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GAIL becomes first Maharatna PSU to go-live with 'RISE with SAP - S/4HANA on Cloud'

(L-R) Praveer K. Agrawal, ED (Training); Rajeev Kumar Singhal, Director (BD), GAIL; Sanjay Kumar, Director (Marketing), GAIL; Ayush Gupta, Director (HR), GAIL; Sandeep Kumar Gupta, Chairman & Managing Director, GAIL; Manish Prasad, President & Managing Director, SAP, Indian Subcontinent; R. K. Jain, Director (Finance), GAIL; Deepak Gupta, Director (Projects); Lalit Bhatt, Executive Director (Business Information System).

New Delhi, India: GAIL (India) Limited has successfully gone live with SAP S/4 HANA. Hosted on a robust and scalable cloud platform, this strategic migration involved a full transition from the company's legacy ECC system to the next-generation SAP S/4HANA Cloud, strengthening GAIL's IT foundation for future growth and innovation.

With this move, GAIL is positioned to leverage intelligent technologies such as artificial intelligence, machine learning, and advanced automation—reinforcing its commitment to operational excellence, digital innovation, and resilience in today's dynamic business landscape.

With this initiative christened "Navodaya", GAIL becomes the first Maharatna PSU to achieve this milestone. Despite the complexities involved, the implementation and migration has been completed within the scheduled time of one year.

Speaking on the occasion Sandeep Kumar Gupta, Chairman & Managing Director, GAIL, remarked, "This is a strategic leap forward that will help us deliver even greater value to our customers, employees and stakeholders."

Rakesh Kumar Jain, Director (Finance), GAIL highlighting the benefits of this new enterprise said,

Rajendra Prasad Goyal assumes additional charge of CMD, NHPC

Rajendra Prasad Goyal, Director (Finance), NHPC has taken over the additional charge of the post of Chairman and Managing Director (CMD) of NHPC Limited, India's premier hydropower company and a Navratna Enterprise of Government of India on 1st July 2025. Earlier, Goyal has also held the charge of post of Chairman and Managing Director, NHPC from 01.03.2024 to 07.08.2024. Goyal joined NHPC on 18th November 1988 as Finance Professional and he has risen the professional ladder by virtue of utmost sense of responsibility, ethics and dedication to the company.

He has vast experience of more than 36 years in NHPC in the core areas of Finance, coupled with in-depth understanding of Financial, Contractual and Regulatory issues involved in the construction and operation of hydropower projects. Goyal is also Chairman of Jal Power Corporation Limited (JPCL), Bundelkhand Saur Urja Limited (BSUL) and NHPC Renewable Energy Limited (NREL) and Nominee Director on the Board of NHDC Limited, Chenab Valley Power Projects Private Limited (CVPPPL), Ratle Hydroelectric Power Corporation Limited (RHPCL) and Loktak Downstream Hydroelectric Corporation Limited (LDHCL) which are subsidiary companies of NHPC.

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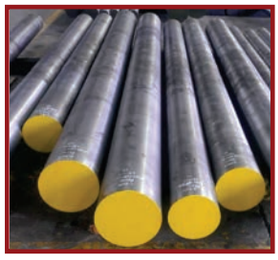

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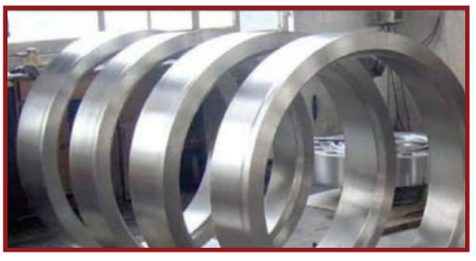
RING

CIRCLE



RING

FLANGES

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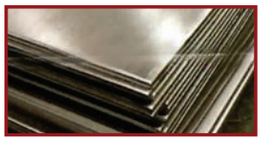

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"This transition to a cloud-enabled intelligent ERP system is not about technology – it's about building a stronger, smarter, and more agile enterprise."

In his address, Manish Prasad, President & Managing Director, SAP, Indian Subcontinent, said, "This landmark achievement will help GAIL grow exponentially in efficiency and journey of AI to achieve new heights."

Galaxy Surfactants among one of the few firms to achieve ISCC PLUS sustainability certification

Mumbai, India: Galaxy Surfactants Ltd., a leading manufacturer of specialty care and performance ingredients for the personal care, home care and beauty industry, has received the globally recognized International Sustainability and Carbon Certification (ISCC) PLUS certification for its manufacturing facilities in Taloja (Maharashtra) and Jhagadia (Gujarat) for their key performance products. With this key milestone, Galaxy becomes one of the pioneers among Indian chemical companies to be recognized under this certification system, reinforcing its commitment towards responsible sourcing and the development of low-carbon footprint products.

With this certification, Galaxy can now manufacture ingredients using raw materials that come from renewable, recycled, or circular sources. The ISCC PLUS system tracks the materials through a mass balance method, ensuring everything is traceable and meets strict sustainability rules, including greenhouse gas (GHG) reduction and responsible sourcing.

The certified products includes SLES (Sodium Lauryl Ether Sulphate), Betaines Phenoxyethanol, using sustainable feedstocks. While these versions are better for the environment, they still match the same high standards of quality and performance as the regular ones.

By offering these sustainable ingredients, Galaxy is helping its customers reduce their Scope 3 emissions, the indirect emissions that come from the products they buy. This supports not just their sustainability goals but also builds a more responsible supply chain across the industry.

Dow India recognized as one of India's Best Companies To Work For and Best Workplaces™ in Chemicals in India 2025

Mumbai, India: Dow Chemical International Pvt. Ltd. (Dow India) has been recognized as one of India's Best Companies To Work For, among the top 100 and has earned the distinction of Best Workplaces™ in Chemicals in India 2025.

Presented by Great Place To Work®, these accolades honour organizations that have created remarkable employee experiences, fostering inclusive culture, and set high standards in workplace practices. Through a strong focus on collaboration, continuous learning, and development opportunities, the company empowers its employees to thrive and contribute meaningfully to its success. This recognition highlights Dow India's commitment to building a resilient, growth-driven, and inclusive work environment — reinforcing its position as

Santosh Kumar Takhele assumes additional charge as Regional Executive Director (West-I), NTPC Limited

Santosh Kumar Takhele has assumed the additional charge of Regional Executive Director (West-I) at NTPC Limited with effect from 30 June 2025.

A graduate in Mechanical Engineering from G.B. Pant University of Agriculture and Technology, Takhele joined NTPC in 1988 as an Executive Trainee. Over the course of a distinguished career spanning 37 years, he has held key leadership roles across several core functions such as Contracts & Materials, Mechanical Maintenance, Operations Services, Fuel Management, Environment Management, and Safety.

He has served at various NTPC locations including Singrauli, WR-I HQ, Kanti, Farakka, and Corporate Centre – EOC, making significant contributions to each assignment. Takhele is currently the Chief Executive Officer (CEO) of Ratnagiri Gas and Power Pvt. Ltd. (RGPPL) and will continue in this capacity alongside his new additional role.

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Siddhartha Ghosal, CEO & Country President, Dow India, expressed his gratitude for the honor, said, "We are proud to be recognized as one of the Best Companies To Work For and as the Best Workplaces in Chemicals™ in India for 2025. This achievement is a testament to our collective commitment to nurturing a culture of continuous learning, innovation, and collaborative growth. I am grateful to our teams for their dedication to making Dow India an industry leader and a truly great place to work."

UltraTech's mine awarded India's first ever 7-star rating for a limestone mine

Union Minister of Mines Shri G Kishan Reddy and Rajasthan Chief Minister Shri Bhajan Lal Sharma award UltraTech's Naokari Limestone Mine 7 Star Rating

Mumbai, India: Thirteen of UltraTech Cement Limited's Limestone Mines were recognised for excellence in sustainable mining by the Indian Bureau of Mines, Ministry of Mines for FY 2023-24 at an award ceremony held on 7th July 2025 at Jaipur, Rajasthan.

