

Textile Insights

Delivering Inspiring Information

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Textile Ministry Set To Launch TEEM Scheme To Strengthen Textile Value Chain

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The Union textile ministry is all set to launch the Textile Expansion and Employment (TEEM) scheme. The scheme is part of a larger, five-part strategy - an 'Integrated Programme for the textile sector' announced by the Union Finance Minister Nirmala Sitharaman in the Union Budget 2026-27. The integrated programme aims to strengthen the entire value chain, targeting a massive expansion in manufacturing capacity and job creation to meet Vision 2030 goals. India aims to create a US\$ 350-billion textile and apparel industry by 2030, including achieving exports worth US\$ 100 billion by that period.

The five-part integrated initiative proposed to enhance competitiveness and employment, includes the Textile Expansion and Employment Scheme to modernize traditional clusters with capital support, machinery and technology upgrades as also the National Fibre Scheme to promote self-reliance in raw materials like silk, wool and MMF, Samarth 2.0 for workforce skilling; the National Handloom and Handicraft Programme to support artisans and the Tex-Eco Initiative for sustainable manufacturing.

"The Textile Expansion and Employment Scheme focuses on modernisation of traditional textile clusters through capital support for machinery, technology upgradation and establishment of common testing and certifica-



tion centres. The scheme, which is expected to be launched soon, is likely to enhance productivity, quality compliance and large-scale employment generation," says an official.

"The Textile Expansion and Employment scheme announced by the FM during the Budget seeks to enhance productivity, improve quality compliance and generate large-scale employment. It aims to modernise traditional textile clusters by providing capital support for machinery, technology upgrades and common testing centres. By promoting the growth of the sector, the scheme aims to create significant, high-quality job op-

portunities. The scheme will help the industry in becoming more competitive through technological advancements. As a result of all these benefits, the scheme will strengthen India's position as a global textile manufacturing and export hub," states Dr. Gurudas Aras, Independent Director & Strategic Advisor.

The Union textiles ministry recently convened the first post-budget national industry consultation at Vanijya Bhawan, New Delhi, bringing together senior government officials, industry leaders, financial institutions, development partners and representatives from across the textile value chain to deliberate on im-

plementation priorities following the Union Budget 2026 announcements. The consultation focused on operationalising two key initiatives the Textile Expansion and Employment (TEEM) Scheme as also the Tex Eco Initiative - aimed at strengthening competitiveness, modernisation, sustainability and employment generation across the textile and apparel sector.

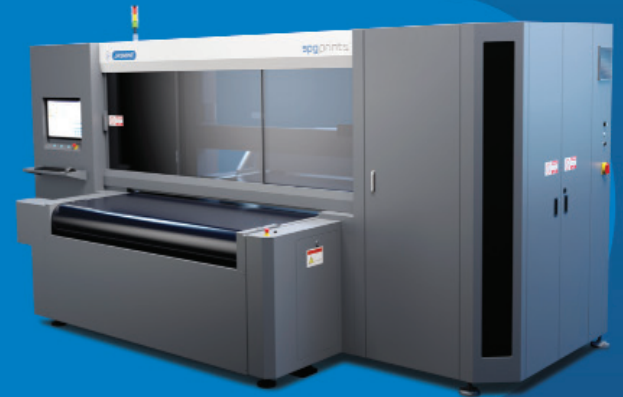
While delivering the welcome and context-setting address, Rohit Kansal, Additional Secretary (Textiles), said that the Union Budget has been distinctly textile-centric, with a strong focus

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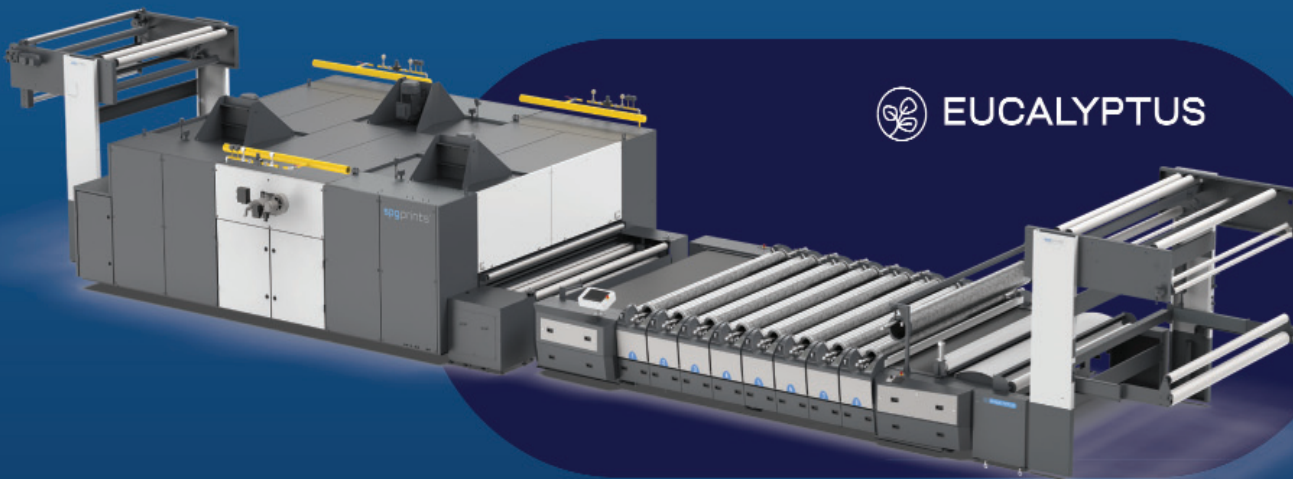
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Textile Ministry Set To Launch TEEM Scheme To Strengthen Textile Value Chain

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on employment generation and manufacturing growth. He noted that the announcement of the Integrated Programme for the textile sector provides a comprehensive framework to align investments, policy support and institutional efforts across the value chain. He further underlined that the Budget signals a clear intent to scale manufacturing, strengthen domestic capabilities and position textiles as a key driver of inclusive growth and job creation.

During the consultation, officials of the ministry of textiles highlighted that the TEEM scheme would rest on four pillars: Access to affordable finance, operational excellence, enhancement of the cluster ecosystem, and promotion of cluster competitiveness, innovation and branding.

"The entire industry welcomes this proactive move on the part of the Union Textiles Ministry to make the TEEM Scheme operational at the earliest. The scheme has tremendous potential to enhance the competitiveness of India's textile and apparel sector. It can create more, new and better-quality jobs for our youth, and enable the sector to leverage the opportunities opening through the FTAs. At CITI, we remain committed to collaborating closely with the ministry and other key stakeholders to make this scheme a huge success," says Ashwin Chandran, Chairman, CITI.

"The five-point textile integrated programme is a great move as, in the background of the various FTAs being signed and the GST realisation, the future of textiles and apparels is much brighter. However, to capitalise on the same, we need a solid manufacturing base for which the textile expansion and employment scheme will go a long way in helping in industry in creating that foundation with that scale to



The Union Budget has been distinctly textile-centric, with a strong focus on employment generation and manufacturing growth. The Integrated Programme for the textile sector provides a comprehensive framework to align investments, policy support and institutional efforts across the value chain.

Rohit Kansal,
Additional Secretary
(Textiles),
Government of India



The TEEM scheme has tremendous potential to enhance the competitiveness of India's textile and apparel sector. It can create more, new and better-quality jobs for our youth, and enable the sector to leverage the opportunities opening through the FTAs.

Ashwin Chandran,
Chairman, CITI



The TEEM scheme seeks to enhance productivity, improve quality compliance and generate large-scale employment. It aims to modernise traditional textile clusters by providing capital support for machinery, technology upgrades and common testing centres.

Dr. Gurudas Aras,
Independent
Director & Strategic
Advisor



The five-point textile integrated programme is a great move as, in the background of the various FTAs being signed and the GST realisation, the future of textiles and apparels is much brighter.

Sanjay Jain, MD, TT Ltd

take care of the future opportunities," states Sanjay Jain, MD, TT Ltd.

As part of the TEEM scheme, the Union ministry would focus actively on addressing six areas:

Access to affordable finance, technological obsolescence, limited downstream capacity, high attrition rates & low employee productivity, weak cluster infrastructure, as also branding and

market access issues related to power costs, ease of doing business, environmental compliance and cotton price volatility.

Some of the measures also being contemplated by the Ministry of Textiles include: Unlocking low-cost global funding for on-lending to textile and apparel entities intermediated by financial institutions, providing various subsidies and incentives to drive operational excellence, including employment incentives; establishing textile Seva Kendras to serve as local-level integrated support services for textile and apparel businesses as also supporting tech-driven start-ups and innovation pilots demonstrating textile and apparel use cases. □

India, GCC Launch FTA Negotiations To Deepen US\$ 178 Billion Trade Partnership

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India and the Gulf Cooperation Council (GCC) have formally launched negotiations for a comprehensive Free Trade Agreement (FTA), marking a significant step toward strengthening one of India's most strategic economic partnerships.

The joint statement on the India-GCC FTA was signed in New Delhi on February 24, 2026, by Piyush Goyal, Union Minister of Commerce and Industry and Jasem Mohamed Albudaiwi, Secretary General of the GCC, in the presence of senior delegations from both sides. The move follows the signing of the Terms of Reference earlier this month and formally sets the stage for detailed negotiations.

Calling the development a significant milestone, Goyal noted that the proposed agreement builds on deep-rooted historical, cultural and commercial ties between India and the Gulf region. At a time of global economic uncertainty and shifting supply chains, he emphasized, a robust and mutually beneficial trade pact can harness complementarities and provide long-term stability to businesses on both sides.



(L to R) Piyush Goyal, Union Minister of Commerce and Industry of India and Jasem Mohamed Albudaiwi, Secretary General of the GCC.

Albudaiwi echoed similar sentiments, stating that the FTA would inject predictability and greater certainty into bilateral trade and investment flows, further reinforcing the region's economic engagement with India.

The stakes are substantial. The GCC is India's largest trading partner bloc, with bilateral trade touching US\$ 178.56 billion in FY2024-25. Of this, Indian exports stood at US\$ 56.87 billion, while imports largely energy-driven reached US\$ 121.68 billion. The bloc accounts for over 15 per cent of India's total global trade and trade between the two sides has grown at an

average annual rate of 15.3 per cent over the past five years.

India's key exports to the GCC include engineering goods, rice, textiles, machinery and gems and jewellery, sectors that stand to gain significantly from improved market access and tariff rationalisation. On the import side, crude oil, LNG, petrochemicals and gold dominate trade flows, underlining the region's critical role in India's energy and commodity security.

