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THE INDIAN TEXTILE JOURNAL

135 YEARS 1890 - 2025

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Circulated in India & South Asia | ISSN0019 - 6436 | May 2025 | ₹150

TOP STORIES

- Market analysis of Indian denim industry
- Khadi's rise in Gen Z fashion
- Interviews: Sanathan Textiles, Vishal Fabrics, Rupa, and Grey Matter Concepts

RIDING THE TARIFF WAVE

Trump's 27% reciprocal tariff on India could give Indian textile exporters an edge over rivals like China, Vietnam, and Bangladesh. The key question is—will India seize the opportunity or miss it again?

Interview: Hitendra Bhargava, CEO, Klüber Lubrication... Page 49

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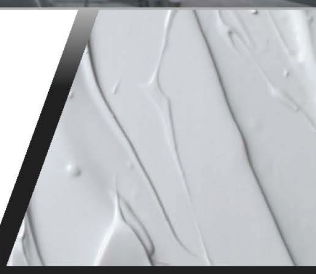

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US Tariffs: A Tipping Point for India's T&A Industry

The global trade landscape is shifting, and the Indian textile and apparel (T&A) industry finds itself at a strategic inflection point. Years of pandemic-induced stagnation, geopolitical tensions, and China's continued dominance had stifled India's growth in this sector. Now, a fresh wave of tariff reforms in the US is offering a new lease of life to Indian exporters.

The US administration has decided to impose higher tariffs on several Asian textile powerhouses. Vietnam, Bangladesh, Cambodia, and Pakistan are now facing import duties ranging from 29 per cent to as high as 49 per cent. For China, the range is even steeper—between 54 per cent and 245 per cent depending on the product category. In comparison, India faces a relatively moderate 26 per cent tariff on apparel, making it more appealing in the eyes of American buyers. Though there is a 90-day pause on US tariff implementation for all countries (except China), effective until July 9, 2025, the development can provide a big opportunity for India.

> **Tiruppur, which accounts for 90 per cent of India's cotton knitwear exports and 55 per cent of overall knitwear exports, clocked in ₹400 billion in export revenue in FY25, which was its highest-ever export revenue.**

The external environment is also turning in India's favour. Bangladesh is dealing with political instability, leading to operational disruptions and factory closures. China is facing rising production costs and supply chain uncertainty due to geopolitical factors. Industry estimates indicate that nearly 15 per cent of US-bound textile orders have recently moved away from China. Global brands such as Walmart, Marks & Spencer, and Primark have increased their sourcing from India. In fact, Tiruppur, which accounts for 90 per cent of India's cotton knitwear exports and 55 per cent of overall knitwear exports, clocked in ₹400 billion in export revenue in FY25, which was its highest-ever export revenue.

Despite these gains, the Indian textile industry faces significant structural challenges. Synthetic fibres and man-made materials now dominate 70 per cent of global textile trade. India's overdependence on cotton, high domestic prices, and limited synthetic fibre production capacity limit its competitiveness in fast fashion categories. Additionally, segments like home textiles and made-ups—which contribute $10 billion to India's annual textile exports—are under pressure. With 60 per cent of their orders reliant on the US market, this category has reportedly seen nearly $2 billion worth of exports being put on hold or renegotiation table. Apparel exports, India's largest at $16 billion, are also grappling with the new tariff structure, especially in low-margin categories such as basic knitwear. Furthermore, rising costs may push US consumers to cut back on purchases, reducing demand even for competitively priced Indian products.

Amid these complexities lies a critical opportunity. The tariff shifts offer India a chance to strengthen its position in global supply chains—if it can move swiftly. Investing in synthetic fibre infrastructure, upgrading textile machinery, and focusing on R&D will be the key to building long-term resilience. India has a window to reposition itself as a global textile leader. The coming months will determine whether the industry capitalises on this moment—or lets it slip away once again.

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The Indian Textile Journal
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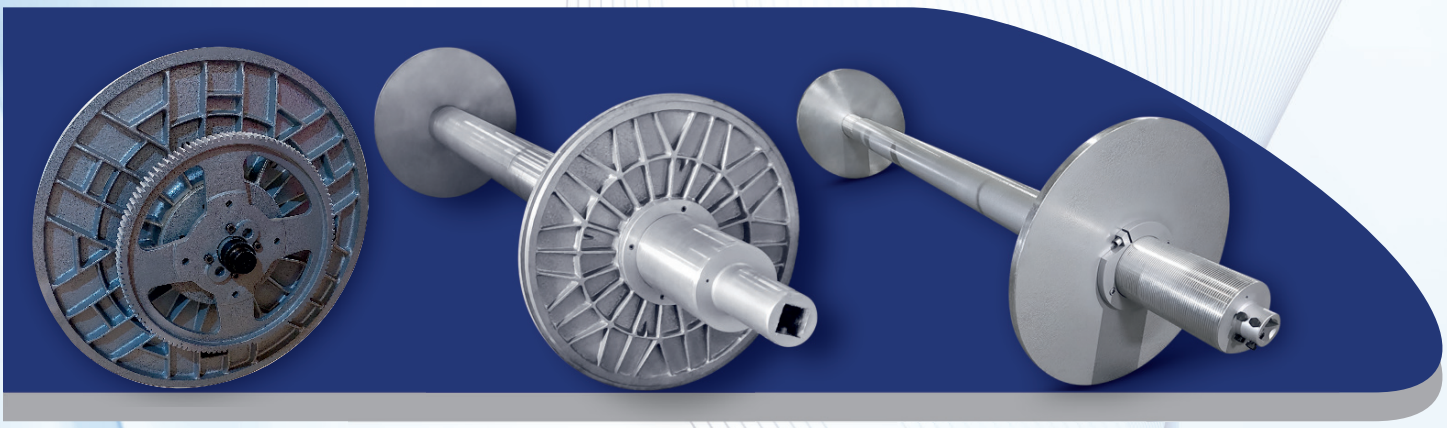

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CAI Signs MoU with Australian Cotton Shippers Association

A delegation from Australian Cotton Shippers Association (ACSA) comprising the Cliff White, Chair, ACSA; Jules Willis, CEO; Shay Dhareula, Ecom Commodities; Joel Hatherell, Olam Agri and Theodare Immanuel, Director, Austrade visited the Cotton Association of India (CAI). The delegates had a very fruitful introductory meeting with the CAI Board of Directors and they were taken around the historic Cotton Exchange building, which is a 100-years old heritage structure.

Thereafter, a Seminar on Australian Cotton was held in the Conference Room of the CAI which was attended by a large number of representatives from the Indian cotton trade and textile industry. In his welcome address, Atul S Ganatra, President, CAI, laid emphasis on the advantages of the Australia-India Economic Cooperation and Trade Agreement which came into force on 29 December 2022, allowing duty-free access to Australian cotton into India with a specific quota of 51,000 tonne per year. Ganatra also exhorted the need for greater cooperation and further strengthening of business relations between the cotton industries of both countries. Thereafter, White made a very informative presentation on the Australian cotton scenario which was followed by one-hour Question-Answer session. Indian farmers, ginners, brokers and other delegates present in the Seminar asked several questions concerning Australian cotton and opportunities for Indian cotton and textile sector and a very lively and interesting discussion ensued.

Later, in the evening, a Welcome reception for the visiting delegates was hosted by the CAI at the Cricket Club of India, where an MoU was executed between the CAI and ACSA envisaging mutual cooperation and to combine their efforts in the areas of exchanging ideas and information concerning cotton production, trade

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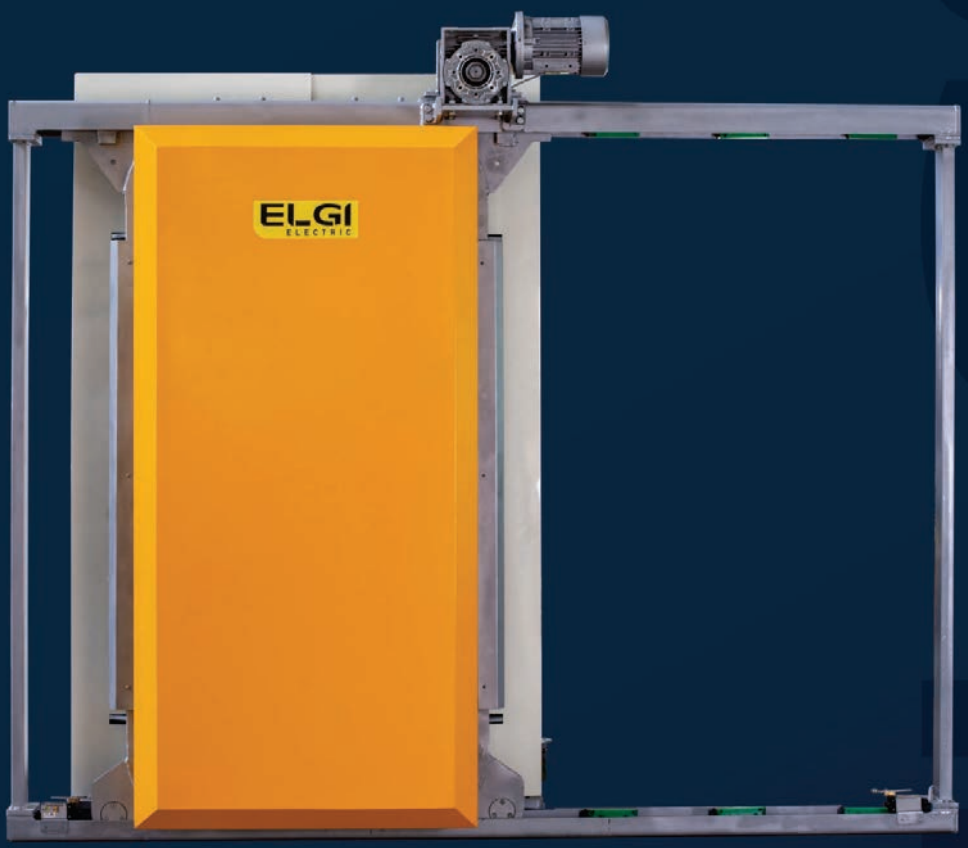

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trends, global pricing, market outlooks, etc. relevant to both countries and to strengthen trade and improve market access and reciprocal support in assisting dialogue supporting the interests of their cotton industries. Ganatra and White signed this MoU in the presence of a large number of dignitaries and representatives from the trade and industry who were present on the occasion.

Ester and Loop Industries to build India's first textile recycling plant

In a strategic effort to tackle the growing problem of textile waste in India, Ester Industries has partnered with Canadian firm Loop Industries to establish a 50:50 joint venture. The collaboration will lead to the development of the world's first textile-to-textile recycling facility in India, aimed at promoting sustainable fashion and responsible waste management by converting discarded fabrics into high-quality, reusable materials.

India is currently the third-largest generator of textile waste globally, yet less than 1 per cent of this waste is recycled into new garments. The joint venture seeks to address this gap by utilising Loop Industries' proprietary chemical recycling technology. This innovative process can convert all forms of polyester waste into virgin-grade PET resin, which can be used repeatedly without compromising quality. The advancement is expected to significantly strengthen the textile sector's circular economy and reduce environmental degradation.

Loop Industries' recycling technology is capable of processing polyester fibres and PET plastics previously considered non-recyclable. The method dramatically cuts reliance on fossil fuels—still the main raw material source for plastic manufacturing—and helps reduce carbon emissions, contributing to broader environmental and climate goals.

The initiative complements the Indian government's sustainability drive and supports ongoing efforts in textile hubs such as Panipat, Bengaluru, and Tirupur. It positions India to become a leader in circular fashion and recycling technologies.

The facility will operate with a zero-discharge system to ensure local water and soil remain uncontaminated, adhering to stringent environmental regulations. With this development, Ester and Loop aim to set a benchmark for eco-friendly industrial practices while reinforcing India's role in global sustainability. The project is seen as a critical step in transforming India's fashion and textile industries toward a more sustainable and circular future.

Moglix appoints Sanjeev Arora as CFO to lead IPO in 12–24 months

Moglix, one of Asia's leading B2B e-commerce companies, has announced the appointment of Sanjeev Arora as its new Chief Financial Officer. In this role, Sanjeev will lead the company's financial strategy and operations, with a focus on capital planning and advancing its long-term growth journey, including preparations for entry into public markets.

With over two decades of leadership across listed and privately held businesses, Sanjeev brings a diverse perspective shaped by his work in industries such as automotive, chemicals, consumer goods, telecom, and FMCG. His career spans key roles at organizations including ASK Automotive, Mosaic, Goodyear, Nokia, and Apollo International.

At ASK Automotive, Sanjeev served as Senior Vice President – Finance, playing a pivotal role in taking the company public. He led IPO readiness, collaborated with

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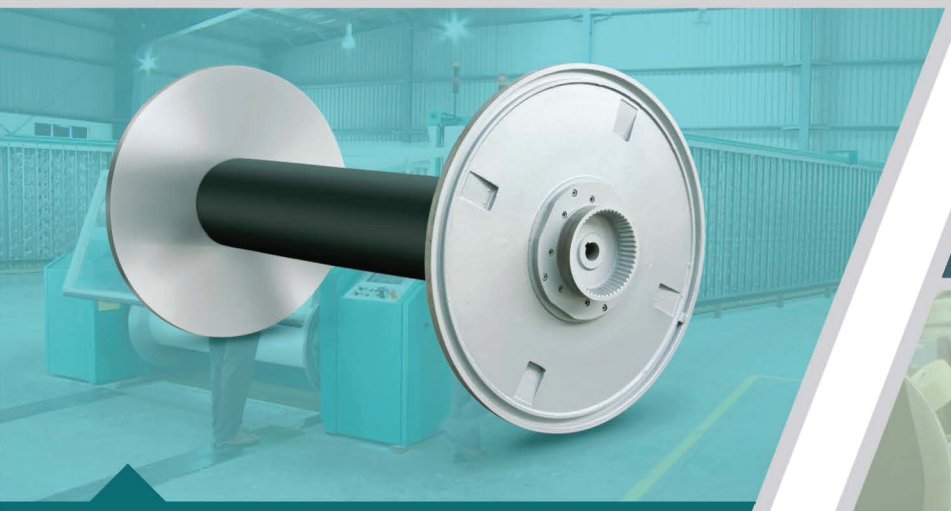

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global advisors, and managed investor communications and regulatory engagements.

Earlier, as CFO and Board Member at Mosaic India, he was responsible for spearheading financial operations, developing business strategies, leading M&A initiatives, building business intelligence, driving digitization efforts, and managing enterprise risk. He also held senior finance leadership roles at Goodyear India, where he oversaw financial planning and controllership in a publicly listed manufacturing setup, along with prior stints at Nokia, Apollo, and ConAgra.

Rahul Garg, Founder & CEO, Moglix, said, "We're pleased to welcome Sanjeev to the Moglix team. His acumen in financial strategy and capital markets will be invaluable as we scale towards our next phase of growth. We look forward to working together to further strengthen our financial foundation and drive long-term value creation."

Sanjeev Arora, CFO, Moglix, commented, "Moglix is building something truly transformative in India's industrial and supply chain ecosystem. I'm excited to join this journey and contribute towards strengthening the finance function to enable sustainable and strategic growth."

Sanjeev is a Chartered Accountant and Cost & Management Accountant and holds a General Management Program certification from ISB. He has also completed executive education in leadership, coaching, and building high-performance teams.

NITRA and NBRI sign MoU for eco-friendly fibre manufacturing

The Northern India Textile Research Association (NITRA), Ghaziabad, has entered into a Memorandum of Understanding (MoU) with the CSIR–National Botanical Research Institute (NBRI), Lucknow, to explore the potential of milkweed (Asclepias) as a sustainable natural fibre. This partnership supports India's broader vision of promoting innovation-led sustainability within the textile sector.

The initiative involves conducting a genomic analysis of the milkweed plant to gain insights into its fibre structure and assess its viability as an eco-friendly alternative to synthetic fibres. Milkweed fibres are naturally lightweight, insulating, and biodegradable, making them suitable for applications in home furnishings, technical textiles, and thermal clothing. Despite these qualities, milkweed has not yet been widely adopted for large-scale manufacturing, primarily

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HARNVEE / 03-2024

due to limitations in sourcing and fibre yield.

The NITRA-NBRI collaboration aims to overcome these challenges by improving fibre yield, establishing sustainable cultivation and sourcing practices, and identifying commercially feasible applications. The project is expected to contribute to the diversification of raw material sources for the Indian textile industry, particularly by introducing an indigenous, renewable option.

This initiative also supports the objectives of Aatmanirbhar Bharat, India's self-reliance mission, by fostering domestic innovation and reducing reliance on imported synthetic fibres. In the long term, the partnership is anticipated to bolster environmental sustainability and enhance economic resilience in textile production through the integration of alternative natural fibres.

New research centre in Coimbatore to boost technical textiles

Kumaraguru College of Technology (KCT) has taken a significant step in advancing research and innovation in technical textiles with the launch of the Kumaraguru Centre for Research in Technical Textiles. Additionally, the institution has formalised four Memorandums of Understanding (MoUs) with key industry organisations to foster innovation and industry collaboration. These agreements have been established with the Indian Technical Textile Association (ITTA), the Textile Association of India (TAI), Tamil Nadu Coir Business Development Corporation (TANCOIR), and the OETI-Institute for Ecology, Technology, and Innovation. The partnerships focus on promoting high-value products that contribute to waste reduction, circular economy initiatives, and environmentally sustainable manufacturing practices.

As part of these efforts, KCT's Department of Textile Technology and Fashion Technology organised the Industry Conclave on Technology-Integrated Textiles and Fashion. Discussions at the conclave highlighted the importance of shifting from a traditional textile industry reliant on currency fluctuations to a more value-driven approach. Technical textiles, with applications in various high-performance sectors such as aerospace, defence, and waterproof breathable fabrics, were identified as critical for sustainable growth and global competitiveness.

Shriniwas Spintex secures bid to acquire Morarjee Textiles

Wardha-based Shriniwas Spintex Industries has been selected as the successful bidder for the acquisition of Morarjee Textiles, a company formerly under the Ashok Piramal Group. The acquisition comes as part of a resolution plan submitted under the Insolvency and Bankruptcy Code (IBC) framework.

As per the resolution plan, Shriniwas Spintex will make an upfront payment of 30 per cent of the total bid amount, with the remaining balance to be paid over the next two years. The total bid value stands at ₹1.56 billion, which includes ₹390 million allocated towards process-related costs.

The financial creditors of Morarjee Textiles, led by Indian Bank, are expected to recover approximately ₹ 1.17 billion from the resolution. This is a partial recovery against the total admitted claims of ₹6.25 billion. Indian Bank, which is the largest creditor, has an exposure of ₹2.18 billion and holds a 39 per cent share in the creditors' voting rights.

The resolution professional, Ravi Sethia, with advisory support from KPMG, has submitted the resolution plan to the National Company Law Tribunal (NCLT) for final approval. Once approved by the tribunal, the acquisition process will move forward, formally transferring the ownership and operations of Morarjee Textiles to Shriniwas Spintex Industries.

India's apparel exports see double-digit growth despite challenges

India's textile and apparel exports recorded a growth of 6.32 per cent in the financial year ending March 31, 2025, compared to the previous year, according to an analysis by the Confederation of Indian Textile Industry (CITI). This growth was primarily driven by the apparel segment, which saw a significant increase of 10.03 per cent, outperforming other segments of the sector.

A detailed breakdown indicates that while textiles posted a moderate growth of 3.61 per cent during April 2024 to March 2025, the apparel segment stood out as the key contributor to the sector's overall export performance. The textile and apparel sector showed resilience amid global economic headwinds, supported by evolving trade dynamics and favourable domestic policies.