Of the thirteen recognised mines, twelve of UltraTech's Limestone mines were awarded a 5-Star rating, while the Naokari Limestone Mine, part of Awarpur Cement Works, an integrated manufacturing unit of UltraTech located in Chandrapur district, Maharashtra, was conferred the highest distinction of being awarded a 7-star rating for exceptional work towards 'Green Mining.' UltraTech holds the distinction of being accorded a 5-star rating for the highest number of mines across all categories of Minerals (Limestone, Iron Ore, Bauxite, Lead Zinc, Manganese) in the reporting year financial year 2023-24, for the second consecutive time.

The Naokari Limestone Mine has received a 5-star rating every year since the award's introduction. The unit was recognised with a 7-star rating this year for its commendable work towards 'Zero-Waste Mining,' and its numerous sustainable mining initiatives such as the usage of lime sludge and paper mills to increase the lifespan of the mine. Awarpur Cement Works unit was also commended for its women empowerment programmes in mining, such as the Dharanya Kanya Scheme – training women as operators for heavy earth moving machinery. Awarpur Cement Works unit undertakes sustainability initiatives to enhance decarbonisation, such as the use of floating solar panels and waste heat recovery systems in cement manufacturing.

At the programme marking the event, the Union Minister of Coal and Mines, G. Kishan Reddy, felicitated UltraTech, India's largest cement and Ready-Mix Concrete (RMC) company, for the outstanding achievements of these mines towards sustainable development and operation for the performance year 2023–24. The felicitation ceremony was also graced by Bhajan Lal Sharma, the Chief Minister of Rajasthan.

UltraTech's endeavours in driving excellence in mining are in line with the Indian Bureau of Mines' goals towards sustainable mining, green mining, efficient operations, and technology-driven mineral processing.

Conceptualised by the Ministry of Mines, the Star ratings are based on adoption of best practices for exhaustive and universal implementation of Sustainable Development Framework in mining. 7-star and 5-star ratings, highest in the rating scheme, are given to mines that perform exceptionally well and best on parameters such as scientific and efficient mining, compliance of approved production, zero waste mining, environment protection, steps taken for progressive and final mine closure, green energy sourcing, land, adoption of international standards, local community engagement and welfare programmes, resettlement, and other social impacts. ■

Hindalco to acquire US-based AluChem Companies, Inc. for $125mn

Versatile applications of Hindalco's Specialty Alumina across high-growth industries.

Mumbai/ Cincinnati: Hindalco Industries Limited, the metals flagship of the Aditya Birla Group, has announced the acquisition of a 100 per cent equity stake in US-based AluChem Companies, Inc., a prominent manufacturer of Specialty Alumina, for an enterprise value of USD 125 million. The acquisition will be carried out through Aditya Holdings LLC, a stepdown wholly owned subsidiary of Hindalco. This strategic acquisition marks a significant investment in specialty alumina, a key step in scaling its high-value, technology-led materials portfolio.

Hindalco's Specialty Alumina business, a key pillar of its value-added strategy, has delivered consistent double-digit growth in recent years and emerged as a high-growth, high-margin vertical within the company's portfolio. As specialty alumina finds newer applications across cutting-edge sectors such as electric mobility, semiconductors, and precision ceramics, this acquisition propels Hindalco up the innovation curve—enabling access to next-generation alumina applications and driving value-accretive growth.

Mr. Kumar Mangalam Birla, Chairman of Aditya Birla Group, said, "Our strategic foray into the specialty alumina space will not only accelerate the development of future-ready, sustainable solutions but also open new pathways to pursue high-impact growth opportunities."

Commenting on the development, Mr. Satish Pai, Managing Director, Hindalco Industries, said, "This acquisition marks a pivotal step in strengthening our capabilities in next-generation alumina applications. As alumina gains increasing relevance in critical and clean-tech sectors, AluChem's advanced chemistry capabilities will significantly enhance our ability to serve these fast-evolving markets."

AluChem brings Hindalco a strong presence in North America with an annual capacity of 60,000 tons across its three advanced manufacturing facilities in Ohio and Arkansas. The company is a long-established supplier of ultra-low soda calcined and Tabular Alumina — materials known for their exceptional thermal and mechanical stability used in cutting-edge applications in high precision mechanical components, and energy-intensive industrial refractories.

Mr. Saurabh Khedekar, CEO – Alumina Business, Hindalco Industries, added, "Hindalco plans to work with AluChem's high performance technology solutions and scale up production of ultra-low soda alumina products to drive larger global market share."

Mr. Ronald P. Zapletal, Founder, AluChem Companies, Inc., said, "This partnership with Hindalco brings AluChem the ability and capital to scale up faster and build scale in North America. AluChem will benefit from their world-class sustainability and safety standards and practices, access to integrated operations and consistent, reliable raw material supply chain."

Hindalco currently operates 500 thousand tons of specialty alumina capacity and aims to scale up to 1 million tons by FY30.

Aether Industries signs contract manufacturing agreement with Milliken Chemical and Textile (India)

Surat, India: Aether Industries Limited (Aether) has signed a definitive contract manufacturing agreement with Milliken Chemical and Textile (India) Co. Pvt Ltd, a wholly owned subsidiary of USA-headquartered Milliken & Company. This long-term partnership positions Aether as the sole contract manufacturing partner for a key strategic product for Milliken. The initial duration of the agreement is ten years, underscoring the trust and alignment between both organizations.

The project will be executed at Aether's Site 3+, which will be fully dedicated to manufacturing the contracted product. With this engagement, the partnership is transitioning from Aether's CRAMS (Contract Research and Manufacturing Services) model to its Contract

Manufacturing model — reflecting Aether's strategic focus on scaling global partnerships through dedicated, high-capacity infrastructure. This agreement further strengthens Aether's position as a trusted innovation-driven manufacturer for international specialty chemical leaders.

Godrej Industries' Chemicals Business to invest over ₹750 cr for capacity expansion

Mumbai, India: Godrej Industries Limited's Chemical Business has embarked on significant capacity expansions in sync with the company's growth plan to become a USD 1 Billion global business before 2030. With a total capital outlay for expansions to exceed ₹750 crore over the next few years, the company has already kicked off several projects.

The company will double its fatty alcohol and euric acid capacities with an addition of 35,000 tons per annum and 20,000 tons per annum respectively. It has tripled its specialities capacity with an addition of 21,000 tons per annum while the glycerine capacity will be doubled with an addition of 24,000 tons per annum. The fermentation capacity will also see a threefold increase with an addition of 1,500 tons per annum. It plans to increase the primary surfactants capacity with an addition of 30,000 ton per annum. Additionally, to support the company's sustainable operations, it will enhance its hybrid power capabilities thereby increasing renewable energy usage to 75 per cent.

Vishal Sharma, Executive Director and Chief Executive Officer, Godrej Industries (Chemicals) said, "Consistently achieving double-digit volumes and revenue growth year after year, it's a very exciting time for us here at Godrej Chemicals. The significant investments in our R&D and commercial teams reflect our commitment to sustainable operations and green products in our quest to deliver innovative solutions to our customers across all market segments."

The company sees green chemistry as an important pillar in its growth strategy. While it is reducing its environmental footprint through energy efficient processes, adoption of renewable energy and zero waste goals, it is also leveraging biocatalysis, continuous manufacturing and fermentation for green, efficient and milder innovations.

Henkel India collaborates with partners to flag off India's first mid-haul re-powered electric truck operations

The pilot operation connects key industrial hubs via two inaugural routes, viz., Chennai to Pune (1,321 km) and Pune to Halol (713 km).

Henkel Adhesive Technologies India has launched its new automotive warehouse in Chakan designed for Just-in-Time delivery and advanced prototyping.

Mumbai, India: In a landmark initiative for India's green mobility landscape, Henkel Adhesive Technologies, in partnership with an integrated logistics and transport solutions company that has a tie-up with an EV retrofitting solutions provider, has flagged off the country's first mid-haul re-powered electric truck operations for commercial logistics.