Beyond trade, the GCC comprising a combined GDP of approx. US\$ 2.3 trillion and a population of over 61 million represents a high-income consumer market with strong infrastruc-

ture spending and industrial diversification plans. The region is also an important investor in India, with cumulative foreign direct investment exceeding US\$ 31 billion as of September 2025. Equally important is the human dimension. Nearly 10 million Indians live and work across GCC nations, forming a vital economic and cultural bridge that strengthens business linkages and services trade.

For the Indian industry, particularly sectors such as textiles, engineering, food processing and chemicals, the proposed FTA presents a major opportunity to expand footprint in a geographically proximate and high-growth market. For GCC economies, closer integration with India offers access to a vast consumer base, manufacturing ecosystem and skilled workforce.

Once concluded, the India-GCC FTA is expected to act as a force multiplier for bilateral trade, diversify export baskets and enhance supply chain resilience. For trade stakeholders, the launch of negotiations signals a new phase of structured economic engagement between two regions whose commercial ties are both historic and future-focused. □

India, Switzerland Signal Stronger Trade Ties Under EFTA Pact

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Union Commerce and Industry Minister Piyush Goyal held a high-level meeting with Guy Parmelin in New Delhi, highlighting a shared commitment to expand cooperation under the India-EFTA Trade and Economic Partnership Agreement (TEPA) and deepen long-term economic engagement.

The meeting, held on the sidelines of the India AI Impact Summit 2026, focused on strengthening collaboration across precision engineering, life sciences, renewable energy, advanced technology and research, while balancing innovation with responsible growth.

India highlighted its emergence as the world's fourth-largest economy, with projected GDP of US\$ 4.51 tril-

lion in 2026 and reiterated its focus on expanding investment flows, enhancing regulatory coordination and building stronger institutional partnerships under TEPA. The government also showcased India's capabilities in pharmaceuticals, vaccines, biotechnology and advanced medical research, inviting greater Swiss participation in these sectors.

To facilitate smoother market entry, India has established a dedicated EFTA Desk at Invest India to support Swiss and other EFTA companies exploring expansion opportunities in the country.

Both leaders emphasized that sustained high-level engagement will be critical to boosting bilateral trade and investment flows, unlocking new



(L to R) Piyush Goyal, Union Minister of Commerce and Industry of India and Swiss President Guy Parmelin.

growth avenues for businesses in both economies.

TEPA marks India's first free trade agreement with the European Free Trade Association (EFTA) bloc comprising Switzerland, Norway, Iceland and Liechtenstein and serves as a strategic gateway for connecting

Make in India products to high-value European markets. The agreement is expected to create opportunities across sectors, benefitting farmers, MSMEs, startups, professionals and advanced manufacturing industries while strengthening India's global trade integration. □



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India–EU FTA To Provide Five-Year MFN Safeguard In Services Trade

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India and the European Union have agreed to extend Most-Favoured-Nation (MFN) treatment to each other for an initial period of five years following the entry into force of their proposed Free Trade Agreement (FTA). The provision is designed to ensure fair and non-discriminatory treatment in bilateral trade in services.

Under the MFN clause, service sectors and service providers from India and the EU will receive treatment no less favourable than that accorded to any third country. In effect, neither side will be able to grant better market access or regulatory advantages to another trading partner without extending similar benefits to the other party, subject to specified conditions and limitations.

The MFN commitment, however, excludes certain areas. It will not apply to taxation agreements, mutual recognition of standards and authorisations or dispute settlement mechanisms. Additionally, both sides retain the flexibility to grant special advantages in border regions for services that are produced



and consumed locally.

The provision forms part of the Trade in Services chapter of the FTA text released on January 27. As part of the institutional framework, a Joint Committee will undertake a for-

mal review in the fourth year after the agreement takes effect. The review will assess issues including the entry and stay of Indian students in the European Union, their employment rights, and rules governing the temporary movement of service providers.

Based on the findings, the Joint Committee will determine whether to extend the MFN arrangement beyond the initial five-year term. The agreement also allows either side to request an earlier review if circumstances arise that materially affect their interests. Should the Committee decide against continuation, the MFN obligation will lapse, although benefits already granted during the period will remain valid.

India and the European Union concluded negotiations on the long-pending FTA last month. The agreement seeks to lower tariffs, expand market access and strengthen trade and investment flows between the two economies, marking a significant step in deepening their economic partnership. □

US Unveils First US\$ 36 Bn Projects Under US\$ 550 Bn Japan Trade Deal

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The United States has launched the first set of investment projects under a newly announced trade agreement with Japan, with the White House unveiling initiatives worth US\$ 36 billion as part of Tokyo's broader US\$ 550 billion commitment to invest in the US economy.

President Donald Trump described the pact as a massive trade deal, stating that it would help revitalise the American industrial base, generate hundreds of thousands of jobs and strengthen national and economic security. As part of the agreement, the US will reduce tariffs on Japanese imports to 15%.

The initial projects span energy, power generation and advanced manufacturing across Texas, Ohio and Georgia.

The largest of the three is a US\$ 33 billion natural gas-fired power plant in Portsmouth, Ohio. US Commerce Secretary Howard



Lutnick said the facility would generate 9.2 GW of electricity annually, calling it the largest gas-fired power project in US history. According to Lutnick, the plant's output would exceed the total residential electricity demand of Ohio.

The project will be operated by SB Energy, a subsidiary of SoftBank Group. The additional base-load capacity comes at a time when electricity demand in the US is rising sharply, driven in part by

data centres supporting artificial intelligence applications.

A second major investment involves Japan's backing of the US\$ 2.1 billion Texas GulfLink deepwater crude oil export terminal off the Texas coast. The offshore facility is being developed by Sentinel Midstream, which confirmed its participation and said it was honoured to partner with the US Department of Commerce and the Japanese government. The terminal is expected to strengthen US crude export capabilities.

The third project is a US\$ 600 million synthetic industrial diamond manufacturing plant in Georgia. The facility will be operated by Element Six, a unit of De Beers Group. Officials said the plant would meet 100% of US demand for synthetic diamond grit, a key material used in advanced manufacturing and semiconductor production. The United States currently relies heavily on imports,

particularly from China, for such supplies.

While the projects mark the first tranche under Japan's \$550 billion investment pledge, details regarding the financing structure remain unclear. Under an earlier US-Japan understanding, profits from joint ventures were to be split equally until Japan's initial investment was recovered, after which the share would shift to 90–10 in favour of the United States.

The announcements followed recent meetings between Lutnick and Japan's economic and trade minister, Ryosei Akazawa, who had indicated that certain issues were still being finalised before formal agreements could be concluded.

The deal signals a deepening of economic cooperation between Washington and Tokyo, linking tariff relief with large-scale strategic investments in energy and advanced manufacturing. □

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TN Boosts Textiles With New Policy, Rs 1943 Crore Outlay

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The Government of Tamil Nadu has unveiled a series of strategic policy initiatives and budgetary measures aimed at strengthening the global competitiveness of the state's textile industry, which accounts for nearly one-third of India's total textile business. Recognised as a key pillar of economic growth, the sector is expected to play a significant role in achieving Tamil Nadu's vision of becoming a US\$ 1 trillion economy by 2031.

On January 29, Deputy Chief Minister Udhayanidhi Stalin launched the Tamil Nadu Integrated Textile Policy 2025-26 at the inaugural International Textile Summit 360 held in Coimbatore. The two-day summit marked a major step in aligning industry stakeholders with the government's long-term roadmap for sustainable and technology-driven growth in textiles.

In the Interim Budget presented by Finance Minister Thangam Thennarasu, Rs 1,943 crore has been earmarked exclusively for handlooms and textiles. An equivalent allocation has been made for MSMEs, while Rs 4,282 crore has been set aside for in-



Udhayanidhi Stalin, Deputy Chief Minister of Tamil Nadu

dustries, which is also expected to benefit the textile value chain through infrastructure and industrial development support.

Welcoming the budget, Durai Palanisamy, Chairman of The Southern India Mills Association (SIMA), expressed appreciation to Chief Minister M. K. Stalin for prioritising the implementation of measures outlined in the Integrated Textile Policy. He noted that the provisions would accelerate modernisation, infrastructure expansion and employment generation across the sector.

Palanisamy also lauded the allo-

cation of Rs 6 crore for establishing an Advanced Quality Testing Laboratory at the South India Textile Research Association (SITRA) in Coimbatore. The facility is expected to support the growth of athleisure and technical textile manufacturing, enabling the state's producers to meet evolving global standards.

According to industry representatives, the budget further provides for the development of Handloom Parks, modernisation of powerlooms, installation of shuttleless looms and incentives to attract fresh investments in technical textiles and garmenting. These initiatives are aimed at enhancing productivity, promoting value addition and strengthening Tamil Nadu's position as a leading textile hub.

In addition, the government has proposed the release of a New Integrated Renewable Energy Policy, backed by a substantial allocation of Rs 18,091 crore, to boost renewable energy capacity in the state. The move is expected to provide sustainable and cost-efficient energy solutions for energy-intensive industries, including textiles. □

Jute MSP Up 4.9% As Policy Signals Sector Support

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The Cabinet Committee on Economic Affairs (CCEA) has approved a Minimum Support Price (MSP) of Rs 5,925 per quintal for TD-3 grade raw jute for the 2026-27 marketing season, marking a 4.9 percent increase over Rs 5,650 per quintal fixed for 2025-26.

Announcing the decision, Information and Broadcasting Minister Ashwini Vaishnaw said the hike would benefit jute growers, particularly in West Bengal and Assam. India is among the world's largest producers of raw jute.

The government said the new MSP ensures a return of 61.8 percent over the all-India weighted average A2+FL cost of production of

Rs 3,662 per quintal. Based on the projected C2 cost of Rs 4,945 per quintal, the MSP is 19.8 percent higher. The move aligns with the Centre's policy since 2018-19 of fixing MSP at least 1.5 times the average cost of production. Farmer groups, however, continue to demand MSP based on the Swaminathan formula of C2+50 per cent.

According to an official statement, MSP payments to jute farmers rose to Rs 1,342 crore during 2014-15 to 2025-26, compared with Rs 441 crore in 2004-05 to 2013-14. The Jute Corporation of India will continue as the nodal agency for Price Support Operations, with any losses fully reimbursed by the Centre.

In its recommendation, the Commission for Agricultural Costs and Prices flagged significant differences in jute production estimates between the Agriculture Ministry and the Jute Advisory Board, saying the divergence affects price policy and business decisions. It reiterated the need for an expert committee to address the issue.