The export performance was also aided by strengthening trade alliances and government initiatives aimed at boosting the competitiveness of Indian products in international markets. These strategic measures helped instill confidence among exporters and encouraged expansion into new markets.

Additionally, global trade shifts—particularly the ongoing tensions between the US and China—have opened new opportunities for India. ITJ

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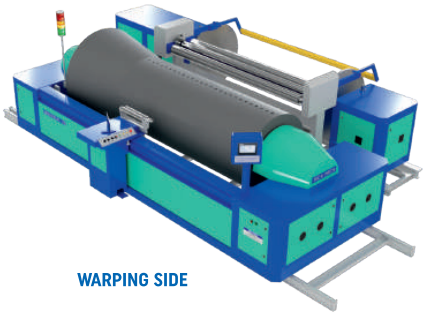

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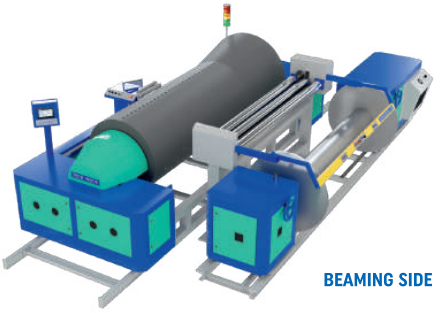

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Rieter Celebrates 230 Years of Innovation

Rieter has stood for pioneering innovation in textile technology for 230 years. Founded in 1795, the company has grown from a trading company to a global technology leader. With a clear focus on automation, digitisation and sustainability, Rieter is shaping the future of yarn production and continues to set standards in the industry.

Rieter, the world leader in developing and manufacturing systems for yarn production with staple fibres, is celebrating its 230th anniversary this year – a history characterised by change, innovation and growth.

The Rieter success story began on April 15, 1795, when Johann Jacob Rieter founded the company JJ Rieter & Cie in Winterthur, Switzerland. Rieter started as a trading company for exotic spices and cotton, and on April 23, 1795, the first cotton bale had already arrived at the Waaghaus trading house on Marktgasse in Winterthur.

Initially involved in spinning mills and textile manufacturing, Rieter continued to develop over the 19 century and shifted its focus to building industrial machinery. Acquiring the buildings of the former Töss Abbey in Winterthur in 1833 was an important step. In addition to spinning mill machines, the company's product line also included machines for winding, knitting, and weaving.

In 1891, Rieter converted into a stock company, which was a significant milestone in the company's history. In the decades that followed, Rieter set new technological standards again and again. For example, the company was the first machine factory in Switzerland with electronic data processing and Rieter set up a modern laboratory for testing materials. It was joined by prototype workshops, a textile laboratory, and a test spinning mill to support further innovation.

Despite economic challenges, Rieter has always used times of crisis as an opportunity to increase its efficiency and hone its strategic focus. Along with its subsidiaries Accotex, Bräcker, Graf, Novibra, Suessen, SSM, and Temco, today Rieter is distinctive and well-known in the market. The company is a leader in spinning mill technology and contributes to sustainability in the textile value chain with state-of- the-art machines, systems, and components.

Rieter's success is based not only on technological excellence, but above all on the people who drive the company forward. The approximately 4 800 employees worldwide are the company's greatest asset. With their expertise, innovative spirit, and passion, they set new standards every day and play an active role in shaping Rieter's future.

From Rieter's perspective, the future of spinning mills is automated, digital, and intelligent. Research and development activities are being intensified – in both the areas of autonomous transport systems and collaborative robotics, as well as for ESSENTIAL, Rieter's digital spinning mill platform. The goal is to fully automate the value creation process of spinning mills by 2027. This will enable spinning mills to reduce their yarn manufacturing costs and maximise their returns. Customers can then concentrate fully on their yarn business and rely on Rieter's technology and know-how for their operations.

With 230 years of experience, strong innovative power, sustainable solutions and a global sales and service organisation, Rieter is perfectly positioned as the market leader and looks to the future with confidence.

About Rieter

Rieter is the world's leading supplier of systems for manufacturing yarn from staple fibers in spinning mills. Based in Winterthur (Switzerland), the company develops and manufactures machinery, systems and components used to convert natural and man- made fibers and their blends into yarns in the most cost-efficient manner. Cutting- edge spinning technology from Rieter contributes to sustainability in the textile value chain by minimising the use of resources. ITJ

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FORECAST

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Riding the Tariff Wave

US President Donald Trump's 27 per cent reciprocal tariff on India could give exporters an edge over rivals like China, Vietnam, and Bangladesh. **Divya Shetty** explores whether India is ready to seize this opportunity or miss it again.

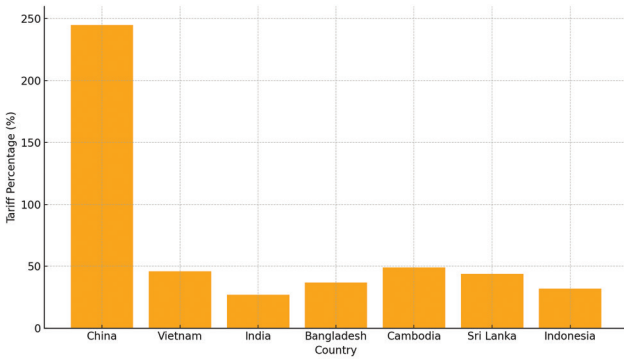
US President Donald Trump recently announced a revised set of tariff rates impacting a wide range of countries, signalling a renewed focus on reshaping global trade dynamics. While several neighbouring nations like China, Bangladesh, and Vietnam have been hit with significantly higher tariff rates, India finds itself in a comparatively advantageous position—with the lowest tariff rates among them.

This unexpected edge could open new doors for Indian exporters, particularly in the textile industry, which stands to benefit from the shifting global sourcing strategies of American buyers seeking cost-effective alternatives.

India's total exports to the US was $77.5 bn in FY24 (around 18 per cent of total exports) of which textile exports would be around $9.6 bn (around 12 per cent of India's total exports to the US; ~28 per cent of India's total textile exports). On the imports front, Indian textile industry imported $0.5 bn from the US in FY24 (around

1 per cent of total imports from the US) indicating that India is net exporter to the US in the textile industry.

Table 1: Tariffs On Textile Exports To US (2024)



Considering lower incremental tariffs on Indian textile exporters, the competitive landscape for Indian textile products is likely to improve. India stands to gain in the textile export market as the US importers optimise their costs by seeking alternatives to suppliers which are relatively more expensive post the reciprocal tariffs (see Table 1).

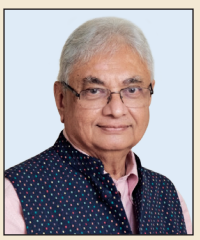
According to **Shradha Saraogi Garg, Associate Director, Corporates, India Ratings & Research**, "The reciprocal tariffs imposed by the US are likely to benefit the Indian textile industry, especially the players engaged in export of apparel and home textiles. Indian exporters may witness increased volumes amid a supply chain re-orientation in the short-term. Larger-integrated textile players already supplying to such US buyers would be at an advantage, compared to the mid and small sized players, to capitalise on the increasing export opportunities."

"This is going to be a strategic opportunity for India because comparatively our competing countries are burdened with more tax percentage. At the same time we have to pass through the challenge in handling quantities and quality to cater to the market with timely delivery."

Raja Shanmugham, *MD, Warsaw International*

The new tariff landscape

The US has imposed a 27 per cent tariff on Indian textile imports, citing retaliatory measures against India's average 52 per cent tariffs on American goods, Indian textile products enjoyed lower duties, generally under 10 per cent benefiting from trade preferences. The move aligns with the Trump administration's push for 'reciprocal trade' and aims to reduce the $10 billion annual trade deficit with India. In contrast, competing nations continue to enjoy duty-free or low-tariff access



"Our industry will need to upgrade our facilities, increase our production capacities, make our units more compliant, and start manufacturing products required by the American market, rather than just continuing to export what we have been doing so far."

Rahul Mehta, *Chief Mentor, CMAI*

to the US market under preferential trade programs, placing Indian exporters at a distinct disadvantage.

Amongst all the countries, China will face the highest reciprocal tariff from the US and reverse tariff by China on the US. The EU has also decided to retaliate to the reciprocal tariffs of the US.

As per **Gurudas Aras, Strategic Advisor and Independent Director,** "Over the years China has built huge capacities, mainly in high tech manufacturing and is ready to unleash Tsunami of its exports on the world. China is using more factory robots than any other country and those too are locally manufactured. This will bring the manufacturing cost considerably down. This applies to all high-tech electronics, automobiles as well as to the textile manufacturing."

With China's diminished presence in the US textile market due to elevated tariffs, opportunities have emerged for other textile-producing nations. Countries such as India, Vietnam, Bangladesh, Cambodia, Pakistan, Sri Lanka, Turkey, and several South American nations are poised to capitalise on this shift. Notably, Turkey and many South American countries benefit from relatively low US tariffs, often around 10 per cent, enhancing their competitiveness compared to nations facing higher duties.

"With the new US tariffs on Chinese textiles, China may look at diversifying its exports. Japan and South Korea may absorb more due to trade agreements. Bangladesh, Vietnam and India also can be the next big destinations for textiles from China."

Gurudas Aras, *Strategic Advisor and Independent Director*

With the imposition of steep tariffs by the US on Chinese goods, China is actively seeking alternative markets to redirect its surplus exports. India, given its large consumer base and existing trade ties, emerges as a potential destination for these redirected goods. The Global Trade Research Initiative (GTRI) has highlighted concerns that China may resort to dumping products like electric vehicles, batteries, and other technology items in India to offset its trade losses from the US market. This potential influx poses challenges for Indian manufacturers, who may struggle to compete with the low-priced Chinese imports. **Raja Shanmugham, MD, Warsaw International,** opines, "Entry of Chinese goods directly are well governed through tariffs. Still a strict monitoring aspect to be stepped up to control camouflaged entries."

Dr Siddhartha Rajagopal, Executive Director, TEXPROCIL, adds, "A lot would depend on the specific tariff structure. If tariffs on raw materials are lowered while duties on finished goods remain high, it may actually reduce Chinese imports. However, if the tariff revisions inadvertently make certain Chinese goods cheaper or more accessible, we might see a short-term spike in imports—especially in categories where Indian production is limited or less cost-effective, especially in synthetic fabrics.

"The oversupply may potentially lead to the Chinese prices being significantly lower leading to the domestic landed cost for imported goods still being lower than the domestic prices. This may hurt the margins of domestic upstream players in the near-to medium term."

Shradha Saraogi Garg, *Associate Director, Corporates, India Ratings & Research*

India has intensified scrutiny of misdeclared Chinese fabric imports. While revised US tariffs could theoretically divert Chinese exports to India, stricter enforcement of 'Rules of Origin' and industry vigilance are likely to limit this trend."

Urvashi Sharma, Consultant, Wazir Advisor, comments, "The revised tariffs may create a window of opportunity for Chinese textile imports into India. As China adjusts to new tariff dynamics, it is expected to divert its surplus capacities at significantly lower costs to other global markets to compensate for the loss of access to the US. India, with its large consumer base, could become a key target."

Additionally, Bangladesh already enjoys duty-free access for garment exports to India. With reduced competitiveness in the US, Bangladesh may also redirect exports to India, leading to a further rise in imports.

Favourable prospects

As outlined earlier, this revision is poised to unlock significant opportunities for the industry, with several key areas primed for streamlining, including the following.

Competitive edge in value-added products: If the revised tariffs lead to increased costs for synthetic or technical textiles from the affected countries, India stands to benefit by positioning itself as a competitive alternative. This opens the door for Indian exporters to

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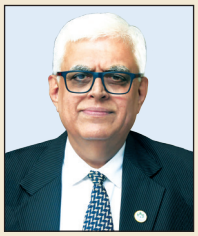
promote their value-added offerings, particularly in segments like organic and sustainable textiles, custom fashion manufacturing, and home furnishings, as well as technical textiles. By focusing on these differentiated, high-demand areas, India can strengthen its presence in the US. market and capture the shifting sourcing preferences of global buyers.

Rising interest from global brands: With rising interest from global brands, international retailers and fashion houses are increasingly seeking reliable, politically neutral, and cost-effective sourcing partners. In this landscape, India stands out as a compelling choice due to its vast textile ecosystem that spans the entire value chain—from farm to fashion. The country has built a strong reputation for producing high-quality cotton and home textiles, and its growing emphasis on sustainable and ethical sourcing further enhances its appeal to conscious global buyers.

MSMEs can step in: While large exporters stand to benefit from increased volumes, MSMEs have the opportunity to tap into niche markets by focusing on customised, high-margin segments. This presents a chance for them to move up the value chain, embrace digitisation and innovation, and forge direct relationships with boutique or mid-sized US brands, thereby strengthening their position in the global market.



"On account of higher tariffs, the resulting higher input costs could erode India's price competitiveness if not managed carefully. Bangladesh and Vietnam already enjoy preferential trade access and lower labour costs, making them formidable competitors."

Dr Siddhartha Rajagopal, *Executive Director, TEXPROCIL*

Key challenges to be faced

The tariff revision presents both an opportunity and a challenge for India. On the positive side, India can position itself as a preferred sourcing hub with lower tariffs compared to competitors, but it must address key structural bottlenecks to fully capitalise on this.

Increased global competition: Although India has comparatively lower tariff rates among Asian countries, Aras mentions that the "nations like Turkey, Morocco, and those in Latin America could also emerge as strong contenders in this competition, with their tariff rates hovering around 10–15 per cent.

Price pressure from rising cost: As tariff rates increase, US importers may be more inclined to share the tax burden with exporters. However, this will largely depend on the strength of the partnership and each party's negotiation skills. **Rahul Mehta, Chief Mentor, CMAI,** adds, "This is something that will work on a one-to-one basis, case-to-case basis. Each exporter and their buyer will be negotiating and arriving at their own conclusions. No exporter enjoys the kind of margin where they can absorb an additional 10 per cent duty. So, as of now, that appears improbable. Presumably, they will be negotiating for some kind of relief or adjustment—perhaps sharing the burden on a 50-50 basis or something similar. But there is obviously no formalised, structured agreement. It has to be dealt with on a case-to-case basis."

Managing capacity: While experts view this as a significant opportunity for India to seize, they also caution that the country has missed similar chances in the past—such as the China Plus One strategy and the disruptions in Bangladesh—primarily due to capacity constraints. Saraogi mentions, "The Indian textile industry may not be able to cash on the opportunity immediately, due to the limited capacity to scale up supply immediately and would need to set up facilities and obtain approvals from international buyers which may take some time. On the contrary, any incremental capacity addition decisions based on the revised tariff structure may be unlikely in the near-to medium term as the situation may evolve over the next few months. Any developments on bilateral trade negotiations between the US and India over the next 4-6 months would be a key monitorable. Further, any increase in low-cost dumping of Chinese textile goods in

Segments potentially exposed to risk

As per the data shared by TEXPROCIL, Product categories like synthetic fibres, technical textiles, and high-value fashion garments could be the most vulnerable. India still imports a significant portion of specialty fabrics and high-performance materials, so any tariff hikes on these inputs could affect production costs and competitiveness. Additionally, low-margin segments like basic knitwear or cotton garments may also suffer if tariffs disrupt the supply chain or increase prices.

Some of the other most vulnerable product categories may include:

- Apparel: Accounts for 35 per cent of India's US-bound exports, facing a 26 per cent tariff.
- Carpets: 58 per cent of India's carpet exports rely on the US market.
- Synthetic fabrics: Vulnerable to under-invoicing and misdeclaration by importers.

India may also impact the gross margin spreads and shall remain under close watch."

Less favoured destination for MMF: India is a global favourite for cotton, thanks to its large-scale production. However, it has yet to establish itself as a preferred destination for man-made fibres (MMF). This gap could potentially result in fewer orders from the US, with demand shifting toward countries that have stronger MMF production capabilities. Sharma adds, "India holds a strong position in the export of cotton-based products, so these products are less vulnerable to the effects of the revised tariffs as India has established itself as a reliable supplier. However, MMF products could be more vulnerable, as India has limited production capabilities in this segment, and its share in the export of MMF-based products to the US is relatively low. This could result in an increased reliance on imports from countries with more established MMF production, making it a challenging segment for India to capitalise on in the wake of these tariff changes."

"The focus should be on improving cost efficiency, expanding capacity, and building a sustainable supply chain to convert this into a long-term opportunity through cost optimisation, product diversification, and scaling production capabilities."

Urvashi Sharma, *is a Consultant at Wazir Advisors*

How can we leverage the 90-day tariff pause?

Although the reduced tariff rates offer significant benefits to the textile industry, the US government has imposed a 90-day pause before their implementation. This window presents a valuable opportunity for the Indian government to engage in negotiations with the US for a more favourable deal. When asked whether the association has any recommendations for the Indian government, Mehta responds, "Our request to the government, essentially during this 90-day period or post the 90 days, is to negotiate the best possible terms with the US government to ensure that the initial advantage we had from the new tariff announcements—where tariffs on India were lower than those levied on Bangladesh, Vietnam, Cambodia, China, etc.—is maintained. This would have placed India in an advantageous position. So, our request to the government is to ensure that this parity is preserved and that we continue to have a lower tariff compared to our competing nations."

During this 90-day pause on reciprocal tariffs with the US, the Indian government has a valuable opportunity to proactively position the country as a more competitive and reliable trade partner. Several strategic actions can be taken to capitalise on this window.

Firstly, the government can advocate for sector-specific concessions, particularly in areas where India currently underperforms—such as man-made fibres (MMF). By highlighting the country's potential for growth and capacity development in this segment, India can make a case for more favourable trade terms and encourage investment into expanding MMF production.

In addition, organising India-US textile summits, trade expos, and B2B matchmaking events can serve as powerful platforms to connect Indian MSMEs and exporters directly with US brands and retailers. These events would foster trust, help build long-term relationships, and provide a stage to showcase India's evolving manufacturing capabilities.

Streamlining export-related infrastructure and processes is also critical. The government should prioritise fast-tracking approvals and clearances in key areas such as logistics, warehousing, and port operations to ensure smoother and faster shipment cycles. At the same time, India must upgrade its testing, certification, and compliance mechanisms to align with the rigorous standards demanded by the US market. This will not only boost credibility but also reduce rejections and improve delivery timelines.

Moreover, this period offers a chance to strategically promote India's strengths—for instance, its leadership in sustainable cotton production and its growing competence in technical textiles. A targeted branding campaign in the U.S. could reshape global perceptions and attract attention from buyers seeking ethical and scalable sourcing alternatives.

Lastly, it's crucial for policymakers to actively engage with industry stakeholders—including exporters, manufacturers, and trade bodies—to gather on-ground insights and challenges. These real-time inputs can be used to restructure incentives and fine-tune export policies so they align better with US import patterns and emerging market dynamics.

By taking a holistic, action-driven approach during this temporary tariff truce, India can not only boost its textile exports but also solidify its position as a key player in the global value chain.

Way forward

While the tariffs position India favourably against Asian rivals, success of the country's export strategy will depend on balancing cost competitiveness, policy agility, and demand-side risks.

The strategy may require some key adaptations going forward, like:

- Product diversification: Focus on value-added textiles and premium segments to offset price sensitivity.
- Market expansion: Explore the EU and ASEAN markets to reduce the U.S. dependency.
- Supply chain efficiency: Adopt automation and sustainable practices to lower costs.
- Policy advocacy: Push for bilateral agreements (e.g., zero-tariff cotton imports) to solidify advantages.

"To avoid any potential impact on our exports, we are already evaluating the export mix and considering moving into value-added segments where India can offer differentiation. Exploring new geographies—like Africa, Latin America, and the Middle East—could also help mitigate dependence on price-sensitive markets. Additionally, we're looking at vertical integration and local sourcing to reduce exposure to global supply chain disruptions and tariff volatility," informs Rajagopal.