The pilot operation connects key industrial hubs via two inaugural routes, viz., Chennai to Pune (1,321 km) and Pune to Halol (713 km). The re-powered electric trucks, equipped with a complete electric powertrain kit, deliver a range of 250 km per charge with payload capacity of up to 8 tons. A single round trip on the Chennai–Pune route helps save approximately 1212 kg of Green House

Gas (GHG) emissions, underscoring the substantial environmental impact this transition can make across India's logistics chain.

For Henkel, mitigating climate change is a core element of the company's climate strategy. To achieve its net-zero target, the company aims for at least 90 per cent absolute emission reductions through abatement across at least 95 percent of all scope 1 and 2 emissions and across 90 per cent of all scope 3 emissions by 2045. The company intends to reduce emissions from upstream and downstream value chain activities by focusing on eco design, low-emission materials, supplier engagement and carbon-efficient logistics.

In another recent development, Henkel Adhesive Technologies India has launched its new automotive warehouse in Chakan, strategically located in one of India's key automotive hubs. This built-to-suit facility is designed specifically for automotive manufacturing customers, ideally suited for Just-in-Time (JIT) delivery models. The warehouse offers cutting-edge capabilities for supplier integration and prototyping innovation. It will manage non-standard prototype materials (IDH) with full SAP traceability, including batch management, manufacturing, and expiry dates. With a scalable infrastructure planned to meet demand through 2030, the site is aligned with ongoing plant expansions and the growth trajectory of the automotive sector.

Superform secures ISCC PLUS Certification for its Dahej and Jhagadia manufacturing units

Mumbai, India: Superform Chemistries Limited, formerly known as UPL Specialty Chemicals Limited, has secured the prestigious 'ISCC PLUS certification' for its manufacturing units in Dahej and Jhagadia, Gujarat. The certification is for specialty chemistries like Chlor Alkali, Phosphorous, Sulphur, Cyanide and Phosgene based chemistries manufactured at both sites using renewable energy-based feedstocks. The certified products include Caustic Soda, Chlorine, Hydrogen, Phosphorous Trichloride, Diethyl Phosphite, Triethyl Phosphite, Trimethyl Phosphite, Phosphorous Oxytrichloride, DPMP, Sodium Sulfide, Sodium Hydrogen Sulphide, Sodium Cyanide, Cyanuric Chloride, Phenyl Chloroformate, Methyl Chloroformate, Ethyl Chloroformate, 2- Ethyl Hexyl Chloroformate & Phenyl Isocyanate.

Speaking about the achievement, Mr. Raj Tiwari, CEO, Superform, said, "We are honoured to receive the ISCC PLUS certification - a milestone that reflects our steadfast commitment to sustainable manufacturing. This achievement not only strengthens our credibility with stakeholders but also positions us to navigate future regulatory landscapes and meet growing customer demand for environmentally responsible and traceable products. It inspires us to champion sustainable practices across our manufacturing units, aligning with industry-leading benchmarks and setting new standards for responsible production."

Bodo Möller Chemie signs asset purchase agreement with Aqua Engineering Services

Frank Haug, Chairman and CEO, Bodo Möller Chemie Group

Bengaluru, India: Bodo Möller Chemie Group, a leading global specialty chemicals products and solutions provider, has signed an asset purchase agreement with Aqua Engineering Services, a Bengaluru-based company into pumps, valves, Fluid Transfer in water treatment, Industrial Adhesive chemical solutions, and other engineering products, to strengthen its presence in India.

This strategic acquisition is aligned with 200 million euro plus Bodo Möller Chemie's long-term vision to deliver innovative, sustainable, and high-performance chemical solutions across industries. "India continues to be a key growth market for us, and this acquisition enables us to deepen our reach and better serve regional customers with localized expertise," said Frank Haug, Chairman and CEO, Bodo Möller Chemie Group.

Cletus Francis, Partner, Aqua Engineering Services, said, "We at Aqua Engineering Services' are elated to

be partnering with Bodo Möller Chemie. We believe it is a transition to a new phase with newer opportunities, scale and global collaboration. Aqua Engineering can fill many gaps with this asset transfer agreement."

Post-acquisition, Aqua Engineering's customer relationships, product portfolio, and technical resources, will be integrated into Bodo Möller Chemie's existing Indian operations. A seamless transition plan is in place to ensure continued service quality and business continuity. Bodo Möller Chemie has partnered with leading companies such as Tata, Mahindra, Bosch, HAL and others. Quality and safety are great assets in the chemical industry, Bodo Möller Chemie Group has all its processes comply with the current international ISO standards, be it in the areas of quality management, occupational health and safety or environmental protection.

Baker Tilly ASA acted as exclusive financial advisor to Bodo Moller Chemie on this transaction. The transaction is expected to be completed by the third quarter of 2025, subject to customary closing conditions. Both companies are working closely to ensure a smooth transition for all stakeholders.

BPCL unveils Geocell Technology to revolutionize plastic waste management in road construction

In collaboration with the Central Road Research Institute, New Delhi, BPCL has developed a textile product called Geocell, designed to repurpose end-of-life and mixed waste plastics for use in road infrastructure.

Mumbai, India: Bharat Petroleum Corporation Limited (BPCL), through its Corporate Research & Development Centre, has unveiled a pioneering solution for one of the world's most pressing environmental challenges, plastic waste disposal. In collaboration with the Central Road Research Institute (CRRI), New Delhi, BPCL has developed an innovative technical textile product called Geocell, designed to repurpose end-of-life and mixed waste plastics for use in road infrastructure.

The launch marks a significant step forward in sustainable construction practices, building upon BPCL R&D's earlier success with the Waste Plastic Module, which has already consumed over 250 metric tonnes of plastic waste across various Indian states.

The Geocell technology, which addresses the complexities of unsegregated municipal waste, especially multi-layered plastics (MLP), has been successfully tested in plant trials conducted in partnership with Tata Projects. These trials demonstrated the technical and economic viability of using such plastics in infrastructure applications, particularly in road construction.

Taking a major leap from lab to field, India's first field trial using technical textiles made from end-of-life plastic was inaugurated on July 11, 2025, at Loop No. 1 of the elevated section of the DND–Faridabad–KMP Expressway, New Delhi. The initiative is a joint effort by BPCL, CRRI, and the National Highways Authority of India (NHAI).

ICRISAT pioneers scalable solution to assess soil degradation

Hyderabad, India: Researchers at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) have developed an innovative and scalable approach to assess soil degradation across semi-arid agricultural landscapes using a combination of proximal and satellite-based diffuse reflectance spectroscopy (DRS). The study titled "Assessing Soil Degradation in Agricultural Landscapes of Semi-Arid Tropics Using Proximal and Remote Sensing-Based Diffuse Reflectance Spectroscopy," recently published by the British Society of Soil Science, offers an innovative, quick, and cost-effective alternative to traditional laboratory soil testing methods.

This method cuts assessment time from weeks to mere minutes. By linking degradation maps with real-world crop yields, the research also reveals a critical finding—that irrigation could shield farms from degradation's worst impacts, offering a lifeline for rainfed agriculture in semi-arid zones. Soil degradation is a critical challenge in semi-arid tropics, threatening agricultural productivity and food security. Traditional methods for assessing soil degradation involve labor-intensive laboratory analyses, making frequent monitoring difficult. ICRISAT's study demonstrates that DRS — a quick, non-destructive technique can accurately estimate a Soil Degradation Index (SDI) by analyzing key soil properties such as organic carbon, erodibility, and nutrient availability.

Using laboratory-based spectroscopy and Sentinel-2 satellite imagery, the team successfully mapped soil degradation across dryland agricultural landscapes in Maharashtra, India. The results showed high accuracy, with laboratory DRS achieving an R^2 of 0.81 and satellite-based estimates an R^2 of 0.52, proving the feasibility of large-scale monitoring.

Dr Kaushal K. Garg, Principal Scientist–Natural Resource Management at ICRISAT, emphasized that by fusing proximal spectroscopy with Sentinel-2 satellite data, the team has achieved an 81 per cent accuracy rate in quantifying soil degradation, a significant first for semi-arid agroecosystems. He underscored that this is not just remote sensing; it is a precision tool specifically calibrated to the realities of smallholder farms, where each data point can directly inform irrigation investments or guide restoration priorities.