The Commission also expressed concern over declining jute acreage over the past two-and-a-half decades, noting wide productivity gaps across states. Yields in Assam and Bihar remain below West Bengal and the national average. It called for strategic interventions to expand area under cultivation and address productivity disparities. □

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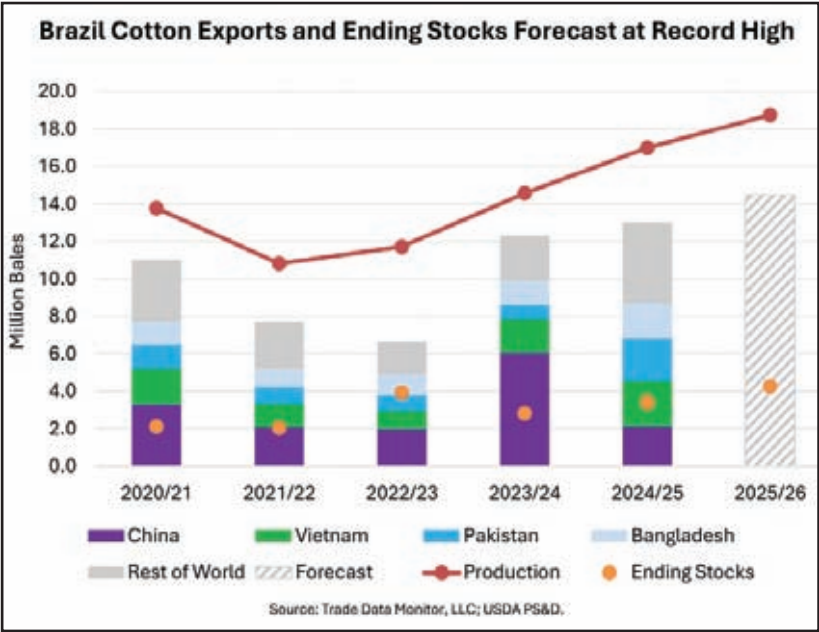


Brazil Cotton Exports & Closing Stocks To Reach Record High In 2025/26: USDA Report

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Brazil's cotton sector is set for another landmark year, with exports forecast to reach a record 14.5 million bales in marketing year 2025/26 (August–July), up 1.5 million bales from the previous season. If realized, this would mark the third consecutive year of record-breaking shipments, reinforcing Brazil's position as a dominant force in the global cotton trade.

The surge in exports has been underpinned by rapid production growth, driven by both higher harvested area and improved yields. However, export gains have not kept pace with output expansion, while domestic consumption has remained largely



unchanged. As a result, ending stocks are projected to climb to a

record 4.3 million bales in 2025/26, the third straight annual increase.

Abundant supplies have weighed on domestic prices over the past three years, mirroring softer global trends.

In the first half of 2025/26, Brazil's cotton exports rose 6 per cent year-on-year, with notable gains in shipments to China, Bangladesh, Turkey and India.

China has reclaimed its position as the top destination, with year-to-date shipments already surpassing the total volume exported to the country in 2024/25. However, volumes remain well below 2023/24 levels, when China was actively replenishing state reserves.

Vietnam, which was the leading importer of Brazilian cotton last season, has sharply reduced purchases this year, increasing imports from the United States instead.

December 2025 marked a record monthly export volume, demonstrating the industry's ability to manage logistics amid surging output. Exporters have also diversified port usage following previous congestion at Santos. In the first half of 2025/26, nearly 10 per cent of shipments moved through ports other than Santos, more than double the five-year average of

4 per cent.

Looking ahead, Brazil's National Supply Company (CONAB) has projected a smaller 2026/27 crop, citing expectations of lower yields and reduced planted area due to high input costs and subdued cotton prices. Nevertheless, elevated carryover stocks could cushion any potential impact on export volumes.

Globally, cotton production is forecast to rise 425,000 bales to 119.9 million, as a larger crop in China offsets reduced output in Argentina.

Global consumption, however, is projected to decline 200,000 bales to 118.7 million, reflecting weaker demand in Pakistan, Indonesia, Portugal and Thailand. While production is up nearly 1 per cent year-on-year, consumption remains flat, keeping market fundamentals relatively balanced.

World trade is expected to hold steady at 43.7 million bales. Lower exports from the United States and Argentina are likely to be offset by higher shipments from Australia. On the import side, reduced buying by Pakistan, Turkey, and select Southeast Asian nations is balanced by stronger demand from China and India.

Global ending stocks are forecast to increase by over 600,000 bales to 75.1 million, with higher inventories in China, India and the United States more than compensating for stock declines in Australia, Pakistan and Turkey.

Meanwhile, the U.S. season-average farm price for 2025/26 is projected to ease by 1 cent to 60 cents per pound, reflecting ample global supplies and subdued demand growth.

With record exports and swelling inventories, Brazil remains at the centre of global cotton dynamics, even as softer demand and price pressures shape the outlook for the coming seasons.

Form IV

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I, Arvindraj Babulal Semrani, hereby declare that the particulars given above
are true to the best of my knowledge and belief.

Date: 10th March 2026

Colorant, TIT&S Ink MoU To Launch Dyes Centre Of Excellence

Colorant Ltd has signed an Memorandum of Understanding (MoU) with The Technological Institute of Textile & Sciences (TIT&S), Bhiwani, for the establishment of the Colorant Centre of Excellence (CoE) – Dyes Synthesis and Application.

The MoU was formalised during the International Conference on Advanced Textile Structural Composites and Geosynthetics (ATSCG-2026) held at the TIT&S's Central Auditorium, in the presence of Giriraj Singh, Union Minister of Textiles, Government of India. The agreement was signed by Subhash Bhargava, Founder and Managing Director of Colorant Ltd and Prof. Dr. B. K. Behera on behalf of TIT&S.

ATSCG-2026 brought together leading academicians and researchers from across the globe, underlining the international stature of the platform. Among the distinguished participants were Prof. Savvas Vassiliadis from the University of West Attica, Greece; Dr. Michal Petru of the Technical University of Liberec, Czech Republic; Prof. Frantisek Novy from the University of Jilina, Slovak Republic; Prof. Robert Böhm of HTWK Leipzig, Germany and Dr. Rajesh Kumar Mishra from the Czech University of Life Sciences, Prague.

Further strengthening the collaborative momentum, Doc. Ing. Aleš Kocourek, Rector of the



MoU exchange between Colorant Ltd and TIT&S, Bhiwani at ATSCG 2026 in the presence of Giriraj Singh, Union Minister of Textiles, Government of India.



Subhash Bhargava, Founder and Managing Director of Colorant Ltd, shares a cordial moment with Giriraj Singh, Union Minister of Textiles, Government of India, during ATSCG 2026 following the MoU exchange ceremony.

Technical University of Liberec, Czech Republic, addressed the gathering on the future of academic-industrial partnerships and presided

over the signing of MoUs with participating industries.

The newly announced Colorant Centre of Excellence aims to integrate real-time industrial practices within academic learning frameworks. Leveraging its operational expertise from Vatva, Ahmedabad, Colorant Ltd will supply, install and commission dye synthesis, testing and application equipment under the MoU framework. TIT&S will provide the necessary laboratory infrastructure and oversee operational maintenance.

Speaking on the occasion, Subhash Bhargava highlighted the importance of creating practical learning ecosystems for aspiring textile technologists. He noted that the Centre will enable students and researchers to gain hands-on experience in dye chemistry, process optimisation and industrial-scale application methodologies aligned with evolving global textile requirements.

The initiative reflects Colorant's commitment to bridging academic research with industrial application, contributing to innovation-driven growth across the textile value chain. The Colorant Centre of Excellence is envisioned as a dynamic hub where research meets real-world application, supporting India's broader textile development agenda. □

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Polyester Power: It's High Time For Surat To Go Global

By Henry Dsouza

At a time when India's textile industry is searching for its next big leap, Sanjay Jain, Managing Director of TT Ltd, delivered a sharp and forward-looking address that placed Surat at the centre of a massive global opportunity. Speaking at SGCCI – Bhilosa Textile Conclave 2026, Jain's message was clear, Surat has the speed, scale and entrepreneurial strength to lead India's man-made fibre (MMF) revolution, but only if it shifts its mindset from domestic dominance to global ambition.

However, Jain said that while Surat has dominated the domestic market, competing within India is no longer enough. The real growth lies outside the country. In the domestic space, Surat largely competes with itself, no other Indian cluster matches its scale in MMF. But to grow from strength to leadership, exporters must look at global markets.

The global trade in man-made fibres today stands at roughly US\$ 500 billion and is growing at 7-8 per cent annually, significantly faster than cotton's modest 1-2 per cent growth. Yet India's share remains disproportionately small. For years, the country relied heavily on cotton, but consumer preferences worldwide have shifted dramatically. Performance fabrics now dominate retail shelves. In stores of brands such as Nike and Adidas, polyester-based activewear has replaced cotton basics. Even within TT Ltd, Jain revealed, garments that were once entirely cotton have shifted overwhelmingly toward polyester blends and performance textiles. The global consumer today prioritises moisture management, stretch, durability and easy-care functionality, attributes where polyester excels.

Jain also pointed the significance of tariff dynamics, particularly in the United States, the world's largest apparel market with trade exceeding US\$ 120 billion. While China continues to dominate, its tariffs remain higher than India's in key categories, creating a strategic window. Rather than focusing solely on competing with Bangladesh or Vietnam, India can capture market share directly from China where tariff advantages exist. But such an opportunity de-



The responsibility now rests with industry stakeholders to act decisively, improve quality, build scale, integrate operations and embrace global ambition. Surat stands at a pivotal moment. Whether the city evolves from a domestic powerhouse into a global textile leader will depend on collective execution.

mands competitiveness in quality, consistency and scale. In Jain's calculation, Surat's biggest weakness is not knitting capacity but processing and quality consistency. Export markets demand uniform dye lots, shade stability, accurate GSM, consistent fabric width and reliable colour fastness. Domestic buyers may overlook minor variations, but global buyers will not. Many of these issues, he emphasised, do not require massive capital expenditure; they require discipline, systems and attention to detail. Investing in robust quality control mechanisms and establishing more accredited testing laboratories in Surat would significantly elevate credibility. When testing becomes standard practice, quality naturally improves.

Scale is another critical factor. Global brands do not want fragmented sourcing. A buyer who needs half a million T-shirts prefers to deal with a single integrated supplier. China's dominance stems not only from cost but from its ability to execute large, consistent orders seam-

lessly. India must move beyond fragmented expansion and encourage integrated growth, especially in raw materials and processing. Backward and forward linkages within the cluster are essential to build global trust.

