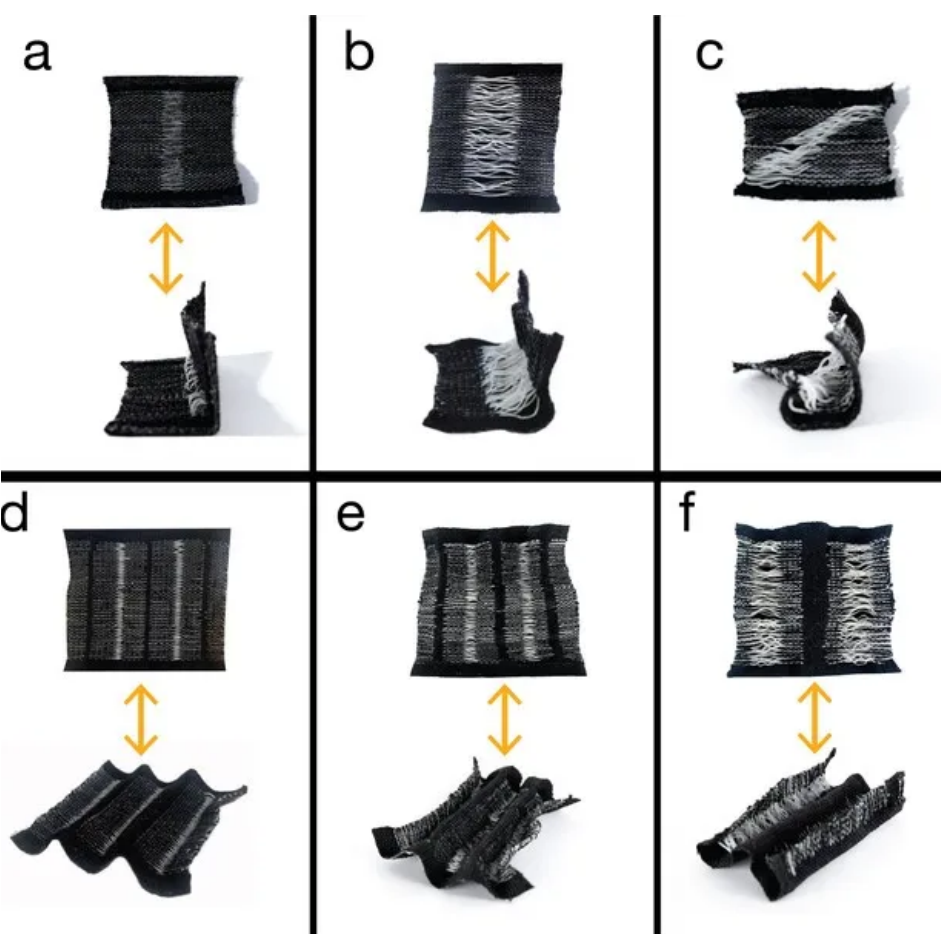


Figure: The fibre contracts in response to an increase in temperature, then self-reverses when the temperature decreases

Men's fashion trend 2024 showcased at Paris & Mila

■ Homayra Anjumi Hoque



Figure: FW24 Menswear; Glitter and glamour (from left): Comme Des Garçons Homme Plus, Dior, Gucci, Balmain Source: Launchmetrics/spotlight

Masculine fashion is undergoing a radical transition in 2024, as more and more men embrace gender-neutral, self-expressive, and sustainable styles. From bold blazers and slim-fit denim to mesh tops and short hemlines, the trends of 2024 challenge the conventional norms of menswear and celebrate diversity and individuality. The men's fashion weeks in Paris and Milan have showcased a diverse range of styles and influences for the Fall/Winter 2024 season. From political statements to quiet luxury, from extravagant glamor to grunge aesthetics, the designers have explored different facets of masculinity and identity through their collections.

Streetwear was once the undisputed king of the fashion scene, but this time it has taken a step back. Winter sandals were strutting their stuff, cozy garments embracing like a warm hug, and enough knitwear to make

grandma jealous. But it marks a break from the recent reign of sneakerheads and sweatpants types, taking more inspiration from timeless tailoring than street influences.

The colorful patterned knitwear pieces have been given an update this season, rather than being limited to their classic form as seen at Kolor. Loewe transfers the style to a long-sleeved shirt for FW24 and pairs it with loose beige baggy cargo trousers.

Brand Sacai takes this trend to a new dimension which is then integrated by Japanese luxury brands. They used this pattern for fluffy long jumpers across the entire collection from denim two-pieces consisting of skirts and trousers to oversized cardigans and outerwear. The collection also features slashed slipovers and floor-length dresses, worn by models of all genders.

Embracing the water

Emporio Armani is a soul brand that just took the adventures without barriers where sharp silhouettes are paired with military boots. The collection exudes the charm of the sailor and the spirit of travelers with navy hats, aviator shades, and rope-detailed belts.