Silox India secures 35 acres industrial land at PIP, Dahej for biggest greenfield investment

New Delhi, India: Arete Group, a Gujarat-based business conglomerate known for developing India's most progressive industrial park, has announced that Silox India, the Indian subsidiary of Belgium-headquartered Silox Group, has secured 35 acres of industrial land at its flagship project, PIP (Payal Industrial Park), for the development of its cutting-edge Inorganic chemicals manufacturing facility.

The estimated initial investment of ₹600 crores makes this one of Silox's largest investments in India to date, with commissioning expected by the end of 2027.

Silox India Team during the groundbreaking ceremony at PIP

Commenting on the milestone, Siraj Saiyed, Director at Arete Group, said: "We are proud to have a global leader Silox within our park. Their choice to establish their new green field project at PIP is a testament to our commitment to offering an ecosystem that supports innovation, global standards, and sustainable industrialization. This transaction also highlights Gujarat's prominence on the global investment map."

At the ceremony, Prakash Raman, MD of Silox India, presented an in-depth overview of the new project, outlining its scope, technological roadmap, and projected commissioning by the end of 2027.

"This new green filed project is a leap forward in our India growth strategy. This facility will not only enhance our manufacturing footprint in South Asia but also allow us to bring global best practices to India's industrial sector. We thank the PIP for their exceptional support in enabling this vision." Raman said.

The 35-acre project site will house advanced production units to manufacture performance chemicals and used across industrial applications such as Textiles, Paints and Coatings, Automotive, Industrial and Sustainable energy solutions.

This land acquisition and investment by Silox India comes at a time when PIP is undergoing rapid expansion and attracting high-impact global investments. Recently, Arete Group launched Phase 2 of PIP, adding 850 acres of integrated industrial infrastructure and announced a ₹1,200 crore investment in the overall Infrastructure development in the park across multiple phases. This phase will feature plug-and-play facilities, upgraded common effluent treatment plants (CETP), and dedicated utilities for hazardous and non-hazardous manufacturing, making it ideal for specialty chemicals, advanced materials, and energy-linked industries.

Strategically located within Gujarat's Petroleum, Chemicals & Petrochemicals Investment Region (PCPIR), PIP is India's largest privately integrated industrial park, spanning over 3,500 acres. It has already attracted leading names such as ALTANA AG, Hindalco, Gharda Chemicals, and Perfect Day Inc., and is now evolving into a world-class hub for green industrial innovation. The infrastructure also includes a 2.5 MLD CETP, scalable to 50 MLD, and plans for on-site green hydrogen generation, biomass-powered steam generation, and a live-work ecosystem with 1,000+ residential units for the workforce.

Kemira and CuspAI forge partnership to pioneer AI-Driven materials innovation

A Kemira truck at a manufacturing site

Helsinki, Finland: Kemira, a global leader in sustainable chemical solutions for water-intensive industries, has entered a strategic partnership with CuspAI, a pioneering materials science artificial intelligence company. This water industry-first collaboration aims to revolutionize materials innovation within the chemical sector through the integration of advanced AI technologies. As part of this partnership, Kemira will leverage CuspAI's cutting-edge AI capabilities. By integrating AI-driven insights, Kemira aims to accelerate the discovery and optimization of new materials, positioning itself as a frontrunner in the chemical industry's digital transformation. In fact, materials discovery – which can take up to a decade – can be accelerated to as little as six months with AI.

The partnership aims to combine Kemira's chemical expertise with CuspAI's AI capabilities to enhance its research and development processes with an initial focus in silico development (digital molecule/ formulation development). The first project will target the removal of PFAS (forever chemicals) from water while there are endless opportunities possible for the future. The removal of PFAS and other micropollutants from water is increasingly relevant due to regulations around consumer and environmental health. Kemira is already addressing this by taking strides into the activated carbon market.

In addition to technological advancements, this partnership will also focus on nurturing AI talent within Kemira. By collaborating with CuspAI, Kemira aims to build a robust pipeline of AI expertise, fostering a culture of continuous learning and innovation.

The company has also entered into a three year strategic collaboration with Shanghai Bluepha Microbiology Technology Co., Ltd., a leading synthetic biotech company, to promote the large-scale application of PHA (polyhydroxyalkanoate) in fully biobased barrier coatings for paper, board and molded fiber, contributing to a move towards sustainable packaging and the elimination of plastic waste.

Through the partnership, Kemira and Bluepha will systematically introduce PHA materials into barrier coatings for paper - such as food packaging, paper labels, board and molded fiber applications, accelerating the transfer of the traditional paper industry towards a lower-carbon and sustainable future. ■

"Fineotex aims to transform into a more globally integrated and innovation-led specialty chemical company"

SANJAY TIBREWALA
Executive Director, Fineotex Chemical Limited

Fineotex Chemical Limited, one of India's leading multinational speciality performance chemical manufacturers, recently won the prestigious 'Business Enterprises of Tomorrow 2025' Award in the Chemicals (SME) category organised by Dun & Bradstreet. The company, which ended FY25 on a stable footing, recorded steady performance in the textile chemicals segment and strong growth in newly diversified businesses — Water Treatment and Oil & Gas. In a free-wheeling interview with **Chemical Engineering World,** ***Sanjay Tibrewala, Executive Director, Fineotex Chemical Limited***, shares the company's growth journey and its future plans.

The global textile chemicals market is projected to reach USD 26.97 billion by 2027, growing at a robust CAGR of 3.5 per cent from 2020 to 2027. Asia Pacific dominated the textile chemicals market with a market share of 68.12 per cent in 2019. Against this background, how would you describe the growth of the Indian textiles chemicals market in the last five years?

Over the past five years, the Indian textile chemicals market has experienced a steady and resilient growth trajectory, driven by robust domestic demand, a shift towards sustainable processing solutions, and the increasing emphasis on performance and quality in textile manufacturing. At Fineotex, we have witnessed this evolution closely and played a proactive role in shaping it.

India's textile industry being one of the largest globally not only provides a vast domestic consumption base but also caters to significant export markets. As global brands increasingly expect eco-friendly and compliant processing, Indian manufacturers have ramped up their use of specialty chemicals that are both high-performance and sustainable. This has led to a rise in demand for specialty textile auxiliaries, where Fineotex has remained at the forefront by offering customized, value-added solutions.

Our growth in this sector is evidenced by consistent demand across geographies and the successful addition of 25 new customers in just Q4 FY25. Moreover, our R&D capabilities, powered by our collaboration with Biotex Malaysia and global partners like EuroDye-CTC and HealthGuard Australia, have enabled us to develop 15 new textile chemical products during the same quarter. These innovations reflect the market's shift toward more efficient, safer, and environmentally responsible chemistries.

Furthermore, regulatory support from global initiatives like ZDHC and Bluesign® compliance, coupled with India's focus on sustainable industrial development, has catalysed the adoption of cleaner chemical solutions in textile processing. With policies like the India-UK Free Trade Agreement expected to ease trade barriers, we see further opportunities for growth and global integration of Indian textile chemicals.

In conclusion, the last five years have laid a strong foundation for innovation-led, sustainable growth in India's textile chemicals sector and Fineotex is well-positioned to continue leading this momentum.

There was a slight decline of 4.76 per cent in total income recorded in FY25 (₹557.64 Cr) as compared to ₹585.51 Cr in FY24. What would you attribute this decline to?

The marginal decline in total income during FY25 is largely attributable to a nuanced and challenging demand environment, particularly in certain segments such as FMCG, cleaning, and hygiene, which witnessed a temporary softness in volumes. These were more short-term, cyclical fluctuations rather than structural issues, and we remain confident about the long-term growth potential of these categories.

It is also important to note that while total income saw a slight dip, our textile chemicals segment remained stable, backed by strong customer retention and the successful addition of new clients and products. More importantly, our newer verticals especially water treatment and oil & gas registered healthy growth in both volume and value terms, reflecting the success of our diversification strategy.

We view FY25 as a period of strategic consolidation. During this time, we continued investing in expanding our capacity (with a 15,000 MTPA greenfield facility underway), strengthening R&D, and entering new geographies. These forward-looking initiatives may have a short-term impact on financials, but they are laying the groundwork for sustainable, long-term value creation.