On compliance, Jain acknowledged tightening regulations in Europe but cautioned against using compliance as an excuse to avoid exports. While certain markets demand high standards, vast opportunities exist in Africa, the Middle East, Asia, South America and even segments of the US where price-quality balance outweighs exhaustive compliance certifications. The world market is vast and opportunities are diverse.

He urged industry bodies to move from discussion to action. Rather than merely participating in exhibitions, clusters must conduct structured market studies, identify two to five product categories where Surat can become globally competitive and actively bring international buyers to the city. One-to-one engagement builds sustainable business far more effec-

tively than passive trade fair participation. Collaboration within the cluster, rather than relentless price competition, will determine future success.

Jain also underlined India's demographic advantage. The country's large workforce, particularly its under-utilised female labour force, represents immense potential. However, competitiveness is determined by productivity, not wage levels alone. A higher-paid but efficient worker can be more cost-effective than cheaper but less productive labour. Skill development initiatives offered by central and state governments must be fully leveraged. Automation and artificial intelligence, he argued, should not be feared. AI-driven design, production planning and efficiency optimisation can dramatically increase speed and precision without eliminating jobs.

Jain cautioned that labour advantages do not last indefinitely. Countries move through manufacturing cycles and India's window of opportunity is open now. Surat already possesses the raw materials, infrastructure, entrepreneurial drive and financial strength needed to lead in MMF. While Ahmedabad and Rajkot remain largely cotton-centric, Surat holds the crown in man-made fibres.

Jain stated that the responsibility now rests with industry stakeholders to act decisively, improve quality, build scale, integrate operations and embrace global ambition. Surat stands at a pivotal moment. Whether the city evolves from a domestic powerhouse into a global textile leader will depend on collective execution. □

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Ivy Decarb: Decarbonizing Processes And Enhancing Productivity In Textile Value Chain

As sustainability regulations tighten in major markets, decarbonisation is becoming a key factor in global textile sourcing. For manufacturers, proving measurable carbon reductions now determines access to brands, finance and export markets.

Ivy Decarb, a pragmatic marketplace platform, connects textile mills, machinery manufacturers, financial institutions and global brands. IVY Decarb built it to validate the positive impact of mills' real green investments.

"Ivy Decarb shows mills exactly how their investments in machinery, renewable energy or water treatment systems drive quantifiable carbon reductions and productivity boosts" Dharmendra Salian – India Director said.

The textile sector is highly resource-intensive. Ivy Decarb spotlights low-carbon machinery, energy-efficient processes and water-saving technologies that deliver immediate productivity and environmental returns.

Machinery manufacturers share performance data on productivity, energy use, water consumption and carbon footprints. Ivy Decarb Platform supports the Mills in their selection process of purchasing new machines or equipment. This empowers confident decisions that enhance both productivity and sustainability performance.

Financing poses a hurdle for these transformations, as green loans demand proof of impact. Ivy Decarb partners with banks to validate investment outcomes, securing funding for mills demonstrating concrete impact.

"We have some customers

who were able to secure up to 100% financing by showcasing investment-driven carbon reductions and efficiency gains," Salian noted. This accelerates technology upgrades and sustainability transitions.

Ivy Decarb connects mills with leading brands by providing actionable visibility into their decarbonization progress. Through the Ivy Decarb Marketplace Platform, mills can securely share validated impact data from their sustainability investments. This ensures data protection while demonstrating tangible emissions progress to brands who are Ivy Decarb's partners and who prioritize suppliers showing measurable environmental improvements amid increasing regulatory pressures.

"No other platform in India's textile sector offers this pragmatic investment validation," Salian said.

Ivy Decarb is present in Italy, Turkey, Bangladesh, China and India, with an increasing interest from the mills. Joining Ivy Decarb's Marketplace Platform is free of charge for textile manufacturers.

Leading machinery manufacturers partners of Ivy Decarb showcase their portfolios proving energy, water, and emissions reductions as well as efficiency gains, using their technologies.

Ivy Decarb is strategically positioned to support India's ambitious Net-Zero roadmap (targeting 2070 and a 50% cut by 2030). This is achieved through its strong relationships with financial institutions, which are essential for funding renewable energy and efficiency projects. □

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Artificial Intelligence Applications Are Changing The Landscape Of Textile Value Chain. Are You Prepared?



Dr Gurudas Aras

The world is fast-moving towards the application of AI (Artificial Intelligence), robotics and digitisation in manufacturing. Smart machines, AI-controlled systems and IoT (Internet of Things) based monitoring tools are used across the textile value chain. The modern textile automation is powered by a combination of digital intelligence, connected systems and precision engineering.

What is Artificial Intelligence, and how is it helping the textile value chain?

Artificial Intelligence (AI) is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy. The devices equipped with AI can see and identify objects, understand and respond to human language, learn from new information and experience and make detailed recommendations to users.

AI is transforming every stage of textile production, encompassing design, manufacturing, quality control and customer interaction. AI is augmenting and revolutionising current processes, driving the industry toward a future. AI is revolutionising how fashion is designed, planned and produced. Modern AI tools help generate real-time design and efficiency gains.



10 ways AI is used in the textile and apparel industry

1. Automated Design and Pattern Making

AI applications help in fashion design by enabling more intuitive and data-driven creation of patterns and fabrics. AI tools analyse vast trend data from fashion shows, online retail platforms, and consumer behaviour studies. This helps predict future trends in patterns, colours and materials, empowering designers to craft collections that align closely with anticipated market demands. This predictive insight shortens the time from design conception to market debut. Personalisation enhances customer satisfaction and loyalty, showcasing AI's pivotal role in transforming traditional fashion design into a dynamic, customer-centric industry. Adobe Flierfly, CLO 3D, Slide 3D AI, Fashion INSTA and Patterned AI are some of the popular tools.

2. Fabric Inspection

Online fabric inspection software streamlines quality control by digitising the detection, recording and reporting of defects in textiles. These solutions range from cloud-based mobile apps for field agents to AI-powered industrial platforms integrated directly into knitting machines or looms. These softwares scan for defects such as mis-weaves, pattern irregularities and colour deviations. This level of precision cuts down on waste and elevates product quality.

Speed of the AI-driven inspection accelerates the production cycle, reduces labour costs while enhancing the efficiency of manufacturing operations. Some popular AI-powered textile monitoring systems that detect fabric defects in real-time on the machine are Uster EVS Fabriq Vision, Smartex.ai, CATS (Datatex), FIDAS, LookOver and LTQuality.

3. Supply Chain Optimisation

AI-powered systems for supply chain management (SCM) have shifted from simple statistical models to autonomous orchestration and agentic AI in 2026. These systems use machine learning (ML) and deep learning to process real-time external data—such as weather, social signals, and geopolitical shifts—reducing forecast errors by up to 43% compared to traditional methods. By leveraging historical sales data, weather forecasts and economic indicators, AI algorithms can predict future product demands. This predictive capacity allows manufacturers to tune their production schedules, maintain efficient stock levels and minimise 'holding costs'. Some of the popular AI tools like Llamasoft, Blue Yonder, Kinaxis Maestro, O9 Solutions and SAP IBP offer supply chain analytics that forecast demand and simulate various market scenarios.

4. Predictive Maintenance

Predictive Maintenance (PdM) represents a shift from "fixing things when they break" or "fixing things on a

schedule" to "fixing things exactly when needed." By using AI to analyse data from industrial sensors (vibration, temperature, pressure and acoustics), these systems identify the subtle "fingerprints" of equipment failure weeks before a breakdown occurs. Predictive AI maintenance is pivotal for enhancing machinery longevity and operational efficiency.

AI models process massive streams of IoT data to perform three primary functions like Anomaly Detection (Identifying patterns that deviate from "normal" operating conditions), Failure Prediction (Estimating the Remaining Useful Life (RUL) of a component), Root Cause Analysis (Determining why a machine is failing, e.g., bearing wear vs. lubrication issue, to ensure the right parts are ordered).

The real-time benefits are in terms of Reduced Downtime (typically decreases machine downtime by 30–50%), Extended Asset Life (increases the lifespan of expensive machinery by 20–40%) and Safety (prevents catastrophic failures that could lead to workplace accidents). The popular AI tools are SKF Solution, Siemens Senseye and IBM Maximo Predict.

5. Robotic Automation

Robotic automation powered by AI is transforming the textile and apparel industry from a traditionally labour-intensive craft into a high-tech sector. By integrating computer vision, machine learning and advanced sensors, robots can now handle "limp" or flexible fabrics—a task historically difficult for traditional machines.

The core applications of AI robotics are Precision Cutting, Fabric Inspection, Handling & Logistics through Automated Guided Vehicles (AGVs). AI-driven robots like SoftWear Automation's Sewbots are transforming textile manufacturing by performing precise and repetitive tasks such as fabric cutting and sewing with accuracy and efficiency. These robots, equipped with 'Advanced Vision Systems' and AI, handle and sew fabrics much faster than humans, with a

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Artificial Intelligence Applications Are Changing...

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Sewbot capable of sewing a standard T-shirt in just 22 seconds. This ensures that high-demand fashion items can be produced quickly. Integrating these robots reduces reliance on skilled human labour, which can be utilised for complex and creative tasks.

Some of the popular AI robotics are from SoftWear Automation (SEWBOT), ABB Robotics, LECTRA and Siemens.

6. Waste Reduction

AI-powered tools are fundamentally reshaping the textile value chain by transforming waste from an inevitable byproduct into a manageable resource. By 2026, industry experts project that AI adoption will be a baseline requirement for competitive, sustainable manufacturing, with early adopters reporting up to a 72% reduction in material waste.

A) Manufacturing: Minimising Pre-Consumer Waste

Systems like Smartex and Robro Systems' KWIS use high-speed cameras and deep learning to scan fabrics during production and detect micro-defects. AI algorithms (e.g., from Lectra) arrange pattern pieces like a jigsaw puzzle to achieve nearly 100% fabric utilisation, reducing cutting waste by 15-20%.

B) Design & Product Development: Preventing Waste Before Production

Tools like CLO 3D and Browzwear use AI to simulate garment fit and drape on 3D avatars, which eliminates significant material and transportation waste.

C) Supply Chain: Solving the Overproduction Crisis

Overproduction is estimated to drive roughly 30% of fashion inventory directly to landfills or markdowns. Platforms like Stylumia and Heuritech help in demand sensing and 20% reductions in excess inventory.