However, this opportunity is not without challenges. India's limitations in man-made fibre (MMF) production, infrastructural bottlenecks, and capacity constraints could hamper immediate gains.

The 90-day implementation pause provides a crucial window for the Indian government to negotiate better trade terms, accelerate reforms, and promote India as a sustainable, reliable sourcing hub. Targeted support for MSMEs, enhancement of MMF capabilities, and stronger compliance frameworks can further strengthen India's position. To truly capitalise on this shifting trade dynamic, India must act swiftly and decisively—leveraging policy, investment, and diplomacy to convert temporary advantage into long-term export growth. ITJ

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"Revised US tariffs could theoretically divert Chinese exports to India."

The Cotton Textiles Export Promotion Council is the first Council set up after Independence by the Government of India in 1954 is an autonomous, nonprofit body dedicated to promotion of exports. The Cotton Textiles Export Promotion Council, popularly known as TEXPROCIL has been the international face of cotton textiles from India facilitating exports worldwide. Texprocil has a membership of around 2,000 companies spread across major textile clusters in India. Its members are well established manufacturers and exporters of cotton textile products like Cotton, Yarns, Fabrics and Home Textiles, showcasing a dazzling array of products across the value chain. **Dr Siddhartha Rajagopal, Executive Director, TEXPROCIL**, explains how this revised tariff rate will impact the Indian textile industry.

Dr Siddhartha Rajagopal, Executive Director, TEXPROCIL

What impact do you anticipate the revised tariff rates will have on the Indian textile industry as a whole and on the cotton textile sector specifically?

As on 9th April 2025, the US administration has introduced a 90-day pause on reciprocal tariffs allowing trading partners including India to continue exporting into the US subject to an additional ad valorem rate of duty of 10 per cent, until July 9, 2025.

However, it is likely that the continuation of imposition of revised tariff rates may lead to a mixed impact on the industry. Overall, for the Indian textile industry, higher import tariffs on certain raw materials or finished goods could increase input costs, especially for MSMEs relying on imported components. The tariffs, if aimed at protecting domestic manufacturing and enhancing its competitiveness, may otherwise lead to a positive push toward local sourcing and production.

> "Tariff revision is both a strategic opportunity and a significant challenge for the industry. Strategically, it's an opportunity to strengthen domestic capabilities and encourage value addition within India."

While the US doesn't import much raw cotton, it imports huge volumes of cotton-based end products like garments and home textiles.

For the cotton textile sector specifically, the impact depends on the product categories affected. It could likely squeeze margins if the inputs which the sector depends on become more expensive. If the tariffs reduce external competition, the sector could benefit from a more favourable domestic market.

Do you foresee a rise in Chinese textile imports into India as a result of the revised tariffs?

A lot would depend on the specific tariff structure. If tariffs on raw materials are lowered while duties on finished goods remain high, it may actually reduce Chinese imports. However, if the tariff revisions inadvertently make certain Chinese goods cheaper or more accessible, we might see a short-term spike in imports—especially in categories where Indian production is limited or less cost-effective, especially in synthetic fabrics.

India has intensified scrutiny of misdeclared Chinese fabric imports. While revised US tariffs could theoretically divert Chinese exports to India, stricter enforcement of 'Rules of Origin' and industry vigilance are likely to limit this trend.

Which textile and apparel product categories do you believe are most vulnerable to the effects of these tariff changes?

Experts suggest that product categories like synthetic fibres, technical textiles, and high-value fashion garments could be the most vulnerable. India still imports a significant portion of specialty fabrics and high-performance materials, so any tariff hikes on these inputs could affect production costs and competitiveness. Additionally, low-margin segments like basic knitwear or cotton garments may also suffer if tariffs disrupt the supply chain or increase prices.

Some of the other most vulnerable product categories may include:

- Apparel: Accounts for 35 per cent of India's US-bound exports, facing a 26 per cent tariff.
- Carpets: 58 per cent of India's carpet exports rely on the US market.
- Synthetic fabrics: Vulnerable to under-invoicing and misdeclaration by importers.

Would you view this tariff revision as a strategic opportunity or a significant challenge for the industry?

Tariff revision is both a strategic opportunity and a significant challenge for the industry. Strategically, it's an opportunity to strengthen domestic capabilities and encourage value addition within India. But in the short term, it could be a challenge—particularly for companies heavily reliant on imported materials or facing cost-sensitive international buyers. The key will be how swiftly the industry adapts and how supportive the government is in fostering local alternatives.

In the case of demand dynamics, there can be likely potential long-term gains if the US sourcing shifts to India. However, for the US buyers, Central America continues to be a competitive alternative for near-shoring their sourcing requirements. Also, one can expect short-term demand contraction from the US. market due to higher consumer prices.

In the context of policy negotiations, the proposed BTA between India and the US presents an opportunity for the textile industry to improve market access. However, due to the evolving circumstances, greater clarity on tariff details and the likely terms of negotiation is expected only after July 9, 2025.

In light of the higher tariffs, how do you assess India's competitiveness in the US market compared to countries like Bangladesh, Vietnam, and China?

Unlike other Asian countries, China is the most affected in this tariff regime. China now faces tariffs of 245 per cent on import of goods into the United States, which is likely to weaken its dominant 30 per cent US market share. Despite being an opportunity for India, to grab a share of China's exports into the US, we will need to add capacities quickly.

> "Low-margin segments like basic knitwear or cotton garments may also suffer if tariffs disrupt the supply chain or increase prices."

On account of higher tariffs, the resulting higher input costs could erode India's price competitiveness if not managed carefully. Bangladesh and Vietnam already enjoy preferential trade access and lower labour costs, making them formidable competitors. China, while facing its own tariff challenges, continues to benefit from scale and efficiency. India needs to offset these disadvantages by focusing on quality, lead times, sustainability, and innovation to remain relevant in the US market.

Are these new tariff structures likely to influence your export strategy, such as diversifying product offerings or exploring new international markets?

While the tariffs position India favourably against Asian rivals, success of the country's export strategy will depend on balancing cost competitiveness, policy agility, and demand-side risks.

The strategy may require some key adaptations going forward, like:

- Product diversification: Focus on value-added textiles and premium segments to offset price sensitivity.
- Market expansion: Explore the EU and ASEAN markets to reduce the U.S. dependency.
- Supply chain efficiency: Adopt automation and sustainable practices to lower costs.
- Policy advocacy: Push for bilateral agreements (e.g., zero-tariff cotton imports) to solidify advantages.

To avoid any potential impact on our exports, we are already evaluating the export mix and considering moving into value-added segments where India can offer differentiation. Exploring new geographies—like Africa, Latin America, and the Middle East—could also help mitigate dependence on price-sensitive markets. ITJ

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"We are seeing a strong move towards eco-conscious textile blends."

Vishal Fabrics (VFL) is a denim manufacturing and fabric processing unit that was incorporated in 1985. VFL stands for a denim revolution that brings equality back to fashion, and change the market trend, forever. Vishal Fabrics is a reputed entity that is known for dyeing, printing and processing of denim, and other wide range of fabrics. **Suketu Shah, CEO, Vishal Fabrics,** in this interview with **Divya Shetty,** gives a glimpse of the current state of the Indian denim industry and also shares his company plans.

Suketu Shah, CEO, Vishal Fabrics

How would you describe the current state of the denim industry in India and globally? What major shifts have you observed post-pandemic?

The Indian denim industry is at a promising juncture, poised for sustained growth. As the world's third-largest denim producer, India is expected to witness a CAGR of 8 per cent between 2025 and 2030. Post-pandemic, the surge in demand for casual, comfort-driven fashion has been a key growth driver, further supported by rising sustainability trends that are sparking innovation across the sector. Globally, while the past two years were marked by uncertainty—particularly due to the Russia-Ukraine conflict—recent quarters have shown positive momentum. This revival is offering much-needed relief to Indian manufacturers, both in domestic and export markets. After an initial post-pandemic boom driven by empty pipelines, the industry faced a slowdown. Today, with demand stabilising, we are confident that the denim sector is on the cusp of a strong and resilient comeback.

Is Indian denim today at par with international quality standards in terms of performance, finish, and innovation? How does Vishal Fabrics ensure global competitiveness?

With over two decades of deep-rooted experience in the textile industry, I take great pride in witnessing the remarkable evolution and growing global stature of the Indian denim sector. Over the past few years, our industry has made significant strides in aligning with international quality standards, focusing on key parameters such as performance, finish, and colour innovation. Today, Indian denim stands shoulder to shoulder with the best in the world, thanks to our abundant cotton supply and cutting-edge manufacturing infrastructure.

India has emerged as a vital contributor to the global denim landscape, driven by technological advancements and a commitment to excellence. At Vishal Fabrics, we are dedicated to maintaining and exceeding these global benchmarks. Through the integration of advanced machinery, robust quality assurance systems, and a strong R&D focus, we ensure our products meet the expectations of leading global brands.

Sustainability and innovation are at the heart of our operations. We continuously invest in eco-friendly technologies and responsible manufacturing practices that not only elevate product quality but also minimise our environmental footprint. Our in-house laboratories and stringent quality control processes adhere to international standards, enabling us to compete effectively with global players.

What are some of the latest trends you are seeing in denim, be it in fabric finishes, blends, or consumer preferences?

As we observe the evolving landscape of denim fashion, it is evident that the market is embracing a seamless fusion of classic influences and modern sensibilities. Consumers today are gravitating towards relaxed silhouettes, wide-leg fits, and nostalgic, retro-

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inspired designs that deliver both style and comfort. This shift underscores a broader trend: the demand for versatile and timeless pieces that align with individual expression.

On the innovation front, there is a marked resurgence in fabric finishes such as raw, brushed, and stonewashed denim, which are being favoured for their unique textures and depth. Moreover, we are seeing a strong move towards eco-conscious textile blends. Recycled fibres, organic cotton, and premium materials like cashmere are being integrated into denim fabrics, enhancing both wearability and environmental responsibility. This is a testament to the industry's commitment to sustainability without compromising on quality or luxury.

In the Indian market specifically, the 3/1 weave structure is regaining prominence. While international markets have consistently favoured this weave, India had momentarily shifted focus to knit-look and dobby weaves. The resurgence of 3/1 indicates a renewed appreciation for authentic denim aesthetics. Denim, being an ever-evolving fashion statement, thrives on subtle yet impactful innovations that allow consumers to stand out. We are also witnessing a dual trend: on one hand, soft finishes are trending, offering a tactile comfort consumers appreciate; on the other hand, there is a growing preference for high-weight, non-stretch denim with straight fits—indicative of a return to heritage styling.

Could you highlight some of Vishal Fabrics' recent innovations in denim that cater to evolving fashion or functional needs?

At Vishal Denim, we place the consumer at the heart of everything we do. Their preferences and feedback guide our innovation strategy, and our marketing team remains consistently engaged on the ground to anticipate emerging trends and identify what's next in denim fashion.

We have engineered a range of specialised fabrics with controlled shrinkage properties, specifically designed to meet the high standards of leading garment brands and export houses. This ensures optimal fit and reduces production concerns for our partners. Our overdyed colour palettes are not only on-trend but also in high demand—offering garments a clean, lustrous finish that resonates with today's fashion-forward consumers. Additionally, we are investing in the development of fabric lines tailored specifically for women, aligning with evolving market needs.

Vishal Fabrics stands at the forefront of denim innovation, seamlessly blending aesthetics with functionality. Our denim collections are thoughtfully designed to deliver superior comfort, breathability, and adaptability—qualities essential for contemporary lifestyles. We take pride in applying advanced functional finishes that enhance durability, stretch, and weather resistance.

What sustainable practices or eco-friendly processes has Vishal Fabrics adopted in denim manufacturing?

At Vishal Fabrics, sustainability is not just a trend — it is a core principle that guides our operations across the entire textile value chain - our commitment to environmentally responsible manufacturing is both comprehensive and deeply embedded in our business strategy.

Vishal Fabrics has adopted state-of-the-art, eco-friendly practices that align with global sustainability standards. Our advanced Effluent Treatment Plant (ETP) enables us to reuse up to 97 per cent of water, supporting our 100 per cent Zero Liquid Discharge (ZLD) policy. This ensures that no untreated water leaves our facility, preserving precious natural resources. In our efforts to minimise our carbon footprint, we have implemented an innovative waste heat recovery system. By utilising a Plate Heat Exchanger, we capture waste heat to preheat demineralised water — an initiative that has reduced steam consumption in our deaerators by 4–5 metric tonne per day. As a result, we save approximately 15 metric tonne of fuel each month. Our rooftop solar power system further enhances our energy efficiency and significantly lowers our carbon emissions. Additionally, we have introduced a Caustic Recovery Plant (CRP), which optimises the use of alkali in our processes and contributes to reduced chemical consumption.

What are the company's future plans in terms of capacity expansion, product diversification, or exploring new export markets?

At Vishal Fabrics, our vision for the future is rooted in strategic growth, innovation, and global expansion. We are actively pursuing product diversification and exploring new export markets to meet evolving customer needs and capitalise on emerging opportunities. Recognising the rising global demand for denim, we are in the process of enhancing operational efficiencies by embracing cutting-edge technologies. Within the denim segment, product innovation and diversification are ongoing priorities—allowing us to stay aligned with dynamic fashion trends and functional performance requirements. We are also making significant strides in strengthening our export capabilities by building a robust value chain from fibre to fabric. With the right talent in place and strategic partnerships underway, we are positioning Vishal Fabrics to collaborate with leading national and international brands.

These forward-looking initiatives are designed to ensure sustainable growth and establish Vishal Fabrics as a globally competitive leader in the textile industry. ITJ

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"Technology is redefining the future of denim."

MADAME is a western-wear women's fashion brand that offers the young fashion-conscious woman. Owned by Jain Amar, the brand provides fast fashion for young women across three continents through EBOs, Store-in-Store Outlets, an official ecommerce website and other online marketplaces. Madame engages over 2,50,000 women every week, across 500 retail touch points, including 150 Exclusive Branded Outlets (EBOs), Large Format Stores (LFS), and other leading Retail Outlets. **Parika Rawal, Design Head, MADAME**, shares insights with **Divya Shetty** on the latest trends shaping the denim industry and how MADAME is leveraging these trends to stay ahead in the market.

How would you describe the current state of the denim industry in India and globally? What major shifts have you observed post-pandemic?

The denim industry, both in India and globally, is experiencing a dynamic transformation. Post-pandemic, there's been a significant resurgence in demand, driven by consumers prioritizing comfort, durability, and versatility. In India, denim is no longer restricted to casual wear—it's being adopted across segments, from office wear to occasion wear, reflecting a shift in consumer mindsets. Globally, the industry is leaning into sustainability and tech-integrated design. The rise of athleisure and the blending of performance with fashion have also reshaped denim consumption patterns.

Is Indian denim today at par with international quality standards in terms of performance, finish, and innovation? How does Madame ensure global competitiveness?

Absolutely. Indian denim has evolved remarkably and is now recognised globally for its quality, innovation, and finish. At Madame, we maintain global competitiveness through a sharp focus on R&D, fabric innovation, and stringent quality controls. We collaborate with leading denim mills and incorporate the latest international trends in design and wash techniques to ensure our offerings align with global standards. Regular benchmarking and consumer feedback loops further enable us to stay ahead.

What are some of the latest trends you're seeing in denim—be it in fabric finishes, blends, or consumer preferences?

Parika Rawal, Design Head, MADAME

The market is witnessing a strong shift toward comfort-driven denim—stretchable, breathable, and lightweight fabrics are in high demand. There's also a growing preference for vintage washes, raw and clean finishes, and gender-fluid styles. Sustainable blends like organic cotton, Tencel, and recycled fibres are becoming mainstream. From a silhouette perspective, flared jeans, relaxed fits, and high-rise styles are making a strong comeback, especially among younger consumers.

Could you highlight some of Madame's recent innovations in denim that cater to evolving fashion or functional needs?

Madame's denim collection is designed to meet the modern woman's need for style, comfort, and versatility. Our recent innovations include denim with enhanced stretch and recovery for all-day wear, moisture-wicking properties for warmer climates, and stain-resistant finishes for better functionality. We've also introduced denim styles with detachable and modular elements—giving wearers more ways to personalize their looks. Fashion-forward cuts, such as asymmetrical waistbands and two-tone panels, are helping us redefine everyday denim wear.

What sustainable practices or eco-friendly processes has Madame adopted in denim manufacturing?

Sustainability is at the core of our denim strategy. Madame actively uses eco-friendly fabrics like Better Cotton Initiative (BCI) certified cotton and recycled materials in our denim line. We are integrating water-saving dyeing and washing technologies and are working with partners who follow zero-liquid discharge practices. Furthermore, we are gradually shifting towards digital sampling and pattern-making to reduce fabric waste in the design process.

What role do you see technology and automation playing in the future of denim production, and how is Madame gearing up for that transformation?

Technology is redefining the future of denim—from automated cutting to AI-driven trend forecasting and inventory management. Madame is investing in automation for precision and efficiency in manufacturing while also exploring advanced fabric technology that enhances wearability. Our digital transformation roadmap includes adopting PLM (Product Lifecycle Management) systems and AI-powered analytics to streamline design, sourcing, and production processes.

> We are shifting towards digital sampling and pattern-making to reduce fabric waste in our process.

What are the company's future plans in terms of capacity expansion, product diversification, or exploring new export markets?

We are on a strong growth trajectory. Our plans include expanding denim production capacity to cater to rising domestic demand and venturing into select international markets where contemporary Indian fashion is gaining traction. On the product front, we aim to diversify our denim range with fashion-forward silhouettes and multi-functional pieces that reflect global trends while staying rooted in Indian sensibilities. Additionally, Madame is building a stronger D2C presence through madameonline.com and exploring collaborative capsule collections with influencers and designers. ITJ

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"Indian denim today stands shoulder to shoulder with global counterparts."

RSWM, the flagship company of LNJ Bhilwara Group, is one of the leading manufacturers and exporters of synthetic, cotton and blended spun yarns in India. Its 12 manufacturing plants with 6.25 lakh spindles, 172 looms, 95 circular and flat knitting machines produce high-quality cotton, melange, synthetic novelty yarns, denim & knitted fabrics. **Rajesh Singh, Business Head – LNJ Denim, RSWM**, in this interaction with **Divya Shetty**, elaborates on the company' offerings and the new trends in denim industry.

How would you describe the current state of the denim industry in India and globally? What major shifts have you observed post-pandemic?

The denim industry, both in India and globally, has entered a phase of stability and resilience post-pandemic. Demand has largely stabilized, and while some global markets face temporary challenges like tariffs, manufacturers are adapting and finding new ways to stay competitive. In India, the market remains strong, with denim holding its place as a staple fabric. The industry is now more demand-driven, avoiding overproduction, and better equipped to handle uncertainties. One of the most significant shifts post-pandemic has been toward comfort-led, hybrid fashion. Consumers seek versatile apparel for multiple occasions, driving demand for relaxed fits, athleisure, and gender-neutral silhouettes. There's less focus on strict categories and more on comfort and utility.

Sustainability is now essential across the value chain. With rising consumer awareness, brands are focusing on transparency and accountability, using organic cotton, recycled fibres like banana, hemp, and linen, and adopting water-efficient technologies. While waterless dyeing remains aspirational, innovations are steadily reducing freshwater usage. Zero-cotton concepts and eco-friendly washing techniques like laser finishes are gaining traction despite cost challenges. Technology has become integral—from 3D design and virtual sampling to digitalised manufacturing and customer interaction—making processes faster and more collaborative. There's also a strategic move toward localized, resilient supply chains. Near-shoring and vertical integration are helping brands reduce dependencies and respond more swiftly to market needs.

Is Indian denim today at par with international quality standards in terms of performance, finish, and innovation? How does RSWM ensure global competitiveness?