Can you throw more light on the water treatment business sector in India? Fineotex has reported strong performance in this sector. How is the company planning to achieve higher growth in this sector?

India's water treatment sector is undergoing a transformative shift, driven by rapid industrialisation, increased awareness around environmental sustainability, and tightening regulatory frameworks that mandate efficient water usage and wastewater management. These trends have created strong tailwinds for the specialty chemicals industry, particularly in water treatment solutions. Recognising this opportunity, Fineotex strategically diversified into the water treatment space and has since reported robust growth, making it one of the fastest-growing verticals within our business.

Our offerings in this segment, especially under the brand, comprise a comprehensive range of specialty polymers designed to prevent scale deposits and enhance flow efficiency in industrial water systems. These solutions are tailored to meet the complex needs of sectors such as textiles, power, and process industries, where operational efficiency and environmental compliance are critical. The performance in FY25 was particularly strong, supported by a healthy order pipeline, increased customer traction, and our ability to quickly deliver customised, high-performance formulations.

To further accelerate growth in this segment, we are undertaking a series of focused initiatives. A key pillar is the ongoing greenfield expansion, which will add 15,000 MTPA to our production capacity and provide the necessary scale to serve larger and more

diversified customer requirements. Simultaneously, we are strengthening our R&D capabilities, both in-house and through international collaborations, to drive innovation in sustainable and next-generation water treatment chemicals. With a strong technical foundation, expanding infrastructure, and increasing demand for eco-conscious solutions, we are confident that our water treatment business will continue to be a significant contributor to our long-term growth story.

How are you planning to leverage on the India-UK Free trade agreement and how according to you will it improve export environment?

The India-UK Free Trade Agreement is a significant development that we believe will open up new avenues for Indian manufacturers, particularly in the specialty chemicals and textile chemicals sectors. At Fineotex, we view this as a strategic opportunity to enhance our global footprint, especially in the UK and wider European markets, where demand for sustainable and high-performance chemical solutions continues to rise. The agreement is expected to reduce trade barriers, streamline compliance procedures, and improve market access factors that are especially critical for companies like ours that operate in highly regulated sectors.

We are well-positioned to benefit from this shift, given our existing compliance with international quality and sustainability standards such as Bluesign®, ZDHC, and REACH. These credentials have already enabled us to establish a strong export base across nearly 70 countries. The FTA will allow us to be more price-competitive, reduce lead times, and expand our client base in the UK, particularly among textile processors and industrial buyers who are looking for reliable, sustainable partners. Our growing product portfolio, coupled with robust manufacturing and R&D capabilities, puts us in an ideal position to deepen our presence in these developed markets and accelerate our export-led growth strategy.

Which are the sectors in which you have envisioned adding 15,000 MTPA of capacity taking the total installed capacity to 1,20,000 MTPA with operations to begin from Q2FY26?

The planned capacity expansion of 15,000 MTPA, which will take our total installed capacity to 1,20,000 MTPA, is a forward-looking investment aligned with our growth ambitions across both core and emerging sectors. While textile chemicals will continue to remain a foundational pillar of our business, a significant portion of this additional capacity is being earmarked for our high-potential verticals namely water treatment, oil & gas, and hygiene and cleaning solutions. These segments have shown strong traction over the past few years and are expected to play a greater role in our overall revenue mix going forward.

This expansion, set to become operational in Q2 FY26, is not just about scaling up volumes, it is also about strengthening our ability to respond swiftly to evolving customer demands with greater product customisation and shorter lead times. By enhancing our manufacturing agility, we aim to serve a more diversified customer base across geographies while ensuring operational efficiencies and sustainability benchmarks are met. The added capacity will enable us to meet rising domestic and international demand more effectively and fuel our long-term vision of being a global, multi-sectoral specialty chemicals leader.

What are the measures taken at Fineotex as part of net zero emissions goal by 2030?

At Fineotex, sustainability is at the core of our operational philosophy, and we have committed ourselves to achieving net zero emissions by 2030. This ambition is being pursued through a multi-pronged strategy that spans clean energy adoption, process optimisation, green chemistry, and responsible manufacturing. A major milestone in this journey has been the successful commissioning of a solar power plant at our Ambernath facility, which significantly reduces our reliance on conventional energy sources and lowers our carbon footprint.

We are also continuously working to enhance energy efficiency across our manufacturing units through automation, lean processes, and smart utilities management. Our product development is increasingly focused on sustainable formulations replacing environmentally harmful substances with biodegradable, plant-based alternatives without compromising performance. This is evident in innovations such as AquaStrike Premium, our biotechnology-based mosquito control solution, which reflects our ability to merge science with sustainability.

We are also strengthening our ESG governance framework, setting measurable targets, and tracking our emissions, energy usage, and waste generation as part of a structured roadmap toward net zero. As we

move forward, we remain committed to integrating sustainability not only as a compliance measure but as a value driver that aligns with global climate goals and stakeholder expectations.

In today's scenario can innovation and sustainability go hand in hand? What are your thoughts?

Absolutely, innovation and sustainability not only can go hand in hand, but in today's business environment, they must. At Fineotex, we see sustainability as a catalyst for innovation rather than a constraint. The growing global emphasis on environmental responsibility has accelerated the demand for solutions that are not just high-performing, but also safe, biodegradable, and resource-efficient. This evolving landscape challenges us to think differently, develop new chemicals, and adopt advanced manufacturing practices that reduce environmental impact.

Our approach to innovation is deeply intertwined with our sustainability goals. For instance, our R&D efforts — driven by global collaborations with partners like Biotex Malaysia, Eurodye-CTC, and HealthGuard are focused on creating formulations that consume less water, generate lower emissions, and eliminate the use of hazardous substances. Products like AquaStrike Premium, which leverages plant-based biotechnology, are a direct result of this sustainable innovation mind-set. Additionally, we are actively working on green chemical solutions across verticals such as textile auxiliaries, water treatment, and oilfield chemicals, all of which are tailored to help our customers achieve their own sustainability goals.

What are the future plans of Fineotex Chemical Limited for the next five years?

In the next five years, Fineotex aims to transform into a more globally integrated and innovation-led specialty chemical company, with a balanced contribution from both traditional and emerging business segments. While the textile chemicals segment will continue to be a steady pillar, our long-term strategy involves building scale and deeper capabilities in high-potential areas such as water treatment, oilfield chemicals, and institutional hygiene solutions.

To support this evolution, we are strengthening our infrastructure through a planned capacity addition of 15,000 MTPA, which will help us address growing demand from global and domestic customers alike. This expansion is being complemented by internal capability building — both in terms of talent and digitalization — to improve operational efficiency, product delivery, and customer service.

Our future roadmap also involves expanding our international presence by entering new geographies and aligning closely with global regulatory and sustainability benchmarks. We are also focusing on brand visibility and customer-centric innovations to build long-term relationships. With a healthy balance sheet and strong promoter commitment, Fineotex is geared towards scaling sustainably while continuing to deliver value through product differentiation and market responsiveness. ■

Solar panel at Bihar Renewable Energy Development Agency (BREDA).

Smarter Energy, Stronger India: Embracing Digitalization and Automation in Power

Ashish Mehta
Vice President – Power & Energy
Rodic Consultants

India stands on the threshold of a transformative energy revolution. As the world's fastest-growing economy, the country is forging ahead to achieve its vision of 'Viksit Bharat' by 2047. But this journey is underscored by a dual imperative of meeting rapidly rising energy demand while addressing the global urgency of climate change. Against this backdrop, digitalization and automation are no longer optional upgrades; they are essential levers to reshape how we generate, distribute, and consume power.

GUEST COLUMN

India's energy demand is expected to grow 11-fold by 2070, driven by industrialization, urban expansion, and the electrification of transport. Smart technologies are now the bedrock of a resilient, agile, and future-ready power ecosystem. According to the International Energy Agency (IEA), India will account for the largest share of global energy demand growth over the next two decades. By 2040, the country is projected to add a power system the size of the European Union's today, underscoring the scale and urgency of adopting intelligent, scalable solutions.