D) End-of-Life: Enabling High-Quality Recycling

AI combined with Near-Infrared (NIR) spectroscopy can identify over



13 fibre types with 95%+ accuracy. New prototypes use AI and lasers to identify and remove non-recyclable elements like zippers, buttons and logos, making garments ready for high-quality chemical recycling. Mandated by EU regulations in 2026, AI-supported Digital Product Passports track a garment's material composition from birth, providing recyclers with instant data on how to process the waste.

7. Personalised Marketing

Many apparel brands have shifted to hyper-personalisation at an individual level. AI-powered marketing tools analyse thousands of data points—including purchase history, real-time browsing behaviour, and even local weather—to deliver a "one-to-one" shopping experience. AI's capacity to sift through extensive customer data enables companies to develop highly personalised marketing strategies. Adopting AI in marketing efforts leads to increased customer engagement and higher conversion rates. AI helps optimise marketing resources by targeting consumers, thereby increasing the effectiveness of marketing campaigns.

Stitch Fix, Hook, Zalando, Stylitics, Pinterest Lens and Nieman Marcus, Valentino and Moncler are some of the popular AI tools used by the leading apparel brands for this purpose.

8. Enhanced Customer Experience

AI-powered tools enhance the customer experience for textile brands by shifting from a one-size-fits-all approach to hyper-personalisation and interactive discovery.

AI-powered chatbots and virtual assistants are transforming the retail experience by offering highly personalised shopping guidance. These systems analyse individual user interactions, preferences and purchasing histories to tailor product recommendations uniquely for each customer. Technologies like PICTOFit (Reactive Reality) and Style3D allow customers to create realistic 3D avatars or upload photos to see exactly how garments drape and fit their specific body shape. Solutions such as Mirror-size and Prime AI replace static size charts with data-driven recommendations, analysing thousands of body types to provide precise fit suggestions instantly. Smart chatbots provide instant natural-language support for inquiries about order status, returns and product availability, which increases customer satisfaction and boosts brand loyalty.

9. Sustainable Practices

AI is a "strategic enabler" of sustainability across the textile value chain, helping brands transition from fragmented manual processes to real-time, data-driven circular models. These tools address critical environmental challenges such as overproduction, high resource intensity and low recycling rates.

AI integrates into all the stages of the value chain to prevent waste through Circular Design & Resource Optimisation (CLO 3D, Browzwear, Materiom AI, Noble AI), Precision Manufacturing & Quality Control (Smartex, WiseEye), Supply Chain Transparency & Inventory Management (Nextail, Stylumia, TruceTrace)

and End-of-Life & Automated Recycling (Rafiberd, Valvan).

Alchemie Technology's Endeavour utilises AI to revolutionise the traditional dyeing process. By employing digital fluid dynamics simulations, the system predicts and controls the exact amount of dye, fixative and water needed for each fabric type, optimising the process to use 95% less water and 85% fewer chemicals.

10. Smart Textiles

AI plays the role of "brain" behind smart textiles, which integrate electronics directly into fabric structures. AI's primary role is enabling these materials to sense, communicate, and react to their environment in real-time. These innovative textiles are embedded with Actuators and Sensors, enabling them to alter properties such as colour or temperature in response to changes in their surroundings. AI assists in selecting specialised fibres—such as conductive yarns or polymeric optical fibres (POF)—to optimise properties like temperature regulation, antimicrobial effects or moisture-wicking. 3D digital twin technology simulates responsive behaviours virtually, such as a fabric changing colour or a garment's thermal insulation adjusting to external cold. Innovative 3D weaving technology (used by Unspun) integrates sensors directly into the garment's architecture, reducing cutting waste by up to 90%.

Conclusion

In summary, the integration of AI across these 10 key areas marks a pivotal shift toward a more circular and responsible textile industry. Ultimately, the 'AI revolution' in textiles is defined by its ability to turn massive data into actionable intelligence. The 10 ways highlighted here represent a roadmap for a smarter, faster and cleaner apparel industry. For manufacturers and designers alike, the opportunity is clear: embrace AI-driven transformation today to ensure a competitive, sustainable and consumer-centric tomorrow. □

(Dr Gurudas Aras is a Strategic Advisor and Independent Director for many leading companies)

Edge AI Powers Next Productivity Leap For India's Textile MSMEs

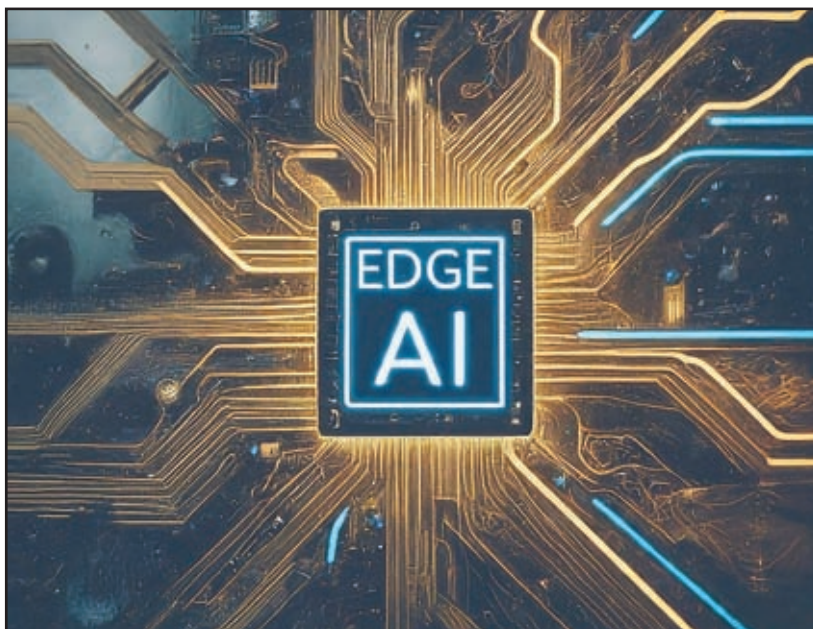
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India's micro, small and medium enterprises (MSMEs) are frequently described as the backbone of the economy, but in textiles that description is literal. From spinning and weaving to processing and garmenting, textile MSMEs form the dense production network that sustains domestic supply chains and export competitiveness. Contributing nearly 30% to India's GDP and supporting over 250 million jobs, MSMEs are central to growth. Yet in textiles, persistent productivity constraints continue to cap margins and global positioning.

The Union Budget 2026–27, with its Rs 100 billion allocation for MSMEs, highlights a strategic shift: India's next growth phase must be unlocked within MSME clusters. For textiles, this means improving the fundamentals, reducing machine downtime, cutting defect rates, optimizing energy use, tightening inventory cycles and stabilizing output quality. In a sector defined by thin margins and volatile input costs, even incremental gains in these areas can significantly enhance profitability.

Textile MSMEs operate under mounting pressure. Cotton and man-made fibre prices fluctuate sharply. Energy costs remain high. Skilled labour is scarce. Environmental compliance norms are tightening, especially for processing units facing scrutiny over water use and effluent discharge. Meanwhile, global buyers demand consistent quality, faster delivery and traceability. Traditionally, promoters have relied on experience and manual supervision to manage these complexities. That instinct-driven model built resilience, but it is increasingly insufficient in a data-driven global market.

Artificial intelligence offers a pathway to shift from reactive to predictive operations. Instead of fixing a spinning frame after it fails, predictive maintenance tools can identify vibration anomalies and schedule intervention before breakdown. Instead of periodic manual fabric inspection, AI-enabled vision systems can detect weaving defects or shade variations in real time. Instead of responding to



An AI-enabled camera on a fabric line can instantly flag defects. Sensors on machinery can detect abnormal vibration patterns before a breakdown. Energy monitoring devices can identify inefficiencies as they occur. This localized approach reduces latency, lowers data transfer costs and avoids dependence on continuous high-bandwidth connectivity.

unexpected energy spikes in dyeing processes, AI systems can optimize load cycles to reduce waste and stabilize consumption.

For many textile entrepreneurs, AI is no longer a distant innovation—it is becoming an operational tool that supports daily decision-making. When effectively deployed, it reduces scrap, lowers rework, anticipates maintenance needs and improves compliance tracking. These improvements translate directly into better margins and stronger buyer confidence.

However, conventional AI architectures built for large enterprises are ill-suited to textile MSMEs. Cloud-heavy systems requiring centralized data lakes and dedicated IT teams do not align with smaller units operating with limited digital infrastructure and intermittent connectivity. Textile pro-

duction decisions often need to be made in seconds, not after data is transmitted to distant servers.

This is where edge AI becomes critical. By embedding intelligence directly on or near machines, data is processed locally and insights are generated in real time on the shop floor. An AI-enabled camera on a fabric line can instantly flag defects. Sensors on machinery can detect abnormal vibration patterns before a breakdown. Energy monitoring devices can identify inefficiencies as they occur. This localized approach reduces latency, lowers data transfer costs and avoids dependence on continuous high-bandwidth connectivity, making it practical for textile clusters across India.

Consider a small weaving unit operating within a textile cluster. Manual inspection may detect defects only

after significant production has been completed, leading to rework or rejection. With edge AI-based inspection integrated into the production line, issues are identified immediately, reducing wastage and ensuring consistent output. When such solutions are adopted across multiple units within a cluster, the impact becomes systemic rather than isolated.

Cluster-led deployment is therefore essential. Textile MSMEs rarely function in isolation; they are embedded in dense industrial ecosystems where firms share suppliers, labour pools and common challenges. Peer learning plays a decisive role in technology adoption. When one unit demonstrates measurable gains through AI-driven quality inspection or energy optimization, neighbouring firms are more likely to experiment.

Industry bodies such as National Association of Software and Service Companies (NASSCOM) and Confederation of Indian Industry (CII) are supporting MSME-focused initiatives through Centres of Excellence and smart manufacturing programmes. Technology providers including Flutura, Detect Technologies and Altizon Systems are developing solutions tailored to industrial environments, including visual inspection, predictive maintenance and energy optimization—use cases highly relevant to textiles.

The key is moving from pilot to scale. Policy intent and playbooks provide direction, but sustained impact requires coordinated deployment, shared infrastructure and accessible financing. Recognition of early adopters, combined with structured knowledge-sharing across clusters, can accelerate diffusion while building operational capability.

The timing is critical. As India strengthens its position in global supply chains, textile MSMEs sit at the core of export growth. But participation in this opportunity depends on consistent quality, predictable output and cost efficiency. Edge AI offers a realistic lever to achieve these outcomes without imposing unrealistic infrastructure demands on smaller firms. □

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Sammir Dattani, Executive Director, Sanathan Textiles Ltd

Sanathan Textiles: Rooted In Integration, Adaptability And Responsibility

For Sanathan Textiles, sustainability is not just about ESG reporting. It's about reducing waste, lowering risk and minimising the environmental footprint of the product itself, says **Sammir Dattani**.