Rajesh Singh, Business Head – LNJ Denim, RSWM

Yes, absolutely. Indian denim today stands shoulder to shoulder with global counterparts in quality, finish, and innovation, and RSWM is a strong example of that progress. We've consistently invested in the right technologies, advanced machinery, and skill development to meet international benchmarks.

What truly drives our global competitiveness is purposeful innovation. Whether in fabric design, process efficiency, or customer service, we're constantly evolving. Sustainability is a core value for us; we're aggressively adopting solar energy, cutting down fossil fuel usage by shifting to agro-based alternatives for steam, and recycling cotton waste through garneting.

A significant differentiator lies in our commitment to responsible manufacturing. We produce exclusively against confirmed orders, thereby preventing overproduction and its long-term environmental impact. Our operations are grounded in ethical practices, with a deep emphasis on human values and fair labour throughout the supply chain. As previously noted, transparency is integral to our entire value chain,

supported by global certifications and robust traceability standards. In terms of service, we are known for our reliability—consistently delivering with speed, precision, and a steadfast dedication to honouring our commitments.

What are some of the latest trends you're seeing in denim—be it in fabric finishes, blends, or consumer preferences?

While core denim fabric remains consistent, innovation around it is evolving across four key dimensions: colour, design, blends, and functional finishes. On the fibre front, there's a growing shift beyond traditional cotton, with increased use of sustainable alternatives like banana, hemp, linen, recycled polyester, and spandex or Lycra. This is driven by both cotton reduction goals and demand for performance fabrics.

Functional finishes are also gaining traction. Since cotton has long been the benchmark for comfort and breathability, new finishing techniques aim to replicate those qualities with alternative fibres, enhancing comfort, durability, wrinkle resistance, and soft hand-feel. In dyeing, classic indigo blues and blacks still dominate, but the focus is now on eco-friendlier processes. Similarly, denim washing is moving toward reduced water usage and sustainable technologies like laser finishing. These not only lower environmental impact but also offer greater design flexibility.

Could you highlight some of RSWM's recent innovations in denim that cater to evolving fashion or functional needs?

We at RSWM are continuously pushing the envelope when it comes to innovation in denim. One of our key strengths lies in our integrated value chain, from fibre to yarn to fabric, which allows us to experiment quickly and deliver efficiently. Whether it's tweaking the fibre composition, optimizing fabric construction, or enhancing finishes, we ensure that our products not only meet the performance expectations but also align with target price points. We're often able to strike that balance within the customer benchmarks. Our recent innovations in denim include the development of biodegradable polyester denim, denim made with sustainable fibres, denim treated with eco-friendly functional finishes, and denim designed for enhanced wearable comfort.

We're also broadening our product mix and moving towards being a complete textile and apparel solutions provider. This involves closely studying evolving fashion demands and functional preferences, and then delivering those through faster innovation cycles and better speed-to-market. What sets us apart is our agility. The backend strength we have, be it in fibre, yarn, or denim processing, gives us the flexibility to respond to any challenge a customer brings to the table, and do so with precision and speed. Our efforts over the last quarter, be it in pricing, quality, or supply chain execution, have yielded strong results and reinforced our position as a trusted, future-ready denim partner.

What sustainable practices or eco-friendly processes has RSWM adopted in denim manufacturing?

At RSWM, sustainability is integral to how we operate. We are actively reducing our dependence on fossil fuels by investing in solar power and adopting agro-waste boilers for steam generation, minimizing our carbon footprint while improving energy efficiency across our manufacturing units. Through advancements in dyeing and finishing technologies, we've significantly brought down water consumption per meter of fabric. Our processes consume substantially less water than industry standards, placing us in line with global benchmarks.

We're also committed to zero liquid discharge in our effluent treatment. Additionally, we're actively incorporating recycled fibres, organic cotton, and alternative materials such as banana fibre and hemp into our blends. Our on-demand production model guides our production only against confirmed orders. We consciously avoid overproduction, which helps efficient management of resources and minimizes textile waste. Transparency and traceability are equally important. We adhere to strict ethical labour practices, and ensure clear certifications across the supply chain.

What are the company's future plans in terms of capacity expansion, product diversification, or exploring new export markets?

We are steadily evolving to meet future demands through calibrated capacity expansion and tighter process control. Our approach remains agile—we scale up in line with market requirements while ensuring sustainable growth. Vertical integration opportunities that complement our denim business are also under active consideration to enhance value and control.

On the product side, we continue to diversify with innovations in blends, finishes, and sustainable materials. We're also investing in recycling initiatives and optimising raw material usage to stay cost-efficient and environmentally responsible. Our vertically integrated setup enables just-in-time manufacturing, helping reduce inventory and waste while improving responsiveness.

We're also exploring new export markets aligned with our strengths in quality, consistency, and speed-to-market. As we move forward, our strategy will continue to focus on innovation, sustainability, and resilience—ensuring RSWM remains a trusted global partner in denim solutions across evolving fashion and functional needs.

ITJ

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"We encourage our designers to approach innovation thoughtfully."

Numero Uno is one of the most admired jeanswear brand in the country. Now the brand also offers a truly wide and marvellous range of casual wear with its famous collection of jeanswear. NU is one of the most admired jeanswear brand in the country. Now the brand also offers a truly wide and marvellous range of casual wear with its famous collection of jeanswear. In fact, the new range is as wide as your imagination. **Manjula Gandhi, Chief Product Officer, Numero Uno**, in this interview with **Divya Shetty**, shares how Indian denim brands are globally competitive.

Manjula Gandhi, Chief Product Officer, Numero Uno

How do you view the current state of the denim industry in India and worldwide? What key changes have you noticed since the pandemic?

The Indian denim market has experienced tremendous growth in recent years, with an annual growth rate of 8- 9 per cent. Recent market studies and projections suggest the denim market is set to reach $9.15 billion by 2026, a rise of $3 billion from $6.15 billion recorded in FY2023.

Indian denim industry has undergone significant transformations post pandemic and is poised for continued growth , driven by a combination of shifting consumer preferences towards comfort and versatility , innovation and technological advancements within denim industry and a growing concern for environment and planet by both brands and consumers . Other key factors include growth of mass and luxury segments, the sudden rise of D2C brands, & expansion of online retail channels.

Does Indian denim now match international quality standards in terms of innovation, finish, and performance? How does Numero Uno maintain global competitiveness?

Indian denim manufacturers have made significant strides in recent years by producing world class high-quality fabrics and garments that meet international standards. In the areas of performance and finishes manufacturers have made significant investments in R&D resulting in high performance fabrics that rival international brands. They are embracing innovation with a focus on sustainability and eco-friendliness, making it a popular choice for fashion brands worldwide.

Numero Uno has adopted eco-friendly practices such as using organic cotton and recycled polyester fabrics and water saving techniques. We have implemented sustainable manufacturing processes in our laundry ensuring minimal impact on environment. We have invested in state of the art manufacturing infrastructure, & aligned our product development with the changes in consumer lifestyle by including innovative products in our collections like lightweight stretchable denims – zero gravity denims for active lifestyle, knitted jog denims perfect for travel & all day comfort, extremely soft hand feel feather touch denims and superior viscose and Tencel blended fabrics for excellent hand feel and comfort. The brand has a dedicated Design & PD team constantly creating new and innovative products and wash finishes in line with global fashion trends. Further their focus on stringent quality, delivery and consistency in curating relevant product has given NU an edge over their competitors.

What are some recent trends you're observing in denim, whether in fabric blends, finishes, or shifting consumer preferences?

Style trends dominating the urban denim fashion are oversize silhouettes, relaxed fits and utility styles. Denim layers like jackets, vests and outerwear are essential for creating statement looks. Further there's

also trend for genderless designs catering to all genders emphasising individuality and comfort.

Can you highlight some of Numero Uno's recent denim innovations that address changing fashion or functional demands?

NU has a dedicated PD & Design team constantly creating new and innovative products and wash finishes in line with global fashion trends.

We have aligned our product development with the dynamically changing consumer lifestyles by including innovative utilitarian products in our collections like zero gravity denims – which are lightweight stretchable denims ideally suited for active lifestyle of today's youth, knitted jog denims perfect for travel & all day comfort, extremely soft hand feel feather touch denims and superior viscose and Tencel blended fabrics for excellent hand feel and comfort.

NU Vintage Jeans are timeless pieces inspired from the old n retro fashion eras evoking nostalgia, and the streetwear inspired multiple pocket Cargo Denims in relaxed comfort fits appealing to the younger audience fashion sensibilities, are few highlights of our current denim collection. Every piece of NU denim whether modern or vintage, minimal or statement, emphasises individuality, self-expression and comfort.

Sustainability is a major focus in the textile value chain. What eco-friendly practices or sustainable processes has Numero Uno implemented in denim production?

We are a responsible eco-conscious denim brand and prioritise sustainable processes and practices within our manufacturing by way of eco-friendly fabrics, fair practices and ethical production. Our washing processes employing latest technology that helps in reducing environmental impact, maintaining denim's heritage while embracing necessary advancements.

We encourage our designers to approach innovation thoughtfully, ensuring that new techniques and sustainability efforts do not compromise the craftsmanship and authenticity that define quality denim.

> Numero Uno has adopted eco-friendly practices such as using organic cotton and recycled polyester fabrics and water saving techniques.

What role do you envision technology and automation playing in denim production's future, and how is Numero Uno preparing for this change?

Automation and technology are revolutionising the denim production process enhancing efficiency, reducing costs and improving quality. Automation in cutting, pattern making and grading thru CAD, and data driven manufacturing are being utilised widely to minimise wastage, expedite production, increasing precision and consistency and for ensuring max efficiency and strategic decision making.

> NU has a dedicated PD & Design team constantly creating new and innovative products and wash finishes in line with global fashion trends.

Emerging trends point towards use of AI in design and production planning, 3D printing, laser finishing etc.

While we are already using the technology and automation for cutting and pattern making efficiency, cost reduction and consistency , we have also initiated use of AI in design, and we are gearing up to integrate it in production planning and quality control as well to further streamline denim production. We are also looking to add 3D printing and laser finishing to enable rapid prototyping, reduced wastage and enhanced customisation. These advancements will empower us to respond quickly to evolving consumer expectations while maintaining a competitive edge in the denim space.

What are the company's plans for future capacity expansion, product diversification, or tapping into new export markets?

Capacity expansion is a strategic decision & will be aligned with company's future growth plans. While we do that and embrace the necessary advancements, we strive to remain focussed on maintaining denim's heritage, to approach innovation thoughtfully, ensuring that new techniques and sustainability efforts do not compromise the craftsmanship and authenticity that define quality denim. By staying adaptable and mindful of both tradition and progress, we aim to continue to evolve in a meaningful and responsible way. ITJ

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"We are well-positioned to thrive in a dynamic global textile landscape."

Sanathan Textiles is one of the leading yarn manufacturers in India, operating across three key segments: polyester filament yarns, cotton yarns, and yarns for technical textiles. With this diverse product portfolio, the company caters to a wide range of applications and end uses. Their yarns are used in suiting, shirting, garments, sarees, and dress materials. Sanathan Textiles also produces yarns for sportswear, gym wear, and home textiles—supplying materials for bath mats, towels, curtains, cushions, carpets, and more. Additionally, they manufacture yarns for backpacks, soft luggage fabrics, seat belts, car roofing, car upholstery, parachute fabrics, shoe uppers, flex fabrics used in advertising hoardings, and other technical applications.

Paresh Dattani, MD and Chairman

Sammir Dattani, Director, Sanathan Textiles

Currently, their polyester filament yarn division contributes approximately 77 per cent of the total revenue, with an annual production capacity of around 200,000 Metric ton per annum (MTPA). The cotton yarn segment operates at a capacity of 132,000 spindles, producing about 14,000 MTPA. The technical textile yarn segment accounts for about 5 per cent of their business, with an annual production of roughly 9,000 MTPA. In this exclusive interview, **Paresh Dattani (PD), Chairman and Managing Director,** and **Sammir Dattani (SD), Executive President, Sanathan Textiles,** share with **Divya Shetty** their future vision and the breadth of solutions offered across textile segments.

The company has introduced innovative products like S-Flex, which combines polyester's benefits with exceptional stretch, eliminating the need for spandex. Could you elaborate on the R&D process behind such innovations and their impact on the market?

SD: Stretch yarns are a very exciting space. If you notice, most of the apparel and garments we wear—high-street clothes from brands like Zara, H&M, Pantaloons, or Westside—now have a certain amount of stretch. There are many advantages to this. It gives the wearer comfort of motion and movement, better shape and fit, and shape retention after washing and wearing. Because of these benefits, many brands are now using stretch fabrics.

We started making stretch yarns a couple of years ago by adding Lycra or spandex to our yarns. This allows the fabric manufacturer to skip additional processing—they can simply buy stretch yarns and create blended fabrics as needed.

With time and innovation, we recently launched our product S-Flex, a self-stretch, four-way stretch polyester filament yarn. Here, we don't add any spandex. By modifying the properties of the polyester filament yarn itself, we achieve four-way stretch. This makes the fabric stretchable, lighter, easier to process, and more cost-effective, since no new elements like spandex are added.

We constantly track trends to understand where fashion is heading. In many ways, fashion starts with yarns—the beginning of the textile chain. What we make goes into garments, suiting, shirting, etc., so we must stay aligned with what customers and brands want.

Additionally our dedicated R&D team is working on developing advanced yarns such as fire-retardant yarns, Sanathan Dry Cool a moisture-wicking yarns, and Sanathan S-flex a four-way stretch yarn without spandex. The upcoming Punjab facility will also house a state-of-the-art R&D team, further enhancing the company's ability to develop cutting-edge products for diverse applications, including apparel, automotive, and home textiles.

Further we produce a wide range of coloured yarns using dope-dyed technology. Now we also offer coloured stretch yarns, adding value for our customers.

This eliminates conventional dyeing, add to better colour and improves UV resistance of the garment , and helps reduce water pollution and carbon footprint by eliminating extra processes.

Sanathan Textiles caters to various segments within technical textiles, including agrotextiles, geotextiles, and indutech. How does the company address the unique demands of these diverse applications?

SD: Yarns for Technical textiles is a very exciting space. It's one of our youngest divisions, started in 2017 currently accounting for approximately 4 per cent of the revenue. There is a lot of push from the government for technical textiles because this segment has tremendous growth potential in India. We are looking to doubling the capacity from 9,000 to 18,000 MTPA. Over the coming years, reports suggest that the technical textile segment is expected to grow at a CAGR of 15 to 17 per cent.

There are only a handful of yarn manufacturers in this segment. While many companies are involved in making fabrics and applications for technical textiles, very few focus on yarn manufacturing.

We make different types of yarns for technical textiles. Our yarns are used to produce geogrid fabric for road and dam construction, conveyor belts, safety slings, deep sea fishing nets, marine ropes, seat belt fabrics, and airbag fabrics. These are some of the major industrial applications.

There are also high-end applications such as premium luggage fabrics, outdoor awning fabrics, fire-retardant suits, and bulletproof jacket fabrics. These are the different types of applications in the technical textile segment for our products.

With the upcoming greenfield project in Punjab set to double the Polyester Filament Yarn capacity, how does Sanathan plan to meet the rising demand in the textile industry?

SD: Our current capacity is fully utilised. We run our facility 365 days, 24/7, so we are fully sweating our assets. It was time for us to grow and the time was right as the financials of the company are healthy. India produces around 4.5 million tonne of filament yarns annually and is a growing market place. —So we decided it was time for Sanathan also to grow. Looking at the demand, and since we are fully sold out and our capacity is fully optimised and utilised, we decided that it was time to expand.

Historically, we have periodically grown all three of our yarn businesses — polyester filament, cotton, and yarns for technical textile— one after the other, to ensure consistent company-level growth without putting too much pressure on any one segment. So, we decided to grow our polyester filament yarn segment. Additionally supply for fabrics has come from the western region, adding logistics costs and extended delivery timelines for customers. When we were analysing the data and deciding the next steps, we saw huge growth in the last four to five years in North India. Today, the polyester filament yarn industry is about a 4.5 million ton market in India, and around 1 million tonne is consumed in North India, which is a growing market. There is no local supplier for this product today — everything is made on the western side of India, between Silvassa and Gujarat. We already have customers in North India to whom we've been supplying to for more than 10 /12 years. So, we are in the process of setting up a greenfield expansion in Wazirabad, Punjab, to be closer to our North Indian customers — mainly in Delhi NCR, Panipat, Ludhiana, and Amritsar. These are the key textile regions in North India that consume polyester filament yarn.

> “We produce a wide range of coloured yarns using dope-dyed technology. Now we also offer coloured stretch yarns, adding value for our customers. This eliminates conventional dyeing, and helps reduce water pollution.”

We are setting up a new capacity that will begin operations in this quarter. With an estimated investment of ₹18.50 billion for the first phase, this project will increase the company's polyester filament yarn production capacity from the current 550 tonne per day to 1,500 tonne per day in a phased manner. The first phase will contribute approximately 250,000 tonne annually, while the second phase will further ramp up production to 355,000 tons annually with an additional investment of ₹2.50 billion. This plant makes us the first fully integrated polyester filament yarn manufacturer in North India.

While, inputs will be raw materials like petrochemicals PTA, and MEG. We will make our own base POY yarns and also make FDY, then convert it into texturised yarns. We will offer a wide variety of products based on market demand and customer needs, supplying different end-user applications.

Overall, we will be doubling our yarn capacity — from two lakh to five and a half lakh MTPA.

Currently, all three yarn businesses are located

in Silvassa. This is a bigger project, and we are entering a new region. By going closer to the customer, we aim to become their preferred supplier. The move also ensures just-in-time deliveries for customers, reducing costs and improving supply chain efficiencies.

> Green measures include the production of dope-dyed yarns, which eliminate traditional water-intensive dyeing processes, and the manufacturing of Sanathan Reviro, recycled polyester yarns from PET chips, promoting circularity in textile production.

What is your perspective on its current state of the Indian Textile industry, and how is Sanathan Textiles positioning itself to adapt and thrive?

SD: The Indian textile industry, with its deep-rooted heritage, holds immense potential both domestically and globally. As one of the oldest industries in the country, it continues to benefit from a rapidly growing domestic market driven by India's young and expansive population. On the global front, shifting trade dynamics—such as tariff wars and disruptions in competing markets like Bangladesh—present a valuable opportunity for India to expand its share in international textile trade.

Sanathan Textiles, with over 20 years of expertise, is well-positioned to capitalize on this evolving landscape. The company's advanced facility in Silvassa supports both domestic markets in western and southern India and a strong export portfolio. To further strengthen its presence, Sanathan is setting up a state-of-the-art greenfield facility in Punjab, aimed at addressing the rising demand from North India. With a strong emphasis on automation and technological innovation, Sanathan is proactively scaling its capabilities to adapt and thrive in the changing textile ecosystem.

What initiatives has Sanathan Textiles undertaken to ensure environmentally conscious production processes?

PD: Sanathan Textiles has embedded sustainability into every facet of its operations, ensuring environmentally conscious production across both current and upcoming facilities.

At its Silvassa unit, the company has implemented Zero Liquid Discharge (ZLD)—where all wastewater is treated and reused within the plant, including for gardening. The facility is also ISO-certified and use recycled paper for packaging, reinforcing its adherence to global sustainability norms.

Looking ahead, the new greenfield facility in Punjab is designed to be a benchmark in eco-friendly manufacturing. It will adopt renewable energy solutions, including an existing 2.35 MW solar power capacity with plans for further expansion. To reduce dependence on conventional fuels, rice husk—an agricultural by-product—will replace gas for heating, a significant step forward in sustainable energy use. The company is in the process of finalizing a partnership with one of India's largest suppliers of agricultural waste to support this initiative.