Amidst growing economic activity, India's power sector represents a ₹40 trillion (USD 480 billion) investment opportunity by 2035, as per an industry report. This is not just an economic lever, but a strategic necessity to ensure energy security and sustainability. Financial investment alone won't bridge the gap; technology must be the multiplier. Digitalization and automation have now emerged as imperative components of modern power and energy infrastructure.

Artificial Intelligence

Artificial Intelligence (AI) is taking center stage by overcoming the traditional challenges posed by renewables like solar and wind posed integration. It plays a critical role in forecasting renewable generation with greater accuracy and improving grid stability. AI algorithms are further enabling analysis of weather patterns, irradiance data, and historical performance to optimize energy flows and ensure reliability. Pilot projects in states like Karnataka, Gujarat and Tamil Nadu have already demonstrated the success of AI-powered demand forecasting and grid balancing. For instance, the Renewable Energy Management Centers (REMCs) supported by POSOCO (Power System Operation Corporation Limited) and MNRE are leveraging AI and big data analytics to improve visibility and integration of renewable energy.

As the renewable energy landscape continues to evolve, transformation drives performance, sustainability, and scalability across solar, wind, and hydropower segments. Solar energy has witnessed remarkable innovation from bifacial panels and anti-soiling technologies to floating solar farms that leverage underutilized water surfaces. Wind power is advancing with modular towers and lightweight blades, enabling deployment in geographically diverse and challenging terrains. In hydropower, prefabricated systems and corrosion-resistant materials are redefining resilience and adaptability.

These shifts signal a broader design philosophy across renewable infrastructure modularity, efficiency, and circularity. This not only improves project durability and scale but also aligns with the Sustainable Development Goals (SDGs) and India's net-zero ambitions.

Digital Transformation

Beyond generation, digital transformation is revolutionizing energy markets. AI algorithms manage trading decisions, price forecasting, and portfolio optimization in real time. Blockchain technology is unlocking peer-to-peer energy trading, while smart contracts are enhancing transparency and efficiency.

Grid operators are using real-time data to balance loads and maintain stability without manual intervention. This shift from reactive to predictive energy management marks a fundamental evolution in how utilities function.

On the project execution front, digital tools like Building Information Modeling (BIM), GIS mapping, IoT, and 3D terrain modeling are being used to ensure projects are safer, more efficient, and more sustainable. From feasibility studies to lifecycle planning, automation is enabling smarter decisions at every stage.

However, digital transformation is not only about machines and data. It is about people. As new

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technologies enter the field, the workforce must evolve. There is a pressing need to train engineers, analysts, and cybersecurity professionals to navigate digital systems. Moreover, new job roles are emerging through operations, analytics, and automation. Upskilling and reskilling are key to ensuring that the digital revolution is inclusive and job-creating. To address this, several public and private initiatives have emerged. The Skill Council for Green Jobs (SCGJ), in collaboration with NSDC is actively rolling out courses focused on digital energy, smart grid management and cybersecurity. Meanwhile, many engineering institutes are already integrating AI- and IoT-based modules into power systems curriculum.

Globally, nations are competing for leadership in clean energy and information technology. While starting points may differ, the vision is shared a digital-first, climate-resilient future. India, with its innovation-driven ecosystem and investor-friendly outlook, is uniquely positioned to lead this transition.

Energy Transition

India's energy transition holds immense promise. From digital grids and AI-powered operations to smart renewables and tech-driven planning, we have the tools to reach net zero potentially before 2070. But realizing this vision requires bold policy support, private sector innovation, and a shared national commitment.

For policymakers, this is a call to support innovation and create enabling digital infrastructure. For industry players, it's an opportunity to lead with intelligence, efficiency, and sustainability. The government's Revamped Distribution Sector Scheme (RDSS), with a funding outlay of ₹3.03 lakh crore is already pushing DISCOMs to adopt prepaid smart meters, cloud-based MIS systems and AI-based demand analytics. This policy backing is creating fertile ground for startups and innovators to scale impactful solutions.

The time to act is now. With technology as the enabler and people as the force, India can light the way to a cleaner, smarter, and stronger future. The energy sector must not just power the economy; it must power progress. ■

Sushil Kumar Rathi
Director
Allcargo Supply Chain Pvt. Ltd

How Smart Automation is Revolutionizing Safety and Accuracy in Chemical Warehousing

Chemical warehousing is unlike any other segment in the logistics industry. It demands a nuanced understanding of hazardous materials, adherence to stringent regulations, and a constant focus on safety and precision. As the global chemical industry expands and regulatory expectations tighten, the role of automation in reshaping this space has become increasingly vital.

Warehouse at Allcargo Gati

Today, smart automation technologies are not just enhancing efficiency they are fundamentally redefining how chemical warehousing operates by enabling greater safety, reliability, and compliance. Chemicals are inherently volatile. Many are flammable, corrosive, toxic, or reactive in nature. Each product has unique compliance requirements, temperature thresholds, and handling protocols. In such an environment, even a small error can lead to severe consequences, both human and environmental.

That's why automation is emerging as a game-changer. Modern warehousing systems are now equipped with sensors that continuously monitor temperature, humidity, gas concentrations, and pressure levels. Advanced analytics and real-time alerts allow warehouse teams to act swiftly, mitigating risks before they escalate. For instance, floating switches in chemical tanks help prevent overflows or spills by triggering immediate system responses.

From Manual Handling to Machine-Led Precision

One of the key advantages of automation is its ability to eliminate manual intervention in high-risk and repetitive tasks. Robotic arms, automated forklifts, and conveyor systems can now manage material movement with far greater accuracy and consistency than human labour. These systems not only improve speed but also drastically reduce the chance of human error — a critical concern in chemical logistics.

Moreover, intelligent software solutions have transformed warehouse operations. Inventory management platforms are being designed specifically for chemical environments, enabling accurate tracking, digital record-keeping, and efficient planning for storage and distribution based on regulatory and operational needs.

Automation frees up skilled human resources from routine tasks, allowing them to focus on oversight, planning, and decision-making. This shift not only improves operational efficiency but also enhances workplace safety and employee well-being.

Future-forward warehouses are also exploring the use of Artificial Intelligence (AI) and robotics in areas such as automated picking, segregation, barcoding, and shelf arrangement. These developments further streamline operations while ensuring regulatory compliance is upheld at every step. Expanding on this transformation is the integration of cloud-based Warehouse Management Systems (WMS), which offer centralised control across multiple sites and enhance traceability of chemical movements throughout the supply chain. These WMS platforms are now increasingly paired with IoT devices to enable

As environmental concerns and safety regulations become increasingly rigorous, the demand for smarter, greener, and safer chemical warehousing solutions will continue to grow. Automation helps organisations stay ahead of these changes — delivering resilience, scalability, and a reduced environmental footprint.

Allcargo Gati's state-of-the-art chemical warehouse in Uran

predictive maintenance, automated safety checks, and smart inventory forecasting — all of which are critical for minimising downtime and avoiding regulatory breaches.

Automated systems are more energy-efficient and less wasteful than their manual counterparts. Temperature-controlled zones can be precisely maintained using intelligent systems, reducing energy consumption and spoilage. Additionally, smart automation is significantly improving traceability and audit readiness. With digital twins, blockchain-based logs, and automated audit trails, companies can now demonstrate compliance with ease, satisfy global safety standards, and prepare for surprise inspections without disruption. This has been particularly beneficial for Indian chemical companies exporting to highly regulated markets such as the EU and North America.

Training and change management also play a crucial role in this shift. The successful deployment of automation in chemical warehousing hinges not just on technology adoption but also on building a digitally skilled workforce. Many logistics firms are investing in upskilling their employees in areas such as robotics handling, safety automation protocols, and warehouse analytics — thereby reinforcing safety while enhancing productivity.

Looking ahead, we can expect even greater convergence of automation with emerging technologies such as Augmented Reality (AR) and Machine Learning (ML). AR-assisted devices could support warehouse staff with guided visual cues during hazardous material handling, while ML algorithms could optimize routes, space usage, and even anticipate safety incidents based on historical data. These forward-looking innovations will continue to raise the bar for safety, efficiency, and intelligence in chemical warehousing.