By **Henry Dsouza**

Sanathan Textiles' story is not one of sudden scale or overnight success, but of a patient, generational transformation that mirrors the evolution of India's textile industry itself. Although the company made its stock market debut only a year ago, its foundations were laid decades earlier, long before its formal incorporation in 2005. Sanathan's origins lie in trading, with the business initially operating as merchants before relocating to Mumbai in search of broader opportunities. The move marked a decisive shift from trading to deeper participation in the value chain beginning with polyester yarn trading. Over

time, this progressed into the manufacturing of polyester yarn, followed by the addition of cotton yarn production and, subsequently, technical textile yarn manufacturing.

What began as a modest enterprise, with a capacity of just 4,500 metric tonnes per annum, has today matured into one of the country's most diversified and integrated yarn manufacturers. At its Silvassa facility alone, Sanathan Textiles now produces close to 2,00,000 metric tonnes of polyester yarn, 14,000 metric tonnes of cotton yarn and 9,000 metric tonnes of technical textile yarns annually, a scale achieved not through acceleration, but through continuity. "This growth has not happened in one year or one phase," says Sammir Dattani, Executive Director at Sanathan

Textiles. "It has been built over twenty years of consistent capital movement, learning and reinvestment."

Operating in a sector often perceived as functional rather than aspirational, Sanathan has quietly focused on fundamentals that matter global fibre consumption trends, evolving end-use applications and structural shift from cotton to man-made fibres. The company's leadership recognised early that the future of textiles lay in versatility. As industries such as sportswear, automotive, home textiles, travel, leisure and infrastructure expanded, yarn was no longer a commodity input, but a performance material. This understanding has allowed Sanathan to position itself not just as a supplier, but as a solution provider, aligned with long-term consumption patterns rather than short-term cycles.

What sets Sanathan apart in the Indian textile landscape is the rare coexistence of three distinct yarn verticals, viz. polyester, cotton and technical textiles, within a single manufacturing ecosystem. The Silvassa plant exercises end-to-end control from polymerisation to packaging, supported by in-house research and development that has enabled the creation of value-added yarns. These innovations not only reflect the company's philosophy of functional relevance, but they are also underpinned by a deeply embedded culture of safety and operational discipline. Every process, from polymer handling to high-speed texturing, is governed by detailed standard operating procedures designed to minimise risk and ensure consistency. "We often say one yarn can do many things," Dattani explains, adding, "From the moment you wake up to the pillow you rest on, the towel you use, the seatbelt you fasten or the billboard you see on the road, our yarns are present everywhere, even if unnoticed."

That omnipresence is strengthened by a vast and loyal customer base of over 14,000 clients across 29 countries, with a customer retention rate of 92 per cent. Such stickiness is not accidental it is the result of consistency, quality control and the ability to customise yarns for highly specific applications. Sanathan's yarns find their way into innerwear, athleisure, denim, luggage fabrics, automobile interiors, geogrids for road construction, safety slings, fishing nets and coated outdoor fabrics, each demanding different performance attributes from strength and stretch to durability and moisture management. Ensuring that such diverse applications are delivered without compromise requires not only technical expertise, but also a workplace environment where safety and health are treated as non-negotiable.

At Sanathan, safety is not positioned as a compliance requirement but as a belief system. The company's guiding principle is that all injuries and work-related illnesses can and must be prevented. Every employee, contractor and visitor undergoes mandatory safety induction before entering the plant, ensuring familiarity with safety

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Sanathan Textiles: Rooted In Integration, Adaptability...

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protocols, personal protective equipment and emergency procedures. "Safety and health of all people who work in and with Sanathan is our number one priority," notes the company's safety leadership, a philosophy reinforced through continuous training, daily briefings and regular risk assessments. Employees are actively engaged in identifying potential hazards through structured programmes, creating a participative safety culture rather than a top-down enforcement mechanism.

This approach has translated into measurable outcomes. Sanathan conducts regular fire, evacuation and emergency response mock drills, often in collaboration with district authorities and neighbouring industrial units as part of mutual aid associations. The company's internal fire brigade and emergency response teams are recognised for their preparedness and professionalism, with Sanathan frequently invited by government bodies and large public sector undertakings to participate in large-scale emergency simulations. Such credibility was formally acknowledged when Sanathan was selected among the top 20 industries from a pool of nearly 2,000 units and awarded the Basic Fire and Life Safety Measures recognition by the Department of Fire and Emergency Services.

The emphasis on safety extends beyond people to processes and infrastructure. Mandatory use of safety helmets, shoes, ear protection, harnesses and high-visibility jackets is strictly enforced based on job-specific risk profiles. Clearly marked emergency exits, assembly points and visual signage ensure that response during unforeseen events is instinctive rather than improvised. "Accidents in health and safety drive accidents in business," Dattani reflects, and elaborates, "Which is why safety is integrated into our business management systems, not treated as a parallel function."

The company's trajectory is inseparable from the evolution of the Dattani family itself. The first generation operated as yarn traders in



Kolkata, the second generation moved westward to establish manufacturing and the second and third generations together have driven expansion while institutionalising governance. "When we joined the business full-time, we were very clear that if we wanted to grow, we needed systems, processes and people," says Dattani. "The IPO journey accelerated that transformation from a family business to a family-owned, professionally managed enterprise." That transition is reflected not only in governance structures but also in the formalisation of safety, quality and environmental management systems across all operations.

Sanathan's board brings together promoter leadership and independent directors with deep expertise in banking, finance, textile engineering and law, enabling in-

formed decision-making at scale. Financially, the company reported revenues of approximately Rs 3,000 crore in FY25 with an EBITDA margin of 8.8 per cent, reflecting resilience even amid large capacity expansions. Operational excellence remains one of Sanathan's defining strengths. While textile plants typically operate at around 70 per cent efficiency, Sanathan's Silvassa facility consistently runs at nearly 96 per cent. This performance is driven by deliberate factory design, preventive maintenance, automation and production fungibility, all of which also reduce operational risk and enhance workplace safety. This operational robustness is underpinned by Sanathan's investments in advanced machinery from some of the world's most respected textile equipment manufacturers. Its spinning and preparatory lines are sup-

ported by technology from LMW, Rieter, Trützschler and Saurer. While winding and finishing operations draw on solutions from Aalidhra. Polymerisation and texturising processes are equipped with systems from Oerlikon Barmag, enabling high-speed production, consistency and flexibility across polyester, cotton and technical yarn applications. Together, these investments have enhanced productivity, improved energy efficiency and reinforced process safety across Sanathan's manufacturing ecosystem. "We design our factories to adapt," Dattani notes, explaining further, "Different customers peak at different times. Our strength lies in understanding those cycles and planning production accordingly."

The commissioning of Sanathan's Punjab facility marks a strategic inflection point rather than mere geographic expansion. Spread across 80 acres of freehold land in Wazirabad, the fully integrated polyester filament yarn plant has been conceived as a circular manufacturing ecosystem where safety, sustainability and efficiency intersect. Raw materials are sourced locally, production occurs close to customers and deliveries are executed within hours instead of days. "Earlier, raw materials travelled over a thousand kilometres to the west, and finished yarn travelled back to the north," says Dattani, and explains the benefits of expansion, stating "By manufacturing in Punjab, we have cut that entire movement, reducing logistics costs, delivery times, carbon emissions and associated handling risks."

Phase One of the Punjab facility operates at 700 tonnes per day and is expected to reach full capacity shortly, while Phase Two will add another 250 tonnes per day. Once fully operational alongside Silvassa, Sanathan's total production capacity will rise to approximately 5,70,000 metric tonnes annually, a 155 per cent increase achieved through phased execution rather than aggressive scale-up. Although margins saw a temporary dip due to commissioning costs, management views this as a transitional phase that will normalise as util-

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Sanathan Textiles: Rooted In Integration, Adaptability...

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isation improves, supported by stable operations and disciplined risk management.

Sustainability and safety converge strongly in Sanathan's operational philosophy. Both Silvassa and Punjab operate on zero-liquid-discharge systems, ensuring complete water treatment and reuse. Packaging has evolved from recycled GRS-certified cartons to reusable pallet systems at Punjab, reducing paper waste, while improving material handling safety. Most notably, the Punjab facility uses agricultural waste as fuel for heating, replacing fossil fuels while addressing stubble burning in North India. "This is not just about ESG reporting," says Dattani, "It's about reducing waste, lowering risk and minimising the environmental footprint of the product itself." The company's certifications, including ISO 9001, ISO 14001 and



ISO 45001, reinforce this integrated approach to quality, environment and occupational health and safety. Technology underpins this ecosystem. Sanathan was an early adopter of SAP and has since migrated to cloud-based platforms, enabling real-time integration across locations. Automation has reduced manpower intensity in high-risk zones while improving consistency, traceability and safety. The company is now exploring AI-driven

data analytics to better understand demand patterns, predictive maintenance and process optimisation. "Data has become a strategic asset," Dattani observes, adding, "It helps us plan better, respond faster and create clarity for the future." Looking ahead, Sanathan's ambitions remain anchored in value creation rather than scale for its own sake. Plans include doubling capacity in technical textile yarns, setting up a new cotton yarn facility in Mad-

hya Pradesh and continuing to enhance product value through innovation, all while maintaining the same rigour around safety and sustainability. "We have never chased being the largest," Dattani concludes, "Our focus has always been on adding value to the product, to the customer and to the ecosystem. Growth is a consequence of that approach." In an industry often defined by volume and price, Sanathan Textiles offers a different narrative: one rooted in integration, adaptability and responsibility. By embedding safety into its operational DNA and aligning manufacturing strategy with consumption realities and environmental stewardship, the company has woven itself seamlessly into the fabric of modern life, proving that even in the most elemental of industries, thoughtful evolution can create enduring distinction. □

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Engineering The Compound Effect In High-Speed Ring Spinning

Quantifying the Financial Impact of Micro-Operational Improvements in a 60s Ne Spinning Mill



Pravin Salokhe, Production Manager, Alok Industries Ltd

In fine-count ring spinning, marginal operational improvements generate disproportionately large financial gains due to high spindle speeds, elevated energy consumption and premium raw material costs.

This paper presents a quantified case study from a high-speed spinning mill producing 60s Ne yarn, demonstrating how small improvements in general cleaning time, traveler change duration, doffing efficiency, utilization, units per kilogramme (UKg), and comber noil percentage together generate significant annual savings.

All calculations are based on nearer actual operating parameters and are presented for practical replication.