Additional green measures include the production of dope-dyed yarns, which eliminate traditional water-intensive dyeing processes, and the manufacturing of Sanathan Reviro, recycled polyester yarns from PET chips, promoting circularity in textile production. Sanathan is also shifting to reusable pallets instead of cartons, drastically cutting down on packaging waste.

As Paresh Dattani notes, these efforts reflect Sanathan's strong commitment to sustainability, not just as a responsibility, but as a core growth driver for the company's future.

What key strategies or philosophies have driven Sanathan Textiles' journey from legacy to leadership?

Sanathan Textiles' journey from legacy to leadership has been driven by a clear strategic vision, innovative thinking, and strong succession planning. With a goal to surpass ₹75 billion in revenue, the company is focused on efficiency, market expansion, and value-added product offerings. Its roadmap includes commissioning the Punjab facility by FY26, followed by a ₹4 billion cotton yarn expansion and a second phase of polyester capacity by FY28.

Sanathan is also exploring downstream opportunities in technical textiles to deepen its value chain integration. A strong emphasis on automation, process efficiency, and continuous R&D reflects its commitment to innovation. The Punjab facility is set to enhance supply chain operations and cement its market leadership, while sustainability remains at the core of its strategy through renewable energy use and recycled materials. Importantly, with a solid succession plan in place and active involvement from the next generation, Sanathan is future-ready and well-positioned to thrive in a dynamic global textile landscape. ITJ

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"We are deeply focused on building a sustainable business."

Founded in 1968 by three visionary entrepreneurs, Rupa & Company started as a humble dream and has grown into a leading name in India's innerwear and outerwear market, with a strong global presence. Rupa swiftly embraced the athleisure movement, recognising the modern consumer's need for comfort without compromising on style. Collections like Bumchums and Colors combine function and fashion, offering versatile clothing that moves effortlessly from workouts to social settings. With innovations such as moisture-wicking fabrics and stretchable materials, Rupa ensures comfort and functionality, making it a go-to brand for active lifestyles. **Ramesh Agarwal, Whole Time Director, Rupa & Co**, discusses the company's future plans in an interview with **Divya Shetty**.

Ramesh Agarwal, Whole Time Director, Rupa & Co

Can you tell us more about the company's portfolio?

With a rich portfolio of brands catering to men, women, kids, and infants, Rupa continues to redefine everyday fashion. Frontline, Euro, and Jon serve the diverse needs of men, while women find stylish comfort in brands like Softline, Femmora, and Colors. For the younger generation, Bumchums and Colors Junior range offer playful and functional options and the adorable Peek-A-Boo range wraps infants in cuddly, bubbly comfort.

Rupa caters to a wide range of customers across men, women, and kids. Which of these segments is currently witnessing the highest demand, and what are the driving factors behind it?

Rupa is witnessing peak demand in the men's segment, which contributed around 86 per cent of revenue in 9MFY25. This growth is fuelled by the rising adoption of athleisure and premium innerwear, as consumers increasingly seek comfort and style. We've expanded into the mid-premium and premium space with a wide range of categories, gaining momentum among quality-conscious buyers.

Are there any new or innovative materials being used in your hosiery or innerwear range that are transforming the comfort or performance of your products?

Yes, at Rupa, we are actively incorporating new and innovative materials in our hosiery and innerwear range to significantly enhance comfort and performance. Our focus is on using moisture-wicking and breathable fabrics that keep wearers cool and dry throughout the day. We've also embraced 3D knitting technology to create seamless designs that offer a superior fit and eliminate irritation, ensuring all-day comfort. These initiatives not only reduce our environmental impact but also cater to the growing demand for sustainable fashion.

On the technological front, we utilise CNC technology for precision manufacturing and CAD tools for innovative design and rapid prototyping, allowing us to bring high-quality products to market faster. We also use Colorfast technology to ensure our garments retain vibrant and durable colours even after repeated washes. Our fully automated operations further maximise efficiency and maintain consistent product quality across the board. Whether it's innerwear, thermal wear, or athleisure, our innovative approach ensures that every Rupa product delivers on performance, comfort, and conscious design.

What are some of the sustainable practices that Rupa has adopted in its manufacturing and supply chain?

At Rupa, we are deeply focused on building a sustainable and future-ready business that aligns with

the values of Gen Z and global ESG benchmarks. We have adopted energy-efficient production methods, water conservation techniques, and ensured responsible chemicals and effluent management.

To define our ESG focus areas, we conducted stakeholder engagements and materiality assessments involving investors, employees, suppliers, and regulators. This helped us identify and act on the most critical environmental, social, and governance issues. We also ensure transparency in sourcing and regularly train investors on sustainable practices. Our social initiatives prioritise diversity, human rights, and occupational safety, while our governance practices emphasise ethics, accountability, and responsible sourcing, emphasising our promise to sustainability, social good, and long-term value creation.

> Over the next 3–5 years, Rupa's key priorities lie in product diversification, strengthening brand positioning, and expanding market presence both in India and abroad. We're broadening our portfolio beyond innerwear.

How is Rupa leveraging technology, such as automation or digitalisation, in its production or retail processes to stay competitive in the market?

Rupa is harnessing technology to drive growth and stay ahead in a competitive market by integrating automation and digitalisation across both manufacturing and retail. Our operations employ CNC for precision manufacturing and CAD for innovative design and prototyping, enabling high-quality production with minimal manual intervention. We also use advanced Colorfast technology, such as the 'Spectraflash SF450' spectrophotometer, to ensure vibrant, durable colours that meet international standards. On the retail front, we leverage digital platforms and e-commerce to connect with the Gen Z population and offer a personalised shopping experience. Looking ahead, technologies like IoT and data analytics will enhance supply chain visibility, while AI will aid in demand forecasting, pricing, and trend identification. Our assurance to innovation is reflected in collections like the vibrant 'Colors' range and digitally printed innerwear, showcasing how we continue to evolve with consumer preferences and global benchmarks.

Is Rupa looking at expanding its footprint in international markets? If yes, which regions are being targeted and what's the strategy for global outreach?

Yes, Rupa is actively expanding its footprint in international markets, focusing on regions like the Middle East, Africa, and Southeast Asia. While our primary market remains India, contributing 98 per cent of our revenue, we are strategically exploring new growth opportunities abroad. Our approach includes both physical and digital channels, with multiple exclusive brand outlets and a strong presence on major e-commerce platforms like Amazon, Flipkart, Myntra, Blinkit, Swiggy, Instamart, Reliance Retail, and more.

What are the company's key focus areas or goals for the next 3–5 years in terms of product diversification, brand positioning, and market growth?

Over the next 3–5 years, Rupa's key priorities lie in product diversification, strengthening brand positioning, and expanding market presence both in India and abroad. We're broadening our portfolio beyond innerwear to include outerwear, activewear, and thermal wear, designed to meet the evolving tastes of Gen Z and millennials. On the branding front, the goal is to reposition Rupa as not just an essential wear brand but a lifestyle choice, merging fashion, comfort, and innovation.

> We utilise CNC technology for precision manufacturing and CAD tools for innovative design and rapid prototyping, allowing us to bring high-quality products to market faster.

Market-wise, while India remains core, especially through general trade and e-commerce, we're strategically growing in international markets like the Middle East, Africa, and Southeast Asia to tap into new demand and drive sustainable global growth. ITJ

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Khadi's Rise in Gen Z Fashion

With thoughtful policy, design innovation, and reproducible infrastructure, khadi can be more than a fad—it can be a cornerstone in international debates on sustainable fashion, opines **Nealesh Dalal**.

In a time when the fashion world is increasingly turning towards sustainability and personal expression, a humble, handwoven fabric of colonial India is quietly finding its way back into fashion—this time, on Gen Z's shoulders. Something that was once inextricably linked with freedom fighters and Gandhian austerity is now experiencing a revival with a generation that is as global but also local in its consciousness.

From fashion week runways to Instagram reels, khadi has transcended and redefined itself as a cultural icon. But this resurgence is not just a temporary phenomenon. It is a result of deep-rooted shifts in how younger consumers conceptualise identity, sustainability, and fashion.

Khadi: From symbol of resistance to statement of revival

To understand its modern appeal, one needs to go back to the origin of khadi. Woven into the very fabric of India's freedom struggle, khadi was not merely a cloth—it was a movement. Mahatma Gandhi championed it, transforming it into a symbol of self-reliance, the dignity of labour, and resistance against colonial industrial goods.

But since independence, khadi has slowly fallen off the mainstream fashion narrative. Government emporia and ceremonial wear relegated khadi to a market brimming with synthetic blends and machine-spun products. For decades, it bore an undeserved reputation for being rough, old-fashioned, and hipster-unfriendly.

That stereotype is now gently evolving, led, perhaps anomalously, by India's newest consumer generation.

Why is Gen Z turning to khadi?

Born between the mid-1990s and early 2010s, Gen Z represents a distinct demographic. They are digital natives, yes—but socially aware, eco-aware, and increasingly questioning the environmental and ethical cost of fast fashion. To them, what they wear matters as a reflection of their values.

Enter khadi: A fabric that checks all the right boxes

Sustainability: Khadi's low carbon footprint appeals to Gen Z's eco-conscious mindset. Since it's handspun and handwoven, it requires minimal energy and water compared to industrial textile production. In a world grappling with climate change, this is a significant advantage.

Authenticity and local pride: Gen Z loves products and brands that have a story behind them. Khadi, being heritage-based and hand-stitched, speaks of an authenticity that mass fashion can never hope to attain. Gen Z is also shopping with local artisans— something that strongly appeals to a generation that values impact and community.

Self-expression and individuality: In a world overindulged with fast fashion ubiquity, paradoxically, khadi permits individuality. Each garment is individual—its feel and fabric have flaws of human imperfection. Khadi is a peaceful insurrection against conformity in an era dominated by visual individuality, largely showcased on platforms like Instagram and Pinterest.

Post-pandemic perspective: The pandemic witnessed a global restart of consumerism. During the time of lockdown and supply chain issues, there was a distinct shift towards conscious consumption. The chant of "buy less, buy better" worked, and khadi, which emphasises

quality over quantity, was the perfect fit.

When khadi met the runway

Gen Z's wardrobe is not experiencing the khadi invasion in isolation. Fashion designers have contributed to transforming the image of this ancient fabric considerably.

Designers such as Rajesh Pratap Singh, Anavila Misra, Akaaro (Gaurav Jai Gupta), and Rimzim Dadu have placed khadi on the runway with modern silhouettes, creative drapes, and even metallic finishes. Singh, particularly with his minimalist approach, has been known to say that khadi is "the most versatile fabric" he has ever used.

By combining ancient weaves with contemporary cuts, such as khadi jumpsuits, blouses, jackets, and loose saris, fashion designers are rendering khadi fashionably. Fashion designers are no longer limited to kurtas and Nehru jackets. khadi today is trendy, light, and hopefully contemporary.

Interestingly enough, most of these designers are cooperating very closely with rural Indian weavers so that the resurgence is not only superficial but monetary as well.

Social media and the renaissance of khadi

The world of social media, too, has played its part in bringing khadi back.

Gen Z doesn't see fashion through catalogues and physical shops. Social media influencers, reels, second-hand stores, and earthy Instagram pages advise Gen Z on style. Social media sites such as Instagram and Pinterest are filled with slow fashion hashtags that pose khadi clothing in settings where tradition is contrasted with trend.

Thrift accounts, green fashion bloggers, and conscious influencers are dressing khadi up with sneakers, layering it over jeans, or accessorising it with statement pieces, giving the fabric a second chance in perception and consumption.

This visual narrative is significant. It works to reverse khadi from a "heritage wear" category to a "cool wear" category—something trendy, fashionable, and Instagram-worthy.

A fabric with promise and challenges

It does have its problems, though, even amid excitement.

Scalability and Production: Because khadi is handspun and handwoven, increasing production to meet a predicted rise in demand may be difficult. Most weaving clusters remain under minimal infrastructure and outdated tools. Lacking supply, modernisation and capacity-building investments, demand may exceed supply.

Perception Challenges: Even as urban Gen Z is welcoming khadi, the larger segments of the market perceive it as a niche or a premium offering. We must democratise khadi while maintaining its value.

Design Innovation: While designers are experimenting with khadi, the fabric also has unrealised potential in terms of texture, dyeing processes, and utility applications. R&D can explore ways in which khadi can be re-engineered to meet the demands of modern lifestyles—be it sportswear, corporate wear, or interior furnishings.

Policy and Institutional Support: Government schemes such as khadi and the Village Industries Commission (KVIC) have made consistent efforts to popularise the fabric. However, more needs to be done to introduce khadi into contemporary fashion systems, ranging from design school curricula to joint initiatives with high-street retailers.

A bridge between past and future

What's striking about khadi's return isn't just the fashion—it's the symbolism. In choosing khadi, Gen Z is building a bridge between heritage and modernity, craft and commerce, sustainability and style. They are challenging the notion that traditional fabrics do not belong in museums or textbooks. Instead, they're wearing history on their sleeves—literally.

This isn't nostalgia. It's a nuanced reinterpretation.

In khadi, they do not only learn about a fabric but also a narrative. A subtle rebellion against quick fashion. A link to artisans. A feeling of home. And maybe a future.

While global and local fashion trends continue to oscillate back and forth, the success of khadi offers a compelling case study of revival, exceptionally well done. It shows how a generation of fast lifestyles and digital natives can still actively seek slowness, depth, and sustainability.

With thoughtful policy, design innovation, and reproducible infrastructure, khadi can be more than a fad—it can be a cornerstone in international debates on sustainable fashion.

Gen Z might not be turning wheels in their backyard, but they are turning a new page. This new chapter is invigorating khadi, not just as a reminiscence of the past, but as a weaving of the future. ITJ

About the author:

Nealesh Dalal is the Founder of JD School of Design, and Design Gurukul and Managing Trustee of JD Institute of Fashion Technology. He began his career in the design education industry in 2002. His years of experience has led to in-depth awareness, strategic judgement and understanding which has helped in the successful integration of new age courses. The adaptation of edutech in Dalal's endeavours has helped to cultivate interactive classrooms and give students access to innovative resources that make classes meaningful.

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Rieter Card C 80: Optimised Cost-Performance Ratio

After installing three Rieter cards C 80, Chuzhou Jinshangjia Yarn Industry Co, saw its cost-performance ratio improve. The Chinese spinning mill, which is based in Anhui Province, values the C 80 for its high stability, remarkable production efficiency and long service life. The superior sliver quality with up to 82 per cent fewer neps ensures excellent end spinning performance and delivers a yarn quality that their downstream customers appreciate greatly.

Figure 1: The C 80 produces up to 120 kg/h, far exceeding the output of previous models.

Jinshangjia pursues the twin goals of increasing production while keeping sliver quality high. With around 100 000 spindles the company produces 55 tonne of Ne 16 to 26 carded compact yarn per day. Previously, the company used the Rieter cards C 72 with a production rate of 80 kg/h. To achieve higher capacity without using more space, Jinshangjia tested different solutions and finally chose the C 80. Today they produce up to 120 kg/h sliver per card. Neps were reduced by up to 82 per cent during the carding process. The C 80 helps handle higher order volumes and supports the company's goal of improving both yarn quality and cost efficiency.

Features for better performance

The card C 80 has the largest active carding area, which improves fiber opening and cleaning. It has 40 active flats and precise carding gap settings, leading to high sliver quality and finally to more efficient spinning. Energy efficiency is another advantage. The improved drive system and suction technology lower energy consumption while keeping output high. The modular design reduces maintenance and machine downtime.

Long-term partnership with Rieter pays off

Jinshangjia has used Rieter's technology since 2013. Gu Jingguo, General Manager of Chuzhou Jinshangjia Yarn Industry Co, emphasises, "Our cooperation with Rieter dates back to 2013. For more than a decade, we have relied on Rieter's equipment, advanced technology and professional service. The card C 80 is characterized by high stability, remarkable production efficiency and a long service life. The sliver is of superior quality, with fewer neps, ensuring excellent yarn quality. This is highly appreciated by our customers."

Figure 2: Gu Jinguo, General Manager of Chuzhou Jinshangjia, appreciates the superior sliver quality that ensures excellent spinning performance.

By investing in the C 80, Jinshangjia strengthens its position as an innovative company. With the advanced carding technology, it continues to improve production, ensuring growth and high-quality yarn for the global textile market. ITJ

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High-performance warp machines gain ground in North America

Karl Mayer to showcase its innovations in the German Pavilion at Techtextil North America 2025.

Karl Mayer will present innovative solutions for warp knitting and warp preparation for the technical textiles industry at Techtextil North America, from May 6 to 8, 2025. At the German Pavilion, in Hall B of the Georgia World Congress Center in Atlanta, visitors will find a dedicated team, video presentations and materials on machine topics focused on the North American market: the HKS 3 M-ON high-performance warp knitting machine, the PROWARP automatic sectional warping machine and the Wefttronic II RS high-performance Raschel machine with weft insertion.

Mariano Amezcua, President of Karl Mayer North America, is looking forward to a lively trade fair: "There's nothing like the energy of reconnecting face-to-face at Techtextil – being able to engage directly with our customers, showcase real-world applications, and spark conversations around future growth is both inspiring and invaluable."

Highlights from the Karl Mayer presentation

The HKS 3 M-ON offers the latest technology for highly efficient and precise production of tricot fabrics - the most important market for Karl Mayer warp knitting machines in North America. Models with three guide bars are the most widely used machines in this market. The HKS 3 M-ON combines maximum flexibility with speed and a competitive price, thus ensuring a performance that is expected to generate great interest among Techtextil visitors.

The HKS 3 M-ON combines maximum flexibility with speed and a competitive price.

Prowarp is the ideal machine for investments in capacity expansion and productivity improvements

The Wefttronic II RS is also well-established in the US market for technical textiles. Manufacturers of coating substrates for industrial roofs rely on the cost-effective and reliable Raschel machine with course-orientated weft insertion which boasts considerable capacities. Geotextiles are another lucrative application area for the Wefttronic II RS. The Karl Mayer team will have an extensive collection of samples at their disposal and look forward to a lively exchange of ideas.

The Prowarp has great potential in North America. It is the ideal machine for investments in capacity expansion and productivity improvements. The automatic sectional warper processes all types of materials and is equipped with the latest connectivity, measurement and control technology. The Proactive warping system, in particular, is sure to attract attention.

The system records the warp quality of the sectional warper and features a three-stage modular structure for diverse information requirements. Each expansion level provides more detailed quality data and production information. Module 1 manages all the basic values supplied by the warper sensors for direct beaming quality. Module 2 supplements these values with optical evaluations of a machine-integrated camera to obtain specific information on band width, alignment and parallelism. Module 3 provides quality protocols with the highest information density. Creel monitoring data and individual yarn tension values from Multiguard are also included in the records. ITJ

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"Klüber Lubrication is a trusted partner in driving operational excellence."

Klüber Lubrication provides high-performance lubricants that ensure seamless machine operation, enabling uninterrupted production of superior-quality fabric. As a global leader in specialty lubricants, Klüber delivers advanced solutions tailored to the evolving needs of various industries, including textiles and apparel. With decades of expertise, the company focuses on enhancing the efficiency, reliability, and longevity of textile machinery. In this interview, **Hitendra Bharagava, CEO and Regional Management Board Member Asia Pacific, Klüber Lubrication**, discusses the current state of the Indian textile industry and how Klüber Lubrication is leveraging automation and sustainable practices to contribute to the Indian market.

Hitendra Bharagava, CEO and Regional Management Board Member Asia Pacific, Klüber Lubrication

Kindly brief us about your company. How is your company serving customers from the textile & apparels (T&As) segment?

Our lubricants are specifically engineered to minimise friction, reduce wear and tear, and optimise energy consumption—helping textile manufacturers boost productivity while reducing operational costs. Whether it's spinning, weaving, knitting, dyeing, or finishing, our solutions are developed to perform under the demanding conditions of modern textile production.