A Forward-Thinking Imperative

As environmental concerns and safety regulations become increasingly rigorous, the demand for smarter, greener, and safer chemical warehousing solutions will continue to grow. Automation helps organisations stay ahead of these changes — delivering resilience, scalability, and a reduced environmental footprint.

Chemical warehousing is fast becoming one of the most scrutinised components of the global supply chain. Embracing automation isn't just a competitive edge — it's a strategic necessity. The future belongs to those who are ready to reimagine chemical logistics through the lens of technology, safety, and precision. ■

Biotechnology's Cleanest Contribution to the Chemical Industry

Vishal Sharma
Executive Director & CEO
Godrej Industries Limited (Chemicals)

India's chemicals sector is expanding, both for domestic demand and global exports. As a national economic engine, the industry is projected to be valued at 300 billion USD in the next three years. One key driver of this growth is changing consumer preferences: the demand for eco-friendly, sustainable products has never been higher. In 2022 alone, chemical manufacturers invested around 600 crore INR in research and development. This creates a significant opportunity for India's speciality chemicals to leverage biotechnology to meet global demand for sustainable products.

Green chemistry and biotechnology are becoming increasingly important for the chemicals sector to stay competitive both domestically and globally. With worsening climate change and deeper consumer awareness, chemical manufacturers must reform their operations and processes to reduce their carbon footprint and create products that are gentle, natural, and highly effective. Greater investment in and adoption of biotechnology is undoubtedly India's ticket to faster and sustainable growth, to meet rising domestic demand and become a key player in global chemical supply chains.

Cleaner Chemicals through Biotechnology

Biotechnology is not a new or emerging science; it has been widely used for decades across sectors such as pharmaceuticals, food processing, etc. Commercial-scale production of compounds like citric and lactic

acids through biotechnological processes has been long established. However, the chemical industry is now increasingly turning to biotechnology, recognizing its potential to reduce dependency on fossil fuels and adopt renewable feedstocks. This shift is driven by several advantages, including lower carbon emissions, energy efficiency, milder process conditions, and the ability to produce complex molecules that are difficult to synthesize through traditional petrochemical routes.

This offers a two-fold advantage. Firstly, it drastically reduces greenhouse gas emissions during manufacturing, which makes products greener, reducing the carbon footprint of the entire value chain from manufacturer to end consumer. Crucially, it also improves waste management: biotechnology-based ingredients are biodegraded at a much faster rate, hence are less harmful to the environment and reduce pollution. This makes biochemicals better aligned with consumer preferences, offering gentle, effective, and eco-friendly alternatives to traditional petrochemicals. These advantages offered by biotechnology have far-ranging applications in diverse industries, from home and personal care and pharmaceuticals to agriculture and energy.

Biotechnology is undeniably transforming the cosmetics industry, paving the way for innovative, effective, and sustainable beauty ingredients. Biochemicals created through fermentation improve the bioavailability of ingredients, allowing for better absorption and efficacy for cosmetics and sunscreens with the added benefit of biodegradability. Beyond consumer goods, biotechnology holds immense potential for the energy sector. A major driver of decarbonisation is renewable energy and fuels. The aviation industry is making considerable progress in this regard with Sustainable Aviation Fuel (SAF), a low-carbon alternative for jet fuel derived from agricultural waste. Policy support for both the adoption and manufacturing of SAF is helping India's aviation sector reduce its emissions steadily. Improved investment in R&D will help make these processes standardised and commercially viable, allowing for wider adoption across the sector.

The chemical industry is now increasingly turning to biotechnology, recognizing its potential to reduce dependency on fossil fuels and adopt renewable feedstocks. This shift is driven by several advantages, including lower carbon emissions, energy efficiency, milder process conditions, and the ability to produce complex molecules that are difficult to synthesize through traditional petrochemical routes.

Biosurfactants have recently attracted a lot of attention from industry and researchers. Biosurfactants are environmentally friendly since they are safe, biodegradable, and non-toxic. Because of their unique auxiliary qualities, they are used in many industries and for environmental cleanup. Natural, biodegradable, non-toxic chemicals for home care; lactic acids for pharmaceuticals; probiotics as the microbiota-gut-health; and bio-pesticides for agriculture are prime examples of how sustainability can be not only good for the environment but also good for business.

Making Biotechnology the Norm

For commercial, sector-wide adoption of biotechnology, bio-derived chemicals must be as effective as traditional chemicals. If sustainability comes at the expense of performance or cost-efficiency, bio-derived chemicals will not be competitive in the market, and decarbonisation efforts will fail.

Equally important is a perception change for chemicals: biotechnology offers the perfect blend of natural and efficient, creating biodegradable chemicals that perform their functions without polluting the environment. Purely natural products are extremely resource-intensive and could be harmful to the environment as well. Biotechnology, by replicating natural processes in a lab, offers the advantage of natural ingredients as well as the efficacy and precision of scientific production.

Biotechnology holds immense potential for the energy sector. A major driver of decarbonisation is renewable energy and fuels. The aviation industry is making considerable progress in this regard with Sustainable Aviation Fuel (SAF), a low-carbon alternative for jet fuel derived from agricultural waste. Policy support for both the adoption and manufacturing of SAF is helping India's aviation sector reduce its emissions steadily.

This requires constant breakthroughs in green chemistry and biotechnology that ensure these methods are viable, cost-effective, and accessible. The commercial potential of biotechnology depends on how well the sector and government can address logistical and infrastructural challenges. Aside from investment in R&D that can enhance biotechnological processes, India needs to sustain investment in green infrastructure for chemicals, promote the adoption of renewable energy across operations, and improve collection, storage, and distribution of necessary bio-based feedstock. These include raw materials derived from renewable and biological sources such as plants, agricultural by-products, and algae. As an agricultural country, India has these resources in abundance but lacks efficient collection and distribution systems that would allow manufacturers to harness these for chemical production.

Along with infrastructure, we need a greater number of professionals specialising in bioengineering and green chemistry to refine and innovate processes. Industry and academia need stronger linkages to ensure that the chemicals sector continues to evolve, solving for region- and sector-specific challenges and addressing emerging issues.

With over sixty nations around the world proactively pursuing policies to support the bioeconomy, India must consciously put itself on the pioneering path by blending innovation and sustainability and building on its gains like biofuels. Deepening our capabilities for biotechnology will not only create a healthier environment and more profitable businesses and better choices and products for customers but also cement India's position as a global leader in sustainability and climate innovations. ■

References:

1. https://*www.essentialchemicalindustry.org/materials-and-applications/biotechnology-in-the-chemical-industry.html*
2. *https://blog.covalo.com/personal-care/the-future-of-biotech-in-beauty-redefining-natural*
3. *https://www.lygos.com/blog/2025-personal-care-trends*
4. *https://gbs2020.net/wp-content/uploads/2021/04/GBS-2020_Global-Bioeconomy-Policy-Report_IV_web-2.pdf*

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Dimensioning, Weighing, and Scanning (DWS) Systems from Atmos Systems

Warehouse Automation: Powering India's Leap to Global Supply Chain Leadership

Khursheed Alam
Founder
Atmos Systems

As India moves steadily towards becoming the world's third-largest economy, its logistics and warehousing ecosystem is undergoing a monumental transformation. At the core of this change lies warehouse automation, a powerful tool that is helping Indian businesses respond to the demands of a dynamic economy, where speed, efficiency, and precision have become non-negotiable. Driven by the exponential rise of e-commerce, the resurgence of manufacturing, and a renewed focus on infrastructure, warehouse automation is no longer viewed as a futuristic concept — it is now a strategic necessity that can make or break a company's competitiveness.