Mill Configuration and Operating Parameters

- Ring Frames: 42
- Spindles per Ring Frame: 1,632
- Total Spindles: 68,544
- Yarn Count: 60s Ne
- Average Spindle Speed: 22,700 rpm
- Ring Frame Productivity: 15.3 kg/hour
- Working Days: 360 days/year
- Yarn Value: Rs 345/kg
- Annual Production Basis
- Hourly production = 15.3 × 42 = 642.6 kg/hour
- Daily production = 642.6 × 24 = 15,422 kg/day
- Annual production = 15,422 × 360 = 5,552,000 kg/year

1. General Cleaning (GC) Time Reduction

- Operating Data
- GC frequency: Once in 30 days per RF
- Average machine cleanings per day: 1.4
- Time saved per day: 1.4 hours
- Annual Time Recovery
- 1.4 × 360 ~ 504 hours/year
- Additional Production
- 504 × 15.3 = 7,711 kg/year
- Financial Impact
- 7,711 × 345 = Rs 26.6 lakh/year

2. Ring Traveler Change (RTC) Time Reduction

- Operating Data
- Traveler changes: 4rfs per day
- Time saved per change: 10 minutes
- Total time saved per day: 40 minutes
- Annual Time Recovery
- 40 × 360 = 14,400 minutes = 240 hours/year
- Additional Production
- 240 × 15.3 = 3,672 kg/year
- Financial Impact
- 3,672 × 345 = Rs12.67 lakh/year

3. Doffing Time Reduction

- Operating Data
- Total doffs per day: 210
- Time saved per doff: 1 minute
- Annual Time Recovery
- 210 × 360 = 75,600 minutes = 1,260 hours/year
- Additional Production
- 1,260 × 15.3 = 19,278 kg/year
- Financial Impact
- 19,278 × 345 = Rs 66.52 lakh/year

4. Utilization Improvement

- Change Considered
- Utilization improved from 98.0% to 98.5% (0.5%)
- Additional Production
- 0.5% of 5,552,000 = 27,760 kg/year
- Financial Impact
- 27,760 × 345 = Rs 95.77 lakh/year

5. UKg Reduction

- Operating Data
- Before improvement: 8.4 UKg
- After improvement: 7.8 UKg
- Reduction: 0.6 UKg
- Annual Energy Units Saved
- 5,552,000 × 0.6 = 3,331,200 units
- Cost Saving
- 3,331,200 × Rs 6.5/unit = Rs 2.17

The study demonstrates that in high-speed fine-count spinning, profitability is governed less by installed capacity and more by operational discipline. Mills operating at high spindle speeds must therefore prioritize loss elimination, energy efficiency and yield optimization as core engineering objectives.

crore/year

6. Comber Noil Reduction

- Operating Data
- Comber production: 18,000 kg/day
- Noil reduced from 20% to 19%
- Cotton Saved
- 1% of 18,000 = 180 kg/day
- Annual saving = 180 × 360 = 64,800 kg/year
- Financial Impact
- 64,800 × Rs166/kg = Rs 1.07 crore/year

Overall Financial Impact

- Improvement Area - Annual Gain
- GC Optimization - Rs 0.27 crore
- Traveler Change - Rs 0.13 crore
- Doffing Efficiency- Rs 0.67 crore
- Utilization Improvement – Rs 4.26 crore
- UKg Reduction - Rs 2.17 crore
- Comber Noil Reduction - Rs 1.07 crore
- Total Impact - Rs 8.57crore/year

Conclusion

The study demonstrates that in high-speed fine-count spinning, profitability is governed less by installed capacity and more by operational discipline. Micro-improvements, when applied consistently, compound into significant financial gains. Mills operating at high spindle speeds must therefore prioritize loss elimination, energy efficiency and yield optimization as core engineering objectives. □

Uster Guides Spinners On Fibre Control To Cut Yarn Claims

Achieving consistent yarn quality remains one of the most demanding challenges for spinning mills worldwide. Recognising that many yarn claims originate from variations in raw material and early-stage processing, Uster Technologies has released practical guidelines to help spinners reduce irregularities right from the start of the process.

The insights are featured in the latest edition of the Uster News Bulletin No. 52, which analyses the most common causes of yarn quality claims and outlines best practices for operational excellence in spinning mills.

Recurring Causes of Yarn Claims

According to Uster's long-term experience, the underlying reasons behind yarn quality claims have remained largely consistent over the past two to three decades. While the severity may vary depending on the yarn's end use, recurring factors such as fibre fineness variation, neps formation, and short fibre content continue to impact spinnability and yarn consistency.

By systematically analysing these parameters, mills can significantly reduce the likelihood of customer complaints.

Laydown Consistency: Managing Micronaire

One of the most critical parameters influencing yarn quality is fibre fineness, or micronaire. Since cotton naturally varies in fineness, maintaining a narrow and consistent micronaire range during bale laydown is essential.

Fluctuations in micronaire can lead to barré effects and inconsistencies in yarn strength, often resulting in claims. To manage this, many spinners rely on data from Uster HVI systems for laydown planning. Increasingly, mills are adopting automated solutions such as Uster FiberQ, which uses algorithms to optimise bale selection by controlling micronaire and other fibre characteristics simultaneously.

This data-driven approach not only reduces manual intervention but also strengthens long-term



Measuring fiber quality parameters with Uster HVI



Bale mixing – laydown

quality management from fibre to yarn.

Fibre Process Control: Focus on the Blowroom

Another frequent source of yarn irregularity is the formation of neps. Uster emphasises that preventing nep creation at the beginning of the process is more effective than attempting to remove them later.

In the blowroom, the focus lies on balancing trash removal with minimal fibre damage. Mechanical opening and cleaning can inadver-

tently increase short fibre content and neps due to stress on the material. While some mills attempt corrections during carding or combing, Uster recommends thorough testing and optimisation at the blowroom stage as a more economical and sustainable solution.

Routine performance checks using Uster AFIS systems are widely adopted to monitor blowroom and carding efficiency, especially after machine maintenance or changes in cotton laydown recipes. Close monitoring helps maintain optimal opening, cleaning

and waste levels while limiting fibre deterioration.

Processing Statistics: Benchmarking Performance

Processing charts in Uster Statistics enable mills to track fibre characteristics such as neps, short fibres and impurities across each stage of production. Typically, neps increase in the blowroom from bale to card mat, followed by a reduction after carding.

By benchmarking their performance against global standards, mills can quickly identify areas requiring improvement or confirm overperformance.

Managing Diverse Raw Materials

Process control becomes even more critical when working with mechanically recycled cotton or man-made fibres. Recycled cotton often enters the blowroom with higher short fibre content, depending on its source and opening method. Similarly, synthetic fibres, though uniform initially, can also suffer damage during processing.

Advanced testing solutions such as Uster AFIS 6 enable mills to assess both cotton and synthetic materials, helping identify fibre deterioration before it translates into yarn irregularity.

Proactive Quality Management Uster underscores that fibre characteristics directly influence spinnability and yarn consistency. Measuring and understanding fibre quality at every stage is fundamental: what is not measured cannot be controlled.

Through Uster News Bulletin No. 52, the company shares best-practice recommendations from industry experts, offering actionable guidance to help spinning mills reduce quality claims and enhance production consistency. A range of additional application literature and the updated Uster Statistics are also available to support mills in strengthening their quality management systems.

With data-driven control and systematic monitoring, Uster aims to support spinners in achieving a new level of reliability and excellence in yarn production. □



Uster News Bulletin No. 52 is available to download free of charge. Besides a comprehensive introduction about claims in general and in comparison with the last fifty years, it contains eight sections on how to manage yarn irregularities claims.

Download link:
www.uster.com/unb52download



Furthermore, Uster offers a poster on causes, effects and solutions regarding fibre quality. Get your free-of-charge download!

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Locked In A Hot Room: How I Finally Understood Enthalpy!

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Murugan Santhanam, Managing Director, Texdoc Online Solution Pvt. Ltd.

Upon entering the air-conditioning specialist's office, I was greeted by a refreshing coolness — the kind that feels like a gentle sea breeze. Just moments earlier, I had been thinking about how the weather outside had suddenly shifted from pleasant to unbearably hot over the past week.

The specialist welcomed me and offered a seat. As I settled down, I instinctively looked around the room, trying to locate the source of that "sea breeze."

He noticed my curiosity, smiled and pointed to an air cooler tucked beneath the window.

After returning to his chair, he said, "Most of the time, I prefer using an air cooler instead of an AC. It saves power, and it also gives a bit of humidity — which is actually better for healthy breathing."

I mentally bookmarked that "healthy breathing" comment for later. My main purpose that day was to understand adiabatic cooling more clearly.

"So, I trust you have no doubts about entropy now?" he asked.

"I understand as much as a textile professional needs to, sir," I replied.

He smiled again, stood up, and began closing the windows and doors.

I assumed he was doing this to reduce the energy loss from the air

cooler.

"Alright," he said, "let's talk about enthalpy. And as usual, I believe you don't want equations or fancy jargon, right?"

"It's not that I hate equations," I protested, "but as a textile person, they're difficult for me to understand."

By then, the room had begun to feel slightly uncomfortable. The air felt heavier. Within minutes, both of us were sweating.

"What happened suddenly? We're sweating like anything! Did you turn off the AC?" I asked.

He laughed. "Just wait a moment."

The room grew hotter and more suffocating. I felt like I was inside an oven. Breathing became difficult — like a fish out of water. 'Is this the 'healthy breathing' he mentioned?' I wondered.

Unable to bear the sultriness any longer, I finally asked, "Sir... can we please step outside for a minute?"

"No need! Outside is even worse. Just wait."

He quickly opened the windows and doors, then switched off the pump of the cooler while letting the fan run.

Within moments, the room returned to a pleasant, breathable state. I exhaled in relief.

"I'm sorry," he said with a mischievous grin. "That was a practical demonstration of enthalpy — with-

out equations, jargon, or fancy words!"

I stared at him, confused. "But what exactly was enthalpy in all this? The heat? The humidity? The sweating?"

He leaned forward.

"Let me explain. Our body sweats to maintain temperature. When sweat evaporates, it takes heat from our skin — so we feel cool. But the total heat in our body, the sweat, and the surrounding air doesn't disappear. It only moves. Enthalpy is simply the total heat carried by air — the heat in the air itself plus the hidden heat carried by water vapour. Dry air carries less heat. Humid air carries more because water vapour contains latent heat. That latent heat is part of enthalpy."

He looked pleased with his explanation. But his words opened more questions in my mind.

"So... are we controlling the temperature of the air?" I asked.