The Prada fashion show featured an office-like setup with brown carpets and blue wall dividers partitioning the cubicles, each equipped with desktop computers adorned with the brand logo.

Brand Dazed's content creator Elliot Hoste noted, "It was humdrum artifice on top of idyllic nature, perhaps about the daydreaming of escape we all do while trapped in our 9-5s." He added, "There was also a touch of the apocalyptic: how long would it take for flora and fauna to reclaim the man-made when all the humans are gone?" The water served as a catalytic element, announcing a collection where tradition and experimentation intertwine in a rework of the Italian bourgeoisie.

The FW24 Prada man alternates formal coats with a Canadian tuxedo, wears goggles and a pool cap, and puts on sandals as well as lace-ons.

Supersize is the new trend



Figure: Embracing the water in fashion, Paris fashion week source: Istituto Marangoni



Figure: FW24 Menswear; Fair isle jumpers (from left): Loewe, Kolor, Sacai Bild Source: Launchmetrics/spotlight

From bags to jeans and jewelry, menswear silhouettes and accessories will be bigger and baggier in 2024. Slouchy fits dominated menswear last year, which saw a relaxation of suiting for SS24 whereby items like relaxed chinos had stronger sell-through than ever.

This will continue through 2024. As traditional tailoring players like Zegna and Loro Piana attempt to modernize, they will continue to relax silhouettes for Gen Z who style with versatility and comfort from their clothes. This will manifest through baggy trousers, oversized blazers, and layering combos such as hoodies with blazers.

Tote bag is the new masculine fashion

Men will even supersize their accessories in 2024. The women's "It girl tote" trend, which has seen brands like 16 Arlington and Loewe enlarge their shoulder bags into voluminous totes in recent seasons, will seep into menswear this year, as men's luxury handbags continue to boom. Berluti launched a bag collection at the end of 2023, featuring its large Jour Softy tote. Gucci pushed its monogram travel bag during Wimbledon in June, via ambassador Jannik Sinner. Louis Vuitton launched its monogram travel bags and totes in various bright shades in 2023, worn almost instantly by men's creative director Pharrell. And Bottega Veneta's new oversized Andiamo tote, which debuted on the women's runway, has been spotted on menswear icons like Jacob Elordi and A\$AP Rocky in recent months. The latter wore a bubblegum pink style on his birthday in October, followed by an olive green iteration slung over his shoulder days later in New York with partner Rihanna.

Shifting to the colors: Concept of Jelly dressing

Spanning home décor, couture, and beauty ideas, the jellyfish aesthetic is bubbling up across men's and womenswear for 2024, with puffed-up silhouettes and accessories, lilac and blue tones, iridescent fabrics and fluid lines. Search has surged for terms like "blue jellyfish" (up 155 percent), "jellyfish hat" (220 percent), and "jellyfish lamp" (95 percent) in recent months, per the

Pinterest report. Early signs of the trend include Timothée Chalamet’s lilac latex look at Wonka’s Tokyo premiere, the bubbly jelly-like diamond necklaces sported by Justin and Hailey Bieber in recent months, and so on.

Sparkle, glamor, and glitz

Fashion designers are trending to add a little glitz and glamor to men’s partywear. There have been various tops decorated with silver, sparkling rhinestones showcased in FW’24. From muscle shirts to turtlenecks, styles catered to a wide range of preferences. It’s to be anticipated that these sparkling pieces combined with understated suit trousers or the occasional dark skirt will take center stage this year.

A political message to the world

Fashion is often used to reflect society. While Ukraine or Palestine issues are going on, designers are reflecting them into outfits.

Bluemarble and Paradis made a stand for peace in the form of the peace symbol and a white dove print respectively. Emeric Tchatoua, the designer behind the Paris-based label Paradis, additionally showcased a bag with the words “The World needs more Love“.

The bag is part of a look that features the face of Cuban revolutionary Che Guevara on a red hoodie. A political statement – albeit a controversial one – coincides with the return of a print that was particularly popular on tees in the early 2000s, regardless of the wearer’s prior knowledge of the person depicted.

The Berlin label GmbH also took a stance and spoke out against discrimination not only, but also during their fashion show. Serhat Işık and Benjamin Huseby, the duo behind the brand, emphasized their solidarity with Palestine in a speech after the show. The collection emphasizes this using a watermelon print – the fruit became a symbol of protest as it features the colors of the Palestinian flag – and kufiya, also known colloquially as “pali cloth“.



Figure: Shin Ishikawa in Jelly dressing Source: Getty images

Leggings in men’s fashion

Pants in men’s fashion have become wider again in recent seasons, but some brands now seem to be going in the complete opposite direction and challenging gender stereotypes. Instead of jeans and suit pants, leggings and tights are also appearing on the runways. Leggings are also being combined with boots. Doublet uses tight-fitting trousers in contrast to an oversized jumper, thus playing with the silhouette. JW Anderson, the famous British designer makes use of dark, transparent tights. He also pairs the piece with loose-fitting shirts and jumpers and makes it happen on the runway.