Equally important is our market presence. We are wherever our customers are. With a robust distribution network, dedicated technical support, and service teams located close to key manufacturing clusters, we ensure that our expertise and products are readily accessible. This proximity enables us to respond swiftly, offer personalised solutions, and build long-term partnerships with both OEMs and end-users across the textile value chain.

By combining world-class technology with a deep understanding of local market needs, Klüber Lubrication continues to be a trusted partner in driving operational excellence for the textile and apparel sector.

What is your perspective on the current state of the Indian textile and apparel industry, and how does Klüber Lubrication support its growth?

India's textile and apparel industry has the potential to become a global leader, but achieving this requires overcoming key structural challenges. High production costs due to import duties on essential raw materials like man-made fibres and cotton, along with non-tariff barriers such as Quality Control Orders, are affecting the industry's competitiveness. Additionally, scaling up manufacturing and ensuring smooth production processes are critical to sustaining growth. At Klüber Lubrication, we support the industry by providing high-performance specialty lubricants that enhance machine efficiency, reduce unplanned downtime, and optimise energy consumption. Our solutions help textile manufacturers improve their production capabilities, making them more resilient and globally competitive.

What challenges could hinder India's textile sector from reaching its $350 billion target by 2030, and how can Klüber Lubrication contribute to overcoming them?

One of the biggest challenges is ensuring large-scale, cost-effective production while maintaining product quality. Import dependency on critical raw materials and fluctuating cotton productivity can create supply chain disruptions. Additionally, machinery efficiency plays a crucial role in achieving production targets, but many textile manufacturers face issues related to excessive wear, frequent maintenance, and energy losses.

Klüber Lubrication addresses these challenges by offering advanced lubrication solutions that enhance machine reliability, extend component life, and reduce operational costs. By minimising friction and wear, our products help manufacturers achieve uninterrupted production, ultimately supporting the industry's growth ambitions.

How crucial is technological modernisation for the Indian textile industry, and what role does Klüber Lubrication play in this transformation?

Technological modernisation is key to improving efficiency, sustainability, and global competitiveness in the textile sector. Advanced spinning, weaving, and finishing machines require precision and reliability to function optimally, yet many manufacturers struggle with frequent breakdowns and high maintenance costs. At Klüber Lubrication, we provide innovative lubrication solutions specifically designed for high-speed textile machinery, helping manufacturers enhance productivity and extend the service life of critical components. Our solutions not only reduce friction and wear but also contribute to energy savings and lower emissions, aligning with the industry's shift toward more sustainable and automated production.

As the Indian textile industry scales up its manufacturing capabilities and moves toward greater digitalisation, what opportunities does Klüber Lubrication foresee, and how are you enabling this transformation?

The Indian textile industry is undergoing a significant transformation, driven by the twin objectives of expanding manufacturing capacity and adopting smarter, technology-driven operations. With initiatives like PM-MITRA (Prime Minister Mega Integrated Textile Region and Apparel) aimed at consolidating value chains and creating integrated textile hubs, there is a clear shift toward scale, efficiency, and digital maturity.

Klüber Lubrication sees this as a strong opportunity to contribute not just through high-performance specialty lubricants, but also by supporting the digital ambitions of our customers.

As textile manufacturers adopt more advanced machinery and automation, the demand for precision, predictive maintenance, and data-driven operations is growing rapidly. We help customers enhance their capabilities by integrating lubrication strategies into their digital maintenance systems—enabling real-time performance tracking, improving machine uptime, and reducing manual intervention.

By working closely with our customers, we enable condition-based lubrication and support them in aligning their production goals with intelligent maintenance practices. This helps reduce unplanned downtime, improve energy efficiency, and extend equipment life—key outcomes for manufacturers aiming to stay competitive in a globalised market.

In this evolving ecosystem, Klüber Lubrication plays the role of both a technical advisor and a strategic partner—offering solutions that empower textile manufacturers to transition smoothly into the era of smart manufacturing.

> "At Klüber Lubrication, we provide innovative lubrication solutions specifically designed for high-speed textile machinery."

Sustainability is becoming increasingly important for the textile and apparel sector. How is Klüber Lubrication contributing to this transition, both through its products and broader sustainability initiatives?

Sustainability is no longer just an aspiration—it is a core requirement for textile manufacturers aiming to stay competitive and aligned with global expectations. At Klüber Lubrication, we actively support this transition by providing high-performance synthetic lubricants that help reduce friction and wear, extend the life of machinery, and significantly lower energy consumption. This leads to a tangible reduction in emissions, resource usage, and operational waste—critical factors in any sustainability-driven production model.

Our commitment goes beyond product performance. Klüber Lubrication has been awarded the EcoVadis Gold rating for four consecutive years, placing us among the top 3 per cent of companies worldwide in terms of sustainability performance. This recognition reflects our consistent focus on environmental responsibility, ethical business practices, and supply chain transparency.

In the textile industry specifically, we collaborate with both OEMs, manufacturers and service partners to implement lubrication strategies that enhance equipment reliability while meeting sustainability benchmarks. Whether it's optimising lubricant change intervals to reduce waste or supporting energy-efficiency goals in high-speed textile machinery, our solutions are designed to align with the industry's green transformation. Through this dual approach—innovative products and robust sustainability practices—we are proud to contribute meaningfully to a cleaner, more efficient textile ecosystem. ITJ

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Para Aramid Fibres for Versatile Applications

Aramid is used in fibrous form as well as in woven textile and pulp form, as reinforcement in demanding composite applications ranging from protective clothing to automotive and industrial applications.

Para-aramid, poly (p-phenylene terephthalamide), fibres are highly crystalline synthetic fibres with high tensile strength, excellent chemical and abrasion resistance and high melting point. They even outrank carbon fibre in impact and wear resistance while also having higher a strength-to-weight ratio. Aramid is used in fibrous form as well as in woven textile and pulp form, as reinforcement in demanding composite applications ranging from protective clothing (helmets, bulletproof vests, and fire protection) to automotive and industrial applications (gaskets, brake pads, tires, conveyor belts, and hoses).

However, the full use-potential of aramid fibre is hindered due to adhesion issues to matrix materials. To achieve the high strength-to-weight ratio, outstanding mechanical performance and durability characteristic of advanced composite materials, strong adhesion between the reinforcing fibres and the matrix material is critical. The adhesion issues with aramid fibres arise from the surface structure of the fibre, which is very smooth and chemically inert, lacking in reactive side groups. To overcome this phenomenon, surface treatments are used, which traditionally promote either physical or chemical adhesion with the matrix. For example, a plasma treatment increases the surface energy of the fibre by increasing hydrogen bonds at the fibre surface, thus enabling a physical bond to be formed between the fibre and matrix. On the other hand, with a chemical surface treatment, reactive side groups are grafted to the fibre surface, which can react with the matrix material and create a strong covalent bond between the fibre and the matrix. However, these methods are often suitable for only one type of matrix material, may lose their effectiveness rapidly during storage and may drastically reduce the mechanical properties of the fibres. Thus, new approaches are needed, and research is increasingly directed towards utilising mechanical adhesion between fibres and matrix.

Typically, mechanical adhesion is considered a lesser form of adhesion in composites, but it has some major advantages, such as independence of chemical

compatibility. With mechanical adhesion or interlocking as the prominent adhesion mechanism, a wider range of material combinations could be used in composite applications, including thermoplastics. Thermoplastic materials are a desirable group of matrix materials for composite applications due to their lower toxicity and easier recyclability when compared to thermosetting materials. However, they are a challenging material group in terms of adhesion. Another benefit of mechanical adhesion at the fibre-matrix interface is that composite production becomes more economical as the same surface treatment can be used with multiple matrix types.

Mechanical adhesion or interlocking can be formed between the fibre and matrix, for example, by adding nanowires, nanoparticles, nanotubes, or nanofibres to the fibre surface. These structures simultaneously increase the surface area and the surface roughness of the fibre. For example, by increasing mechanical adhesion together with chemical interactions, Nasser et al. have been able to increase short beam strength of laser-induced graphene-coated aramid fabric by 70 per cent in epoxy matrix. Lv et al. have achieved similar results with in-situ polymer grafting and carbon nanotubes on aramid in the epoxy matrix, but they concluded the increase in interfacial shear strength (IFSS) to be due to increased polarity rather than topography. However, by purely increasing mechanical adhesion with adsorbed aramid nanofibre, Nasser et al. have been able to increase short beam strength by 26 per cent and IFSS by 70 per cent in epoxy, which shows what the imminent potential mechanical adhesion has in terms of composite applications.

However, to fully benefit from mechanical adhesion, the attached medium (i.e., nanofibers or particles) needs also to be strongly adhered to the fibre surface, as Gonzalez-Chi et al. and Ehlert et al. have demonstrated. Also, the unique skin-core structure of the highly crystalline para-aramid fibre may lower the overall adhesion properties of the fibre even if strong interphase is formed between the fibre and matrix. As force is applied to the interphase, the top layer of the fibre may fibrillate and be sheared off completely. By applying a "new skin" layer of graphene to the fibre, Cheng et al. have been able to reconfigure the phenomenon and change the failure mechanism from fibrillation of the fibre "skin" to clean fracture at the interface, while increasing the IFSS by 75 per cent in epoxy.

In this paper, the effect of mechanical adhesion has been studied as the main adhesion mechanism at the fibre-matrix interface. This is done by adding nanoscale deposits onto aramid fibre surface that increase surface area and topography and thus, enable mechanical adhesion at the fibre-matrix interphase. The concept of nanoscale deposit addition to increase adhesion in macroscale has been proven effective in our previous study. However, the question remained whether the increased adhesion was purely due to mechanical adhesion or a combined effect (i.e., secondary entanglement) and would the result really be effective with other matrix materials as well. In this paper, we aim to address these questions and show that the effect is universal and does work with multiple matrix material types, and that the adhesion increase is purely due to increased mechanical adhesion. Also, we show that the effect is similar across different length scales ranging from micro to macroscale. Both thermoplastic and thermoset matrices were used to evaluate reliably the behaviour of the nano deposit decorated fibre surface in different matrix types, which have significantly different chemical and physical properties. Micromechanical testing is applied so that the failure mode and mechanism of the interphase can be monitored more closely and the effect of secondary artefacts, which may be present in macroscopic bulk material testing, such as fibre entanglement, can be eliminated from the results. For this, a high throughput micro bond test system was used to measure the IFSS of these nano-deposit decorated fibres. This test method was chosen over the more traditional fibre fragmentation test because fibre fragmentation test is unsuitable for aramid fibres due to their high-strain tensile failure mode. Also, the micro bond test method can be applied more easily to both thermoplastic and thermoset matrix materials. In order to focus on the effect of mechanical adhesion, polypropylene (PP) was chosen as the thermoplastic matrix material. PP has very limited hydrogen bonding interactions with the fibre surface, thus making it ideal for this type of investigation. Epoxy (EP) was used as the thermoset matrix because of its availability and wide use in polymer composites across the field. Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and atomic force microscopy (AFM) were used to characterise the nanostructures, study the fibre-matrix interphase and identify the failure mechanism. Further, it was also investigated how well the widely debated micro bond methodology represents macroscale properties of the composite by comparison to the previous results. Also, the influence of aging during storage is studied, and what effect it has on the effectiveness of the surface treatment.

Technical considerations

The fibre surface after the microwave irradiation treatment revealed an abundance of nanostructures covering the surface. As seen in Figure 1, the nanostructures are of irregular shape and that the topography of the fibres has changed due to the surface treatment significantly, but no visible voids are generated on the fibre surface. This is in line with our previous

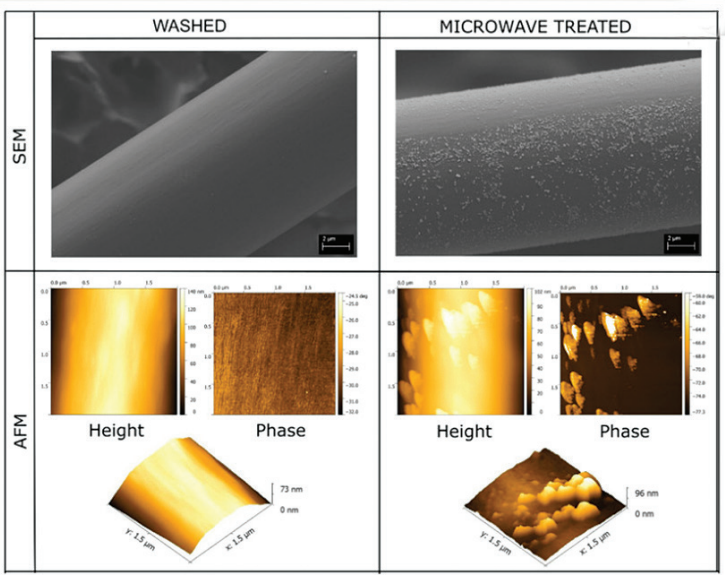

Figure 1: SEM images and corresponding AFM images of the aramid fibres before and after the microwave surface treatment.

findings stating that the treatment has no negative effect on the mechanical properties of the fibres and highlights the repeatability of the surface treatment method.

- Aramid Surface Modification
- Interfacial Shear Strength
- Microscopy
- FTIR Spectroscopy

The AFM studies supported the SEM findings depicting clearly defined protrusions on the fibre surface. The phase contrast image highlights the structural and chemical difference between the bulk fibre and the nanostructures. As the colour gradient in AFM phase contrast image is a combination of topographical details as well as changes in mechanical and adhesive properties, a contrast in colour is created when the chemical and physical properties change in the imaged area. As the nanostructures appear brighter than the fibre surface, it can be deduced that they are not the same material as the fibre surface. Additionally, when using an Energy selective Backscattered (EsB) detector with SEM, the nanostructures also appear lighter than the bulk fibre itself, as seen in Figure 2. The EsB detector reduces edge contrast in the image and thus, the apparent colour difference between the bulk fibre and the nanostructures is due to increased Z-contrast between the two. This, together with the AFM findings, means that the nanostructures are of different material and added to the surface during the microwave surface treatment rather than coming from the bulk fibre itself due to wrinkling or surface degradation.

The increased Z-contrast also implies that the

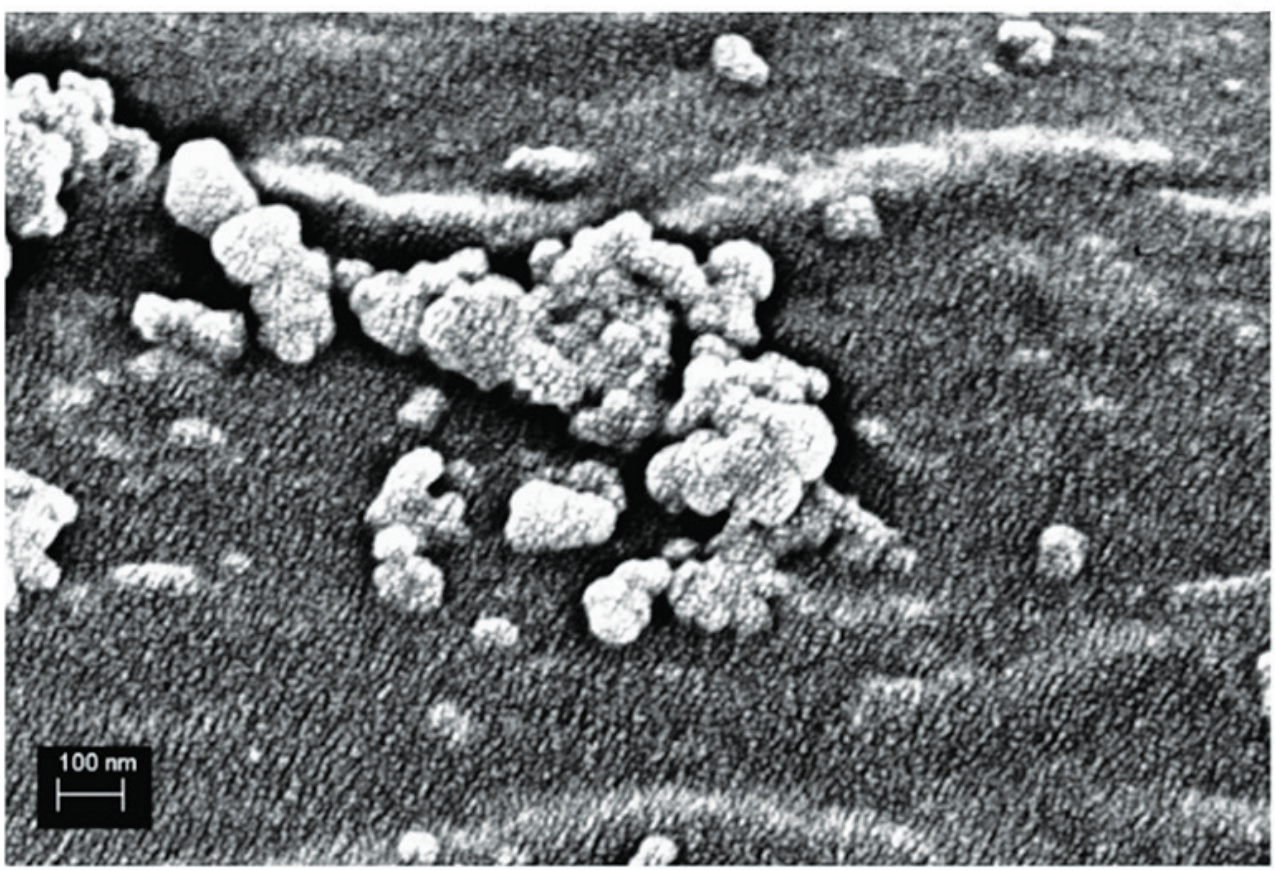

Figure 2: SEM EsB image of the microwave treated fibre surface highlighting the Z-contrast between the fibre surface and nanostructures.

nanostructures are mostly carbon-based compounds with traces of iron from ferrocene used in the microwave treatment. As a heavier element, iron would show up lighter in the EsB image. The iron molecule in ferrocene acts as a nucleation site for the carbon atoms as it is heated up during the treatment process and thus can accumulate into the nanostructures.

As seen from the figures, the irregular shape and varying size of the nanostructures increases the surface area of the fibre efficiently. This increases frictional forces at the fibre-matrix interface as well as adhesion through mechanical interlocking.

The FTIR spectrum of the washed aramid fibres reveals characteristic peaks for para-aramid at 3312 cm−1 (–NH, hydrogen bond association states), 1637 cm−1 (C=O stretching vibration band of amide), 1537 cm−1 (N–H curved vibration), and 1305 cm−1 (N–H bending vibration). Compared to the FTIR spectrum of W-fibres, the hydrogen band peak of MW-fibres has broadened and moved to a lower wavenumber of 3305 cm−1 indicating increased hydrogen bonding at the surface and weakened hydrogen bonding in the polymer chains of the aramid fibre skin layer. This means that the intense heat during the surface treatment causes some damage to the fibre surface but not to a degree that would affect the tensile properties of the fibres, as shown previously, or be visible in SEM. Also, a new peak is present at 2870 cm−1, indicating CH2/CH groups at the fibre surface. The same peak is also present in ferrocene and graphite. This confirms that the nanostructures are decomposition products of ferrocene and graphite, formed during the microwave irradiation treatment.