"No!" he said, "When we spray water into the air, the water evaporates by stealing heat from the air. So, the air becomes cooler but more humid. The total heat — the enthalpy — stays the same. It only changes form. That is adiabatic humidification. Temperature alone cannot describe this process. Two air samples may have the same temperature but different moisture levels — and therefore different heat content. Enthalpy captures both

temperature and moisture in one number."

I nodded slowly. "Then why did we feel so much heat when you closed the room?"

"That," he said, "is the second part of the adiabatic story. In the first part, water steals sensible heat from the air and becomes vapour. That gives us cool, moist supply air. In our little experiment, we created similar supply air — and then kept recirculating it inside a closed room. As the air kept circulating, it picked up additional heat from our bodies, from the pump and fan motors, and from the natural friction of air molecules. So the temperature and enthalpy increased. And because the pump was running continuously, the humidity also increased. The air became nearly saturated."

He paused to let it sink in.

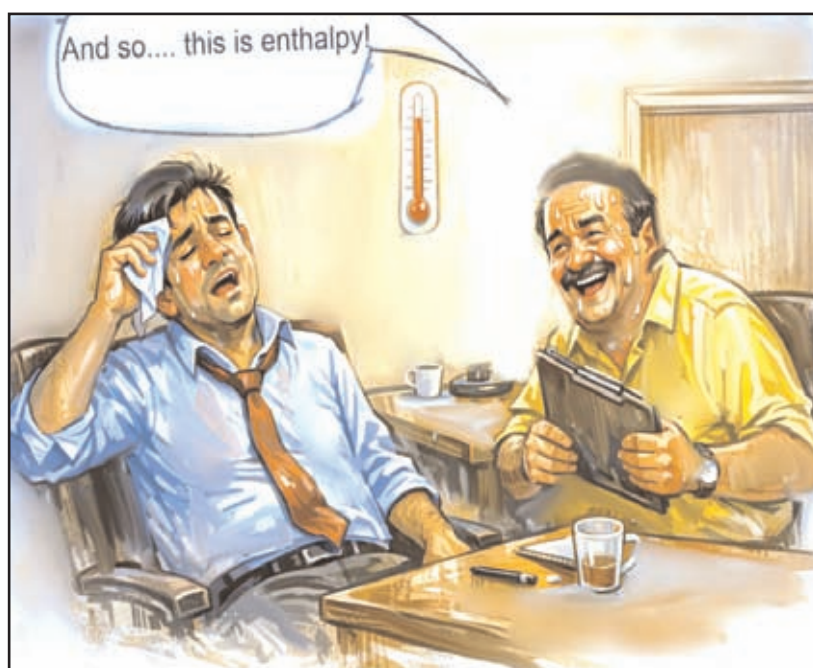
"Now imagine what happens to us in such air. With more heat, we sweat more. But because the air is already full of moisture, our sweat cannot evaporate easily. So we feel hotter, stickier, and extremely uncomfortable."

"Yes," I said, "now I understand why you opened the windows — to remove the extra heat."

"Exactly. Now think of the air in a spinning mill. The air from the humidification plant enters with a defined dry-bulb temperature, RH, and enthalpy. Inside the department, motors, spindles, drafting friction, lights, and people add sensible heat. The air temperature and enthalpy rise. If the air is more humid than the fibre, the fibre absorbs moisture. By the time the air returns to the plant, its dry-bulb temperature is higher and its humidity ratio slightly changed. This air must be let out, or else the department becomes uncomfortable — just like our room."

He finished the explanation in one breath.

I thanked him and stepped out, carrying with me a clearer understanding of enthalpy — not from equations, but from experience. □



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India's GCC Expansion Hits Record 31 Mn Sq Ft; Metros Lead Growth: JLL Report

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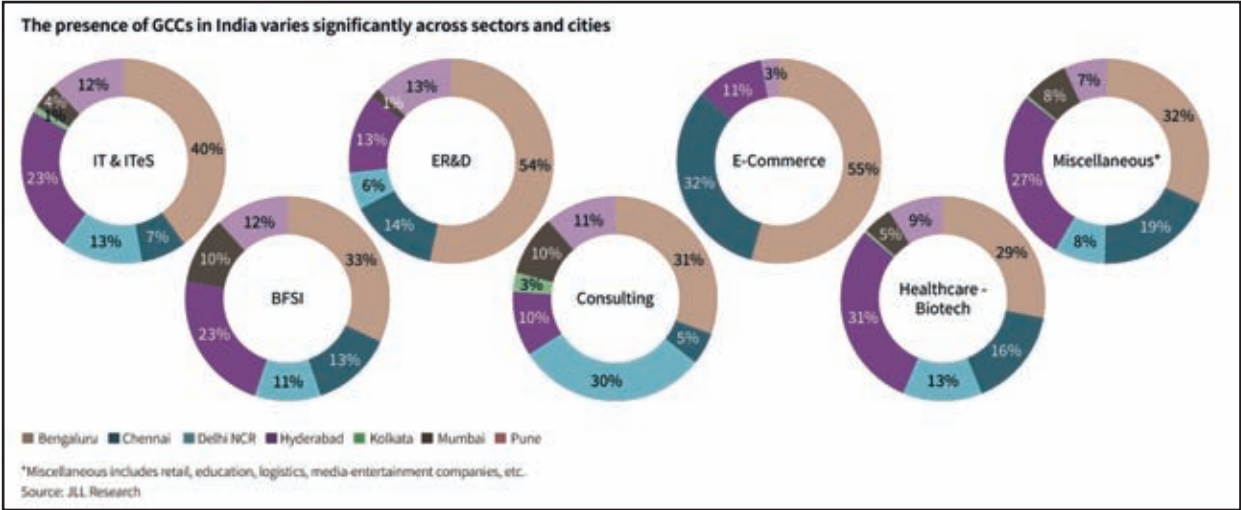
India's Global Capability Centres (GCC) leasing activity reached a record 31 million sq. ft in 2025, reflecting the evolution of a sophisticated ecosystem of specialised metropolitan hubs, each commanding distinct competitive advantages across critical industry verticals.

According to a latest JLL (Jones Lang LaSalle) report titled 'India GCC Guide 2025', the top six major cities have strategically positioned themselves as GCC powerhouses across a diverse spectrum but with unique offerings to specific sectors.

Bengaluru commands a 34-39 per cent market share through its over 900 GCC units, setting the benchmark as the leader of the pack, while Hyderabad's 20-23 per cent market capture is built upon its status as the undisputed leader of the healthcare-biotech sector. This geographic specialisation model is reshaping how multinational corporations approach their Indian operations, moving beyond simple cost arbitrage to leverage each city's unique strengths.

"India's GCC landscape has evolved, moving beyond simple cost arbitrage to leverage each city's unique strengths. The numbers tell a compelling story of sustained growth and maturation. With over 90 per cent of current GCC activity concentrated in Tier I cities, these centres have commanded more than 263 million sq ft of Grade A office stock across the top seven cities, while driving 40 per cent of all office leasing activity over the past decade. What we are witnessing is not just expansion but acceleration," says Samantak Das, Chief Economist and Head of Research and REIS, India, JLL.

"Over 200 new GCCs have entered India in just last two years, with projections indicating total GCC footprint will surpass 350 million sq. ft within the next 3-4 years. This growth is particularly driven by US-headquartered firms, which represent 70% of all GCC demand from 2018 to 2025, underscoring India's strategic importance to American



enterprises. The future belongs to GCCs that view location strategy not as a cost centre, but as a competitive differentiator, leveraging India's multi-tiered city framework to build resilient, scalable operations that can adapt to changing global business demands. This multi-year growth trend reflects a fundamental shift where India has become indispensable to global corporate strategy, offering not just operational efficiency but strategic capability building across the entire value chain," adds Das.

Bengaluru has solidified its position as India's undisputed GCC capital. Bengaluru continues to dominate India's GCC ecosystem, with the Silicon Valley of India now hosting over 900 GCC units, leveraging its robust talent pipeline, mature business ecosystem, and established tech credentials. The city's strength spans IT/ITeS, research and development across engineering and manufacturing sectors, innovation centres spearheading cutting-edge analytics, and retail operations, making it the preferred destination for companies seeking comprehensive offshoring capability development.

"Bengaluru continues to solidify its position as India's undisputed GCC capital, with over 900 GCC units now operating in the city. The city's commanding 34-39% market share is built on its robust talent pipeline, mature business ecosystem, and established tech credentials. Bengaluru's comprehensive

strength across IT/ITeS, research and development, innovation centres, and retail operations makes it the preferred destination for companies seeking world-class offshoring capability development," says Rahul Arora, Head - Office Leasing & Retail Services, Senior Managing Director (Karnataka, Kerala), India, JLL.

According to the global property consultancy firm report, Hyderabad has emerged as healthcare-biotech leader. The city has captured 20-23 per cent of India's overall GCC market, establishing itself as the country's premier destination for healthcare and biotechnology operations. The city's strategic advantages include world-class infrastructure, government policy incentives, and a rapidly growing talent pool specialising in BFSI and analytics as well. Key growth sectors include IT/ITeS, semiconductors, biotechnology, pharmaceuticals, and life sciences, positioning Hyderabad as a critical hub for innovation-driven enterprises.

Pune has secured 15-20 per cent of the national GCC activity over the past four years, attracting major multinational corporations through superior quality-of-life metrics, talent availability and strategic sector positioning. The city excels in BFSI, automotive, IT/ITeS, manufacturing, and engineering services. Similarly, Chennai has experienced strong demand growth year-over-year since 2023, cementing its status as India's manufacturing and au-

tomotive hub with complementary strengths in IT/ITeS, BFSI, and Engineering Research & Development (ER&D) built on its STEM talent base.

Delhi NCR has evolved into a corporate services powerhouse, capitalising on its diverse economic base and strong growth momentum. The region demonstrates strength in IT, BFSI, e-commerce and retail, healthcare, consulting, and education sectors. Mumbai, as India's commercial capital, continues to attract strategic capability and solutions centre set-ups driven by major banks, financial institutions and multinational corporations, with BFSI continuing to remain its primary sector of excellence.

While Bengaluru, Hyderabad and Pune with the other major metros have long dominated the landscape, a shift is underway as global enterprises discover the untapped potential of India's Tier II cities, says the report.

As India's GCC landscape continues to evolve, organisations that embrace strategic geographic diversification will be best positioned to capitalise on the country's vast talent ecosystem while optimizing operational efficiency. The future belongs to GCCs that view location strategy not as a cost centre, but as a competitive differentiator, leveraging India's multi-tiered city framework to build resilient, scalable operations that can adapt to changing global business demands. □

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