Arvin Goods, Recover™, and Ferre Yarns join forces for recycled socks

Sayed

Arvin Goods, the Seattle-based leader in sustainable apparel, has announced the release of its latest sock collection, crafted from Recover™ recycled cotton fiber. This launch further solidifies the brand's commitment to circular fashion and minimizing its environmental footprint.

Since its inception in 2019, Arvin Goods has been at the forefront of sustainable fashion, utilizing recycled materials across its entire collection. The latest collection features crew socks made from 79% recycled materials, including 43% recycled polyester and 36% Recover™ recycled cotton fiber.

Recover™ boasts one of the lowest-impact fibers available, significantly reducing the carbon and water footprint of

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“We are excited to officially partner with Recover™ and Ferre Yarns. Sourcing materials and manufacturing locally allows us to further our mission of delivering the cleanest basics on the planet.”

Dustin Winegardner,
Managing Partner at Arvin Goods

the apparel industry. Compared to conventional cotton, each pair of Arvin Goods socks made with Recover™ fiber saves up to 18 gallons of water.

Collaboration for a Sustainable Future

This new collection is a testament to Arvin Goods' dedication to responsible practices throughout the design, manufacturing, and distribution process. The brand prioritizes not only using low-impact materials but also minimizing its environmental impact through strategic partnerships.



Figure: "The goal is to disguise military": Ukraine tests fabrics for anti-thermal imaging poncho

- **Recover™:** Their ongoing collaboration with Recover™ stems from a shared belief in circular fashion that prioritizes quality, feel, and style.
- **Ferre Yarns:** This partnership with Ferre Yarns, based in Alicante, Spain, minimizes transportation emissions by sourcing materials locally.

Impact and Availability

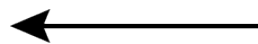
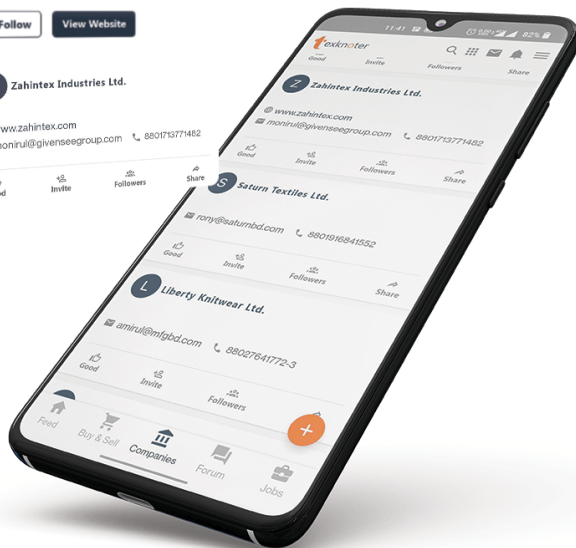
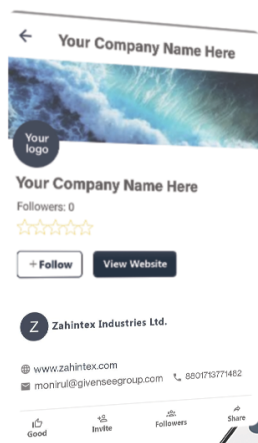
The new collection not only embodies Arvin Goods' commitment to sustainability but also offers customers stylish and comfortable everyday wear. The brand continues to set a new standard for low-impact fashion, encouraging consumers to make conscious choices that benefit the planet.

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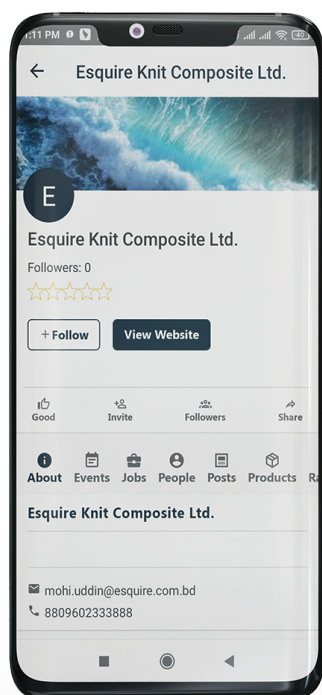
“Our work with Arvin Goods is driven by our shared belief in circular fashion that doesn't compromise on quality, comfort, or style.”

Boris Mercier
SVP Marketing at Recover™

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- Buy & Sell
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- Events
- Forum
- Jobs
- Profile
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- Notification



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Create & build your profile

Events

Create & Join events in a single place.

Buy & Sell

A dedicated marketplace to buy & sell products.

Jobs

Post jobs easily and get the right professionals.

Post

Share thoughts or views with people of the same interest.