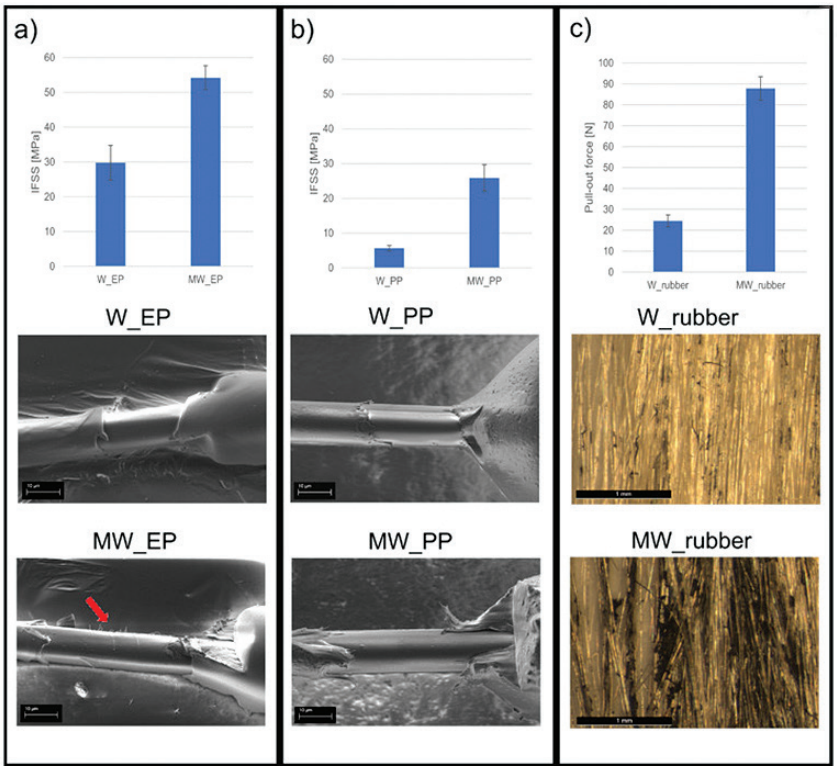

Figure 3: The IFSS results and SEM images of the corresponding fracture surfaces for (a) W_EP and MW_EP, where the arrow indicates fibrillation of the fibre surface, and (b) W_PP and MW_PP. The fibre bundle pull-out force and corresponding optical images are presented in (c) for W_rubber and MW_rubber

IFSS was calculated with linear regression using the slope of load versus embedded area (Aemb) for each tested fibre separately. The IFSS for each sample type was then taken by calculating the average of the IFSS values of the separate fibres of that sample type. From the data obtained, it can be seen that the load required to debond a droplet is higher with samples that are covered with nanostructures than with those that are not, even though the effective embedded area is similar. This implies that protrusions as small as nanoscale, can significantly alter the properties of the fibre-matrix interface in a way that can be detected with a microscale method. This same trend can be seen with both EP and PP matrix. As the behaviour is similar in both thermoset and thermoplastic matrix, it emphasises the importance of mechanical adhesion as a major adhesion mechanism that is independent of chemical compatibility. By increasing mechanical adhesion with the nanostructures, the maximum load increased by 56 and 395 per cent in MW_EP and MW_PP, respectively. Although, the scattering of data appears to increase due to the surface treatment in MW_PP as compared to W_PP, this is not the case. Relative standard deviation (RSD) in both data sets is similar (~14 per cent), which means that the data is highly comparable. Also, the R2 value for all measured samples ranged between 0.82–0.98, meaning high compatibility with the linear fit and thus, highly reliable measurement results.

The average IFSS results are presented for W_EP, MW_EP, W_PP, and MW_PP together with macroscopic fibre bundle pull-out test results for the same surface treatment in rubber. It is evident that the IFSS increases alongside with the increased surface topography of the fibres. Moreover, the increase in IFSS follows a similar trend with the bundle pull-out test in rubber. The results show that the IFSS increases in a similar fashion with thermoplastic, thermoset, and elastomeric matrices, even though the potential for chemical interaction of these matrix types is very different. For example, with EP, an

increase in interfacial adhesion can be achieved through covalent bonding with the fibre surface during curing or by creating higher frictional force with the cured and cross-linked resin. Mercaptan compounds, Lewis acid, and alkali products can be used to achieve such covalent bonds with EP. However, as none of them are grafted to the fibre surface in this case, what remains, is the increase in friction. This is also the case with PP.
The chemical composition of PP provides only limited hydrogen interaction, which could affect favourably to interfacial adhesion with aramid. The main attribute towards the adhesion is mostly compressive forces due to favourable trans crystallisation occurring during the cooling process of the polymer melt. This was noted by Wang et al. They showed that small grooves and protrusions will increase thermal stress due to increased stress concentration during the PP crystallisation when the melt is cooling. This localised stress concentration will further on enhance the nucleation ability of PP and, thus, promote trans crystallisation leading to enhanced interfacial adhesion. The nanostructures created to the aramid fibre surface in this study, will act as such protrusions as described by Wang et al., and thus, lead to increased mechanical adhesion between the fibre surface and PP. In both EP and PP matrix, the nanostructures also increase stress transferability, which in turn, increases the IFSS in a similar fashion in both matrix types. These findings indicate that the primary adhesion mechanism between the fibre and polymer in this case, is indeed mechanical adhesion.

The measured IFSS value for W_PP is 5.7 MPa, which is similar to other studies done with micro droplet test and aramid/PP combination. This shows that the high-throughput microbond method is highly suitable for IFSS evaluation also with thermoplastic matrix. Overall, the IFSS increased from 29.8 to 54.2 MPa (82 per cent increase) and from 5.7 to 25.9 MPa (358 per cent increase), in EP and PP matrix, respectively, due to the surface treatment. This is very significant as it shows that the surface treatment is suitable for both thermoplastic and thermoset materials and that it has a similar effect in them both. Also, it is worthwhile noting that with this straightforward and fast surface treatment process, the IFSS of aramid/EP combination could be brought to the same level as with other more complicated methods reported only recently.

SEM images of the failed fibre-matrix interphase and visual observation during micro bond testing supported the IFSS results. The failure mechanism during testing changed from pure shear at the interphase to a combination of peeling and shear as the surface topography was introduced. With no surface treatment, the fibre surface after de bonding appears smooth and unscathed, with only a minor amount of matrix residue remaining, as seen in Figure 4. This indicates that the fibre-matrix interphase has failed as the matrix droplet is sheared off. Also, the detachment site of the droplet shows a clean break with a small gap between the fibre surface and matrix, indicating a weak interphase.
With the surface-treated fibres, the detachment site of the droplet shows no gap and is more uneven, meaning that a stronger fibre-matrix interphase has been created. The debonded surface is rougher even with some fibrillation of the fibre skin structure, which indicates that the failure has shifted from purely occurring at the fibre-matrix interphase to a combination of fibre surface fibrillation and peeling together with interfacial shearing. The change in the appearance of the debonded surface is very clear with the harder EP matrix, as seen in Figure 4a, where red arrows point to sections of fibrillated fibre surface. Whereas with the softer PP, the matrix is rather fibrillating itself and clinging to the nanostructures than cleaving bits off from the fibre surface. The PP strands clinging to the fibre can be seen clearly underneath the fibre. This indicates that the fibre/matrix adhesion is higher than the cohesive strength of the matrix. It also means, that the nanostructures are strongly attached to the fibre surface, as delamination occurs jointly from the skin-core interphase and skin-matrix interphase. As a result, it can be said that the main adhesion mechanism contributing towards the increased interfacial adhesion is mechanical adhesion.

Additionally, the IFSS results follow very closely the same trend observed with the macroscopic fibre bundle pull-out test in rubber. By increasing the amount of nanodeposits on the fibre surface, the adhesion and the strength of the interphase can be increased in both micro and macroscale. This is in line with findings of previous studies, such as the ones made by Beter et al. It also suggests that the high-throughput microbond method produces reliable data, which can indeed be used to evaluate adhesion properties in macroscopic composite structures. This type of composite research and

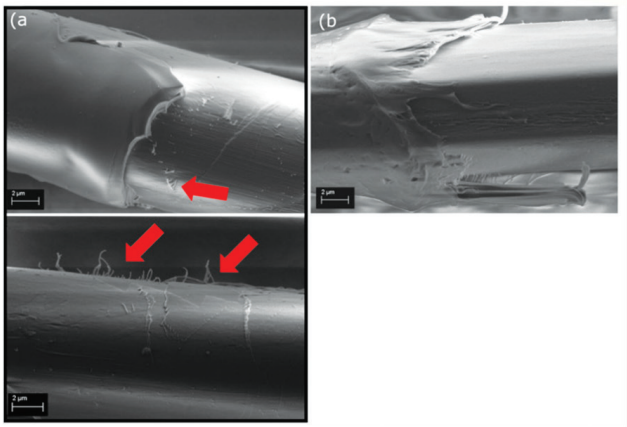

Figure 4: SEM images of the facture surfaces of (a) MW_EP, where red arrows indicate the fibrillation and peeling of the fibre surface, and (b) MW_PP after IFSS testing.

> The adhesion issues with aramid fibres arise from the surface structure of the fibre, which is very smooth and chemically inert, lacking in reactive side groups.

development process can be made more economical and efficient.

Storage properties, and more precisely, aging, of the nanostructure covered fibre surface was also investigated. Some of the surface-treated fibres were taken aside and kept for 48 months at room temperature and protected from light. The IFSS of these fibres was measured with the micro bond procedure in EP, and visual changes in the fibre surface were studied with SEM. The results revealed only minimal decrease in IFSS (~2 per cent), which is well within the deviation range, compared to newly surface-treated fibres. Also, no change in the appearance of the fibre surface was observed. Thus, no significant decrease in the interfacial properties of the fibres has occurred, and the surface treatment can be considered durable enough to withstand storage over long periods of time.

Conclusions

This work explored the effect of nanostructures on the interfacial adhesion of aramid fibre in both a thermoplastic and a thermoset matrix and related the results also to an elastomeric matrix from a previous study. Our findings demonstrated that a significant increase in IFSS can be achieved in both thermoplastic (+358 per cent) and thermoset (+82 per cent) matrix, while maintaining mechanical and storage properties of the fibres. The increase in IFSS was noted to be due to enhanced mechanical adhesion between the fibre surface and matrix material caused by the addition of nanostructures to the fibre surface. The positive effect of the nanostructures on interfacial strength was observed both in micro and macroscale tests. The failure mechanism of the fibre-matrix interphase changes from clean shear to combined shear and peeling, as the level of mechanical adhesion increases, proving that the nanostructures are strongly attached to the fibre surface. These results highlight the significance of mechanical adhesion as the main adhesion mechanism and expand the use-potential of aramid fibres to multiple matrix material types and applications with just one fibre surface treatment. ITJ

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About the authors:

- **S Karthikeyan is from the Department of Petrochemical Engineering, SSM College of Engineering, Komarapalayam, Tamil Nadu.**
- **Dr U Ratna is from the Department of Textiles and Clothing, Avinashilingam Institute of Home Science and Higher Education for Women, Coimbatore, Tamil Nadu.**
- **J Lavanya is from the Department of Fashion Design, SRM Institute of Science and Technology, Chennai, Tamil Nadu.**
- **V Sathya is from the Department of Fashion Design, SRM Institute of Science and Technology, Chennai, Tamil Nadu.**
- **Dr N Gokarneshan is from the Department of Textile Chemistry, SSM College of Engineering, Komarapalayam, Tamil Nadu.**

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Boosting Sports Textiles

This partnership marks a significant leap of growth for the specialised textiles segment, which is envisioned as a game-changer in the Indian sports and activewear market.

Messe Frankfurt Trade Fairs India and Concept N Strategies has announced partnership to introduce 'Sporttech pavilion' – a dedicated area showcasing sports and activewear textiles and accessories under Techtextil India 2025. It is a premier platform dedicated to the rapidly expanding sports and fitness textiles at Techtextil India 2025. This strategic alliance aims to provide a major boost to the segment aiming to showcase innovations in speciality fabrics, yarns, sportswear and gear, high-performance textiles and sustainable materials, generating remarkable opportunities for the entire textile universe, especially, for sportswear brands.

The Indian sports and fitness textiles sector are transforming remarkably, driven by the evolving consumer lifestyles, advanced material innovations and growing government support. Amidst this backdrop, this partnership marks a significant leap of growth for the specialised textiles segment, which is envisioned as a game-changer in the Indian sports and activewear market.

The demand for cutting-edge moisture-wicking fabrics, compression wear, breathable textiles and sustainable sports and fitness fabrics are at an all-time high. Rising health consciousness consumers and increasing appetite for high-performance sportswear, are also contributing to the growing demand. This makes Techtextil India 2025 the perfect launchpad for this specialised segment. This collaboration seamlessly aligns with the growing push for self-reliance in textile manufacturing, bundled with the Indian government's focus on technical textile innovations and expanding domestic production capabilities. Industry leaders are recognising this as the perfect time to showcase national innovations in fitness textiles on the global stage of Techtextil India.

Adding to this, Raj Manek, Executive Director & Board Member, Messe Frankfurt Asia Holdings, mentioned, "With our global Texpertise network and established expertise in trade fairs, Techtextil India has always served as a launchpad for emerging textile innovations. 'Sporttech Pavilion' is a natural extension of this vision offering a focused space for sports and performance textiles, an industry that is witnessing phenomenal growth worldwide. This will be beneficial to the manufacturers as well as to the buyers giving them direct access to the latest technologies that will shape the next generation of sports and fitness apparel."

Speaking about this strategic collaboration, Kishan Daga, Anchor Founder, Concepts N Strategies, stated, "India's fitness and sports textile industry is on the brink of a breakthrough, and 'Sporttech Pavilion' will be instrumental in accelerating its growth. India can produce high-quality performance-driven sportswear and gear and it is gaining traction. And with this initiative, we aim to offer a world-class platform dedicated to the segment where Indian manufacturers can showcase their capabilities to a global audience."

With such an extensive product showcase, the expo aims to attract visitors from major sportswear retailers and distributors, product developers, fitness enthusiasts, fashion designers, research and development professionals, textile institutes, sourcing specialists and other professionals from the textile spectrum looking for the next big breakthrough in the segment. The dedicated space for Sporttech Pavilion will serve as a powerful business catalyst connecting material innovators, sportswear brands and textile manufacturers with national and international sourcing leaders.

By leveraging Messe Frankfurt Trade Fairs India's extensive global reach and industry expertise, Sporttech Pavilion will facilitate international market penetration for Indian brands while attracting advanced solutions from the global leaders in sports textiles. Besides this, Techtextil India 2025 will open-up the floor for deeper and more relevant business interactions and enable the exhibitors to tap the expanding market with a special focus on medical textiles through the second edition of MEDITEX in association with the South India Textile Research Association (SITRA). ITJ

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"We're excited about our growing presence in India."

Grey Matter Concepts is a women-owned apparel company that launched in 2016 in New York City. From day one, their mission has been clear: to design apparel that seamlessly blends comfort, performance, and sustainability. The company primarily focuses on essentials like underwear, loungewear, workwear, activewear, socks, and outdoor clothing. Grey Matter Concepts is proud to be women-owned and to have been named one of WPO top 50 Fastest Growing Female-Owned Businesses. The company has proven the concept that weaving comfort, quality, and sustainability together is a smart idea. That proof is in the rapid growth and both customer and team satisfaction. It's the heart of the matter. **Rachel Landau, CEO, Grey Matter Concepts**, in this conversation with **Divya Shetty**, talks about her company offerings and their expansion plans in India.

What are the key product categories that the company specializes in? Are you involved in technical textiles, and if so, what sets your offerings apart in this segment?

Our core product categories include underwear, activewear, workwear, loungewear, socks, and outdoor apparel. We distinguish ourselves in this space by using advanced, sustainable fabrics like recycled polyester, which supports the environment and, when combined with cooling, wicking, anti-odor, and other performance attributes, makes our products highly desirable.

"While our primary market remains the United States, we've strategically begun expanding internationally, including Canada, Mexico, Central America, and India. Our partnerships with major retailers like Walmart and Amazon are key to our global expansion."

Rachel Landau, CEO, Grey Matter Concepts

What truly sets us apart is how seamlessly we integrate these innovative materials into our designs, ensuring our products don't just perform exceptionally—they do so responsibly.

Which international markets does Grey Matter Concepts operate in, and what strategies have helped the company expand its global footprint?

While our primary market remains the United States, we've strategically begun expanding internationally, including Canada, Mexico, Central America, and India. Our partnerships with major retailers like Walmart and Amazon are key to our global expansion. Additionally, establishing our own manufacturing facility in Tirupur, India—a renowned textile hub—has allowed us to scale sustainably, meet global quality standards, and position ourselves for future growth across more international markets.

What is the company's presence in India, and are there any plans for expansion in terms of manufacturing, retail, or strategic partnerships?

We're particularly excited about our growing presence in India. Our state-of-the-art factory under construction

in Tirupur not only boosts our manufacturing capabilities but also aligns perfectly with our sustainability goals.
As we continue to grow, we're actively exploring additional strategic partnerships, expanding production lines, and considering opportunities in local retail and distribution. India represents a key country for us, and we're committed to deepening our footprint there.

What key trends are shaping the industry today, and how is Grey Matter Concepts adapting to these changes?

Today's apparel industry is evolving quickly, shaped by a growing consumer emphasis on sustainability, ethical production, and performance-driven design.

At Grey Matter Concepts, we're adapting proactively by integrating recycled and eco-friendly materials into all our product lines, seeking out LEED certification for our facilities, and championing an inclusive and equitable work environment.
This approach helps us stay closely aligned with consumer values and industry trends. Also, we have embraced automation as a key tenet of our strategy. As we are already building a factory in Tirupur, we have tapped into India's talented engineering sector.

What sustainable practices has the company implemented, and how do they align with global environmental standards?

Sustainability isn't just something we talk about; it's integral to every decision we make. We've significantly incorporated recycled materials into our products, helping to reduce plastic waste and lower our carbon footprint. Over the past several years, many of our shipments have utilized eco-efficient methods. Additionally, we actively support environmental organizations such as 4ocean and the National Forest Foundation. These efforts demonstrate our deep commitment to global sustainability standards.

Can you share some recent innovations or technological advancements introduced by Grey Matter Concepts?

We're continually pushing ourselves to innovate, particularly with sustainable textiles. Recently, we've focused heavily on recycled polyester fibers, which provide exceptional durability and performance benefits while significantly reducing environmental impact. We're also continuously exploring advanced technologies in textile production to elevate our products further, ensuring they meet the evolving needs of our customers without compromising our sustainability goals. For example, we now use regenerative wool in many of our socks, which feels as good or better than virgin wool.

Can you share insights into your total revenue and growth trajectory?

We're proud to share that Grey Matter Concepts is a fast-growing, medium-sized wholesale apparel company with multiple offices in the U.S. Because of our upward trajectory, we will continue expanding our reach and capabilities as a wholesaler and soon-to-be manufacturer.

What are Grey Matter Concepts' future plans in terms of product expansion, market growth, and technological advancements?

Looking ahead, we plan to expand our product offerings to include even more innovative, sustainable apparel options that reflect the evolving demands of our customers. Our global strategy includes deepening our international presence, notably through further investments and partnerships in key markets like India. Additionally, we're committed to exploring and adopting cutting-edge textile technologies and sustainable manufacturing methods. ITJ

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InDyChem 2025 Gains Pavilion Partner

The event will feature a range of activities, including exhibitions, conferences, and networking opportunities, designed to foster collaboration and knowledge sharing.

Worldex India Exhibition & Promotion is pleased to announce the appointment of SDC International India as the Exclusive Sales Partner for InDyChem – An International Textile Coloration Platform, which will be launched alongside InMac and Intex Sri Lanka 2025, further enhancing the global textile industry's networking and business opportunities.

InDyChem – An International Textile Coloration Platform is set to be a landmark event, to be held on 6-8 August 2025 at BMICH, Colombo, aims to bring together industry leaders, innovators, and professionals from around the world to showcase the latest advancements in textile dyes and chemicals industry and demonstrate cutting-edge technologies, sustainable practices, and innovative solutions for the textiles and apparel industry stakeholders and buyers across Sri Lanka, South Asia and other emerging markets. The event will feature a range of activities, including exhibitions, conferences, and networking opportunities, designed to foster collaboration and knowledge sharing.

SDC International India, based in Mumbai, India, is renowned for its commitment to providing top-quality training, exhibitions, and consultancy services to the textile and fashion industry. Their expertise and extensive network make them the ideal partner to drive the success of InDyChem. With a mission to empower individuals and organizations with the knowledge and skills needed to excel in the dynamic field of textiles and fashion, SDC International is well-positioned to promote InDyChem and attract a global audience to converge in Sri Lanka for new business and market opportunities in this dynamic region.

"We are thrilled to appoint SDC International India as our exclusive sales partner for InDyChem," said Arti Bhagat, Executive Director at Worldex India Exhibition & Promotion, the organiser of the Intex and InMac exhibitions. "Their dedication to innovation, sustainability, and ethical practices aligns perfectly with our vision for this event. We are confident that their expertise and extensive industry connections will ensure the success of InDyChem and provide unparalleled value to our exhibitors and visitors not only from Sri Lanka but across the region. As our shows are considered as the annual calendar event of Sri Lanka's textile and apparel industry, we are looking forward to bringing new dimensions in our platform and creating value for the industry stakeholders as well as support towards the future growth and development of the textile and apparel industry in Sri Lanka."

Representing The SDC International (UK and India), Yogesh Gaikwad stated that, "We are enthusiastic about our recent collaboration with Worldex India to organise InDyChem – An International Coloration Pavilion alongside Intex and InMac this year. The dyes & chemicals sector are the best drivers of innovation in the value-chain across the textile and apparel industry and InDyChem will be an excellent opportunity to spread our offerings to a larger group across Sri Lanka and South Asian region. We believe with the addition of this international coloration pavilion, the first of its kind in Sri Lanka, the global manufacturers and suppliers will find a focused platform to promote their latest offerings and sustainable solutions; network with industry leaders and stakeholders and explore new business and market opportunities to grow their business across the region and beyond. We invite the industry to experience and celebrate the vibrant world of colours and their profound impact on the industries at InDyChem 2025".

This year, all three platforms will offer an indispensable opportunity for those who want to closely follow the latest innovations and trends in the textile and apparel sector. ITJ

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Hanover Welcomes ITMA After Decades

The bid for ITMA 2027 was submitted by the venue owner Deutsche Messe in close cooperation with the capital of Lower Saxony and the office of the Lord Mayor.

The city of Hanover is eagerly waiting to welcome participants of the world's largest textile and garment technology exhibition - ITMA 2027. The exhibition will be held from 16-22 September 2027. It is expected to gross 200,000 square metres, occupying 13 exhibition halls at the Messegelaende Hannover.

Held once every four years since 1951, ITMA was last staged in the German city in 1991. The bid for ITMA 2027 was submitted by the venue owner Deutsche Messe in close cooperation with the capital of Lower Saxony and the office of the Lord Mayor.

Belit Onay, Mayor and CEO of the City of Hanover enthused, "We are elated to have successfully bid for ITMA 2027. A bustling hub for trade fairs and congresses, the city looks forward to welcome ITMA back to Hanover after more than 30 years.

"We will spare no effort to ensure the hosting of an excellent ITMA. Hanover is a green and efficient city with a relaxed atmosphere. As a major trade fair city, Hanover is organised, and easy to navigate, making it a stress-free destination for visitors. Its blend of history and modernity makes it a hidden gem for those seeking a well-balanced urban experience."

Interesting accommodation options

Hanover is no stranger to hosting mega trade shows. Supporting this established trade fairs destination is an ample and diverse range of accommodation options, including hotels, guesthouses, inns and private apartments. Each of these options caters to different needs and offers a unique experience.

Currently, the city of Hanover offers over 18,000 hotel beds, ranging from budget to premium options. In the surrounding districts and metropolitan region, an additional 54,000 beds are available. According to Deutsche Messe, the exhibition venue operator, around 4,000 private accommodations can also be found throughout the city, nearby areas, and the broader metropolitan region.

"The majority of the accommodation allow you to get to the fairground within 30 to 90 minutes. In addition, we have a campground opposite the exhibition venue that is open to participants who bring their motorhomes and caravans. ITMA 2027 participants can expect to have more options when another 700 rooms are made available in the city centre next year," said Dr Jochen Koeckler, chairman of Deutsche Messe's Board.

To further assist ITMA participants, the organiser ITMA Services has appointed accommodation specialist bnetwork to provide hotel and vacation apartment booking services. Backed by nearly two decades of experience, the destination management company has handled two past ITMA exhibitions in Barcelona and is attuned to the needs of participants.

A dedicated website is being set up for ITMA participants to book their accommodation. Meanwhile, to enquire about accommodation or to book rooms, please contact itmahotels@bnetwork.com.

While Hanover may not be a primary global gateway in Germany, it is exceptionally well-connected within Europe and beyond. With direct high-speed train links and a well-connected airport, it serves as a convenient transit point for business travellers.

The fairground is accessible by public transport. It has two modern light rail stations that provide direct connections to the city centre. It also has direct links to the motorways, and around 39,000 car parking spaces.

Alex Zucchi, president of CEMATEX which owns ITMA 2027, said, "We look forward to staging our exhibition in Hanover. The city has the necessary infrastructure to support a huge congregation of exhibitors and visitors of a mega ITMA exhibition. The organising team is working with the venue owner to ensure that all participants will have a seamless experience akin to what they have been used to at past editions."

More exhibition information will be available from the ITMA 2027 website which will be launched this July, ahead of the opening of stand space application in September.

The last ITMA exhibition was held in Milan in 2023. Grossing 200,000 square metres, it featured the participation of 1,709 exhibitors from 47 countries, and visitorship of over 111,000 from 143 countries. ITJ

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Techtextil 2026 Sees Strong Bookings

Exhibitors from all product groups have already registered to take part in Texprocess, the leading trade fair for processing textile and flexible materials.

High registration numbers with many new exhibitors herald a strong Techtextil and Texprocess 2026. From 21-24 April 2026, international suppliers present their innovations at the two leading trade fairs- whether in terms of materials, technologies or sustainability. The aim is to tap into new markets, win customers, find business partners and master industry challenges. With an adapted hall layout and new product groups, Techtextil and Texprocess create the best conditions for this.

Turbulent times for the industry: recession, sustainability requirements and geopolitical challenges are putting market participants under pressure with subdued purchasing behaviour, restrained investment or complex process adjustments. The industry's response: innovation and outstanding solutions. Whether new material ideas, efficient processes or sustainable developments: The most important platforms to present these are the world's leading trade fairs Techtextil and Texprocess in Frankfurt. This is also reflected in the current high level of interest in participating. Exhibitors are using this opportunity to position themselves globally and prepare for the future. In addition to the familiar big players, an exceptionally large number of new exhibitors will take part in 2026.

'The outstanding level of bookings shows: the industry is seeking for global visibility more than ever. The key lies in finding the right partners for pioneering innovations and unlocking market opportunities. Techtextil and Texprocess offer the ideal setting for this. The registration status promises two strong events in April 2026 and underlines the growth strategy of the two leading trade fairs,' says Sabine Scharrer, Director Brand Management Technical Textiles & Textile Processing at Messe Frankfurt.

Texprocess 2026: Global visibility for world premieres

Exhibitors from all product groups have already registered to take part in Texprocess, the leading trade fair for processing textile and flexible materials. From cutting and sewing to finishing. Among them are Brother Internationale Industriemaschinen, Gütermann (Germany), Morgan Tecnica (Italy), Robotech (Turkey), Sheffield Cutting Equipment (USA), Style3D | Assyst, Veit and Zünd Germany. New exhibitors include Amann

(Germany), Coloreel (Sweden), Comelz, Cutting Edge Automation Machines (Italy) or Pathfinder Australia. Driven by automation, digitalisation and AI, exhibitors are developing increasingly efficient solutions - and are thus resonating with the needs of the international market.

Techtextil 2026: realising market potential with innovations

Techtextil is also seeing great booking interest from exhibitors. Among those registered are Concordia Textiles (Belgium), Groz-Beckert (Germany), Klopman International (Italy), Kolon Industries (Korea), Lenzing, Sattler Pro-Tex (Austria), Sioen (Belgium) and Schill+Seilacher (Germany). The many new exhibitors include Dystar Singapore, Indorama Ventures Fibers Germany, Monteiro Ribas (Portugal), TreeToTextile (Sweden) and Woolmark (Germany). The leading trade fair for technical textiles and nonwovens covers the entire spectrum of high-tech textiles. Suppliers meet buyers from a wide range of industries here. They are looking for customised material solutions - whether for the automotive or apparel industry. For the first time, there is a separate area for Textile Chemicals & Dyes in Hall 9.0, which is already in high demand. The new Performance Apparel Textiles area in Hall 9.0 is also attracting great interest. It offers promising synergies: With Fibres & Yarns, manufacturers find their upstream stage in the same hall. In addition, the proximity to Texprocess in Hall 8.0 makes it even more accessible for the apparel industry.

Techtextil and Texprocess will be held from 21 to 24 April 2026.

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Best Air: Innovating Humidification Solutions

Best Air is doing humidification systems of civil plants and also prefabricated plants based on customer requirements.

Best Air Group is a reputed company specialist in Air Engineering for Textile Industries and serving the industries for more than 26 years. A well trained and knowledgeable team is offering good sales and service support to the customers. Best Air is doing humidification systems of civil plants and also prefabricated plants based on customer requirements.

Humidification plays a vital role in maintaining the required ambience in the departments enhances the working performance of machineries, yarn/ fabric quality, workers comfort and also the failure of electronic parts due to heat. One of the prime products of Best Air is MAW (Mini Air Washer) is a prefabricated plant is easy to install occupies lesser space. The principle of operation is adiabatic cooling of hot air being conditioned and then delivered to the departments for maintaining the required RH (Relative Humidity). It is possible to achieve the RH ranges from 50 per cent – 80 per cent based on the application at lesser power than civil plants. Mills having space constraints to build civil plants and also mills using air coolers are unable to achieve the required RH prefer our MAW. It is a viable option techno-commercially to fulfill their requirements.

The another product in our basket is CAW (Compact Air Washer) similar to civil plants but cost effective and also quicker to install and run the plant ie. Time saving concept. CAW also meets the requirements of mills to maintain the required department ambience. Our concept of the plant designing is to operate the plant at optimum level of saving energy, also the initial investment and lesser operating cost.

We are also doing prefabricated exhaust plants and CDS (Compact Yarn spinning system) another value addition for Textile Industries.

Looking for a channel partners state wise all India basis. ITJ

(Communication provided by the management of the company)

News Snippet

Meghalaya's Ryndia Silk and Khasi Handloom Get GI Tag Recognition

The Government of India has granted Geographical Indication (GI) tags to Meghalaya's Ryndia silk and Khasi handloom products, signifying a major milestone for the state's traditional textile sector. This official recognition has been documented by the Geographical Indications Registry under the Intellectual Property Office.

Ryndia, a distinctive handwoven fabric, is hand-spun, naturally dyed, organically produced, and ethically sourced. Alongside other handloom items from Meghalaya, it now holds GI status, validating its cultural significance and traditional craftsmanship. This development is expected to boost the identity, market value, and economic potential of these indigenous products, especially benefiting the artisans and weavers who have preserved these practices for generations.

The initiative was driven by the Meghalaya Department of Textiles over a span of four years, with strategic support from NABARD and technical guidance from Dr Rajnikanth. The effort involved collaboration with the Meghalaya Ryndia Producers Association, resulting in a joint application submitted to the GI Registry. This journey gained momentum after the recognition of Umden-Diwon as Meghalaya's first Eri Silk Village on February 12, 2021. ITJ

EXHIBITIONS, CONFERENCES AND SEMINARS

SL NO.	EVENT	DATE	ORGANISER	LOCATION
1	**DenimsandJeans India 2025**	14 - 15 May, 2025	DenimsandJeans	The Lalit Ashok Bangalore, Bengaluru
2	**Screen Print India Expo - Mumbai (SPI Mumbai)**	22 - 24 May, 2025	Messe Frankfurt Trade Fairs India	Jio World Convention Centre, Mumbai
3	**Gartex Texprocess India 2025**	22 - 24 May, 2025	Gartex Texprocess India	Jio World Convention Centre, Mumbai
4	**Global Garments & Technology Expo (GGTE) 1st edition**	13 - 15 June, 2025	National Trade Fairs	Helipad Ground Hall 9, Gandhinagar
5	**HGH India 2025**	01 - 04 July, 2025	Texzone Information Services	Bombay Exhibition Centre (BEC), Mumbai
6	**Fabrics & Accessories Trade Show 2025**	10 - 12 July, 2025	SS Textile Media	Pragati Maidan, New Delhi
7	**Knitshow 2025**	08 - 10 August, 2025	Knit Show Trade Exposition	Knit Show Top Light Trade Center, Tiruppur
8	**Gartex Texprocess India 2025**	21 - 23 August, 2025	Gartex Texprocess India	Yashobhoomi, New Delhi
9	**TexIndia 2025**	25 - 27 September, 2025	SS Textile Media	India Knit Fair Complex, Tiruppur

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Industrial Products Finder	5400	810	4590	Titan Duffle Bag MRP ₹2150 + Century Laptop Backpack MRP ₹2,450
The Indian Textile Journal	5400	810	4590	Titan Duffle Bag MRP ₹2150 + Century Laptop Backpack MRP ₹2,450
Project Reporter (Digital Copy)	10500	1575	8925	VIP Strolley MRP ₹8500

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Equipment India	9000	2700	6300	Titan Duffle Trolley MRP ₹3980 + Titan Duffle Bag MRP ₹2150
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TWIT-BITS

Shandilya Giriraj Singh
Textiles Minister

Had a productive discussion with the Director, scientists, and Hon'ble Minister Ganesh Joshi ji at FRI Dehradun on leveraging bamboo in the textile sector. From fibre extraction to fabric innovation, bamboo holds promise for sustainable textiles, rural employment & green growth.

Invest India

#NewIndia shines as the world's second-largest #silk producer. With growing global demand, the export potential is vast—a golden growth opportunity to invest in the #textile sector.

Wazir Advisors

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After 25 years at the forefront of global trend forecasting, Fashion Snoops is declaring a bold new mission: to safeguard creativity from an algorithm-driven slide into sameness.

Apparel Export Promotion Council

While Chief Minister Majhi highlighted Odisha's emergence as one of the fastest-growing states and a leading destination for responsible and future-ready investments, Spain to India, Juan Antonio March Pujol appreciated the state's dynamic industrial ecosystem and expressed Spain's keen interest in building long-term, technology-led partnerships.

Alok Industries

We had the privilege of hosting Ms. Padmini Singla, Textile Secretary, and Mr. Vijay Kurdagi, Director – CCI, at Alok Industries Ltd. The visit was aimed at providing an overview of our operations and strengths in the textile sector.

The guests were welcomed by our Site President, Mr. Vinod Kumar Yadav, along with myself and the core team. We began with a brief presentation covering our company profile, manufacturing process, and production capacities, accompanied by light refreshments.

A plant tour followed, starting with PSF and Weaving. After this, a formal lunch was arranged in our Executive Canteen.

Marzoli

In the past few days we had the pleasure of welcoming our valued customer Uztex for an important visit to our facilities.

This meeting was a key moment in our partnership, allowing us to deepen the dialogue on crucial topics such as nonwoven technologies and spinning processes. The technical discussions are essential as we continue to grow together and explore new opportunities.

As part of the visit, we also toured companies within the Camozzi Group, offering a closer look at how the synergies across our Group drive innovation and create real value for our customers.

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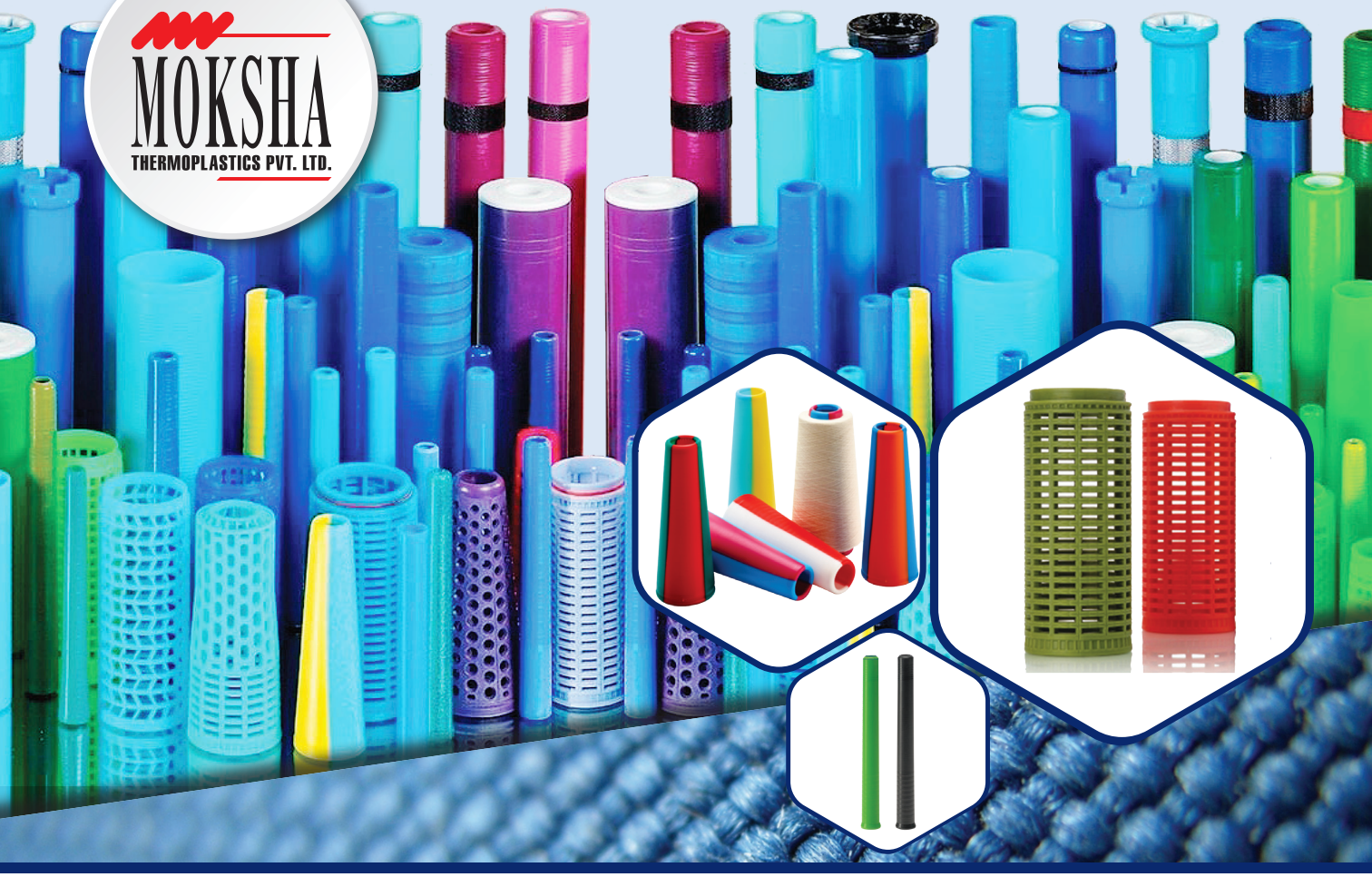

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- "Zebra: Alternating Tandem: To further Differentiate lot identification for enhanced segregation.
- Mosaic Cones: The Newest Addition to Yarn Identity in Permanent Plastic Identity in Tandem for Cones.
- Perforated Cones & Cheeses - Compressible/Non-compressible for yarn dyeing: for- Multiple Use/Sale Yarn for Cotton, Polyester blends, 100% Polyester & Filament yarns.

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