The Indian logistics sector, a key pillar of economic growth, is projected to touch USD34.99 billion by 2027, growing at a robust CAGR of 15.64 per cent. In the first half of 2023 alone, demand outstripped supply by 1.4 times — highlighting the sector's resilience and capacity to adapt. The push for automated warehouses in India is majorly aligned with larger macroeconomic trends, such as the "Make in India" initiative, improvised ease of doing business, and growing consumption across both urban and rural areas. The supply chain has become central to this growth story, and companies across sectors are realizing that outdated, manually driven warehouses are ill-suited to meet modern expectations. This realization has resulted in a growing wave of investments in high-tech warehousing solutions, turning India into a testbed for innovation and efficiency.

The Automation Imperative in a Shifting Economy

India's warehouse automation sector is witnessing unprecedented growth, fuelled by a combination of rising consumer expectations, industry expansion, and the need to remain globally competitive. What was once a labour-intensive, paper-based system is now rapidly transforming into a digital-first, technology-driven model. This shift is especially critical in a country like India, where shrinking delivery windows, increasing inventory complexity, and mounting operational costs demand smarter, more efficient logistics solutions. In fact, this shift is unfolding alongside a broader logistics boom in India. The rapid rise of e-commerce, renewed manufacturing activity, and increasing consumption are reshaping the country's supply chain dynamics.

Warehouse automation involves the use of advanced technologies to automate and optimise the movement of inventory into, within, and out of warehouses—all the way to the end customer—with minimal human intervention. It integrates robotics, artificial intelligence (AI), the Internet of Things (IoT), and intelligent software to manage the entire supply chain workflow, from receiving and storage to picking, packing, sorting, and dispatch. These technologies not only reduce manual effort but also significantly improve speed, accuracy, and cost-efficiency. As businesses focus on streamlining operations and elevating customer experiences, automation has become a necessity rather than a choice.

However, automation is not limited to hardware. Software plays an equally vital role in making warehouses intelligent and agile. Cloud-based Warehouse Management Systems (WMS) and AI-powered analytics platforms are equipping operators with real-time visibility into inventory, streamlined order processing, and predictive insights for demand planning. Many warehouses are also integrating advanced technologies such as surveillance drones, sensor-based tracking, and Automated Guided Vehicles (AGVs) to build truly end-to-end automated ecosystems. These solutions are increasingly taking root not just in metropolitan centres, but also in Tier-2 and Tier-3 cities that are emerging as the next wave of consumption-driven growth.

From Cost Savings to Customer Satisfaction

The benefits of warehouse automation are wide-ranging. It enhances the output, reduces dependency on manual labour, and ensures consistent performance even during disruptions like labour shortages or seasonal demand spikes. Accuracy in inventory management improves significantly, reducing picking errors and return rates while boosting customer satisfaction. In a market where warehouse space is scarce and expensive, automation technologies like AS/RS enable vertical storage optimisation—bringing down real estate costs. Additionally, the integration of energy-efficient systems and predictive maintenance helps lower operational expenses and supports the sustainability goals of ESG-focused organisations.

In essence, warehouse automation is emerging as a transformative force for India's supply chain. It enables businesses to operate with greater precision, speed, and resilience—qualities that are increasingly essential in a highly competitive and rapidly evolving marketplace. As more companies embrace this shift, India is well on its way to becoming a global leader in smart, scalable, and sustainable logistics infrastructure.

Addressing Challenges in Scaling Automation

However, the road to widespread automation is not

Telescopic conveyor from Atmos Systems

without its challenges. One of the primary barriers remains the high initial investment cost associated with automation infrastructure. Small and mid-sized enterprises, which form a significant chunk of India's supply chain ecosystem, often struggle to justify the capital expenditure without clear short-term returns. Moreover, there is a noticeable skills gap when it comes to operating and maintaining these advanced systems. While the Indian workforce is young and tech-savvy, there is still a pressing need for large-scale skilling initiatives that can prepare them to work alongside AI and robotics.

The fragmentation of the warehousing market in India also poses a challenge. Many warehouses are still unorganized, operate on leased land, and lack the uniformity needed for large-scale technology deployment. Moreover, infrastructure gaps such as inadequate road connectivity, power shortages, and inconsistent regulatory enforcement in certain states can hamper the efficiency of even the most sophisticated warehouse systems. That said, with government policies such as the National Logistics Policy (NLP) and the development of multi-modal logistics parks, some of these barriers are gradually being addressed, laying the foundation for a more seamless and tech-driven logistics landscape.

Global Benchmarks, Local Innovation

Globally, the warehousing sector is evolving into a command centre for strategic decision-making, and India is well-positioned to leapfrog into this future. As outlined by Deloitte, international players are transforming warehouses into intelligent hubs that not only manage goods but also forecast demand, optimize workflows, and orchestrate last-mile delivery with near-perfect accuracy. Indian companies, with their strong IT capabilities, access to affordable engineering talent, and rising domestic demand, are in a prime position to adopt similar models. In fact, by embracing these innovations early, India can set new benchmarks in cost-effective, scalable, and sustainable warehouse operations.

Government-led initiatives such as PM Gati Shakti and the National Logistics Policy (NLP) are driving India's logistics transformation by promoting digitisation, standardisation, and the integration of advanced technologies across the ecosystem. Complementing these efforts, schemes like Performance Linked Incentives (PLI) and the Make in India initiative are fuelling manufacturing growth, which is in turn boosting demand for high-efficiency, automated warehousing solutions. The development of multimodal logistics parks further strengthens this momentum, providing the necessary infrastructure backbone to scale warehouse automation nationwide.

The formal recognition of logistics as an infrastructure sector has further enhanced its investment appeal, bringing in capital and attention from global players.

Telescopic conveyor from Atmos Systems

As organised retail expands and consumer habits evolve, demand is shifting away from conventional storage toward technologically advanced warehousing solutions. Companies are capitalising on this shift, leveraging Grade-A infrastructure to streamline supply chains, reduce operational costs, and meet the increasingly sophisticated demands of the Indian market.

The Road Ahead

Looking ahead, the future of warehouse automation in India will be shaped by three key trends. First, the adoption of predictive analytics and AI will evolve from being operational tools to strategic co-pilots — offering prescriptive recommendations on everything from restocking cycles to energy usage. Second, digital twins—virtual replicas of real-time warehouse environments — will enable managers to simulate scenarios and make better decisions without physical disruption. Third, as environmental sustainability becomes a priority, the rise of green warehousing — solar-powered facilities, waste recycling, and water conservation measures — will reshape how automation is viewed from an ESG lens.

Hyperlocal warehousing and micro-fulfilment centres — especially in dense urban areas — are set to play a key role in enabling quick commerce and same-day delivery, powered by compact automation systems. Simply put, warehouse automation is no longer optional — it's central to India's growth story. From large e-commerce players to mid-sized manufacturers, those who invest in automation now will lead the future. As India's economy climbs, automated warehouses will quietly power this rise —boosting efficiency, reliability, and global competitiveness. The future of warehousing is smart, swift, and sustainable — and India is ready to lead the way. ■

GUEST COLUMN

Sustainable Manufacturing & Emerging Trends in the Specialty Chemicals Industry

Namitesh Roy Choudhury
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As global priorities shift towards sustainability, climate resilience and digital integration, manufacturers in specialty chemicals sector are adopting forward-thinking strategies that combine environmental stewardship with economic performance. This evolution is not only reshaping production paradigms but also unlocking new avenues for growth, particularly in emerging markets like India.

The specialty chemicals industry is currently undergoing a significant transformation, driven by the dual imperatives of sustainability and innovation. As global priorities shift towards sustainability, climate resilience and digital integration, manufacturers in this sector are adopting forward-thinking strategies that combine environmental stewardship with economic performance. This evolution is not only reshaping production paradigms but also unlocking new avenues for growth, particularly in emerging markets like India.

Green chemistry is gaining traction where companies are redesigning processes, products, and supply chains to minimize environmental impact and maximize resource efficiency. One of the most significant change is the move towards bio-based alternatives.

Digital transformation is another defining trend. The adoption of AI, machine learning, and IoT is revolutionizing how specialty chemicals are developed, produced, and distributed. These technologies enable predictive maintenance, real-time quality control, and supply chain optimization, enhancing both efficiency and sustainability.

Geopolitical shifts, trade realignments and Environmental, Social, and Governance (ESG) mandates are also influencing the industry's trajectory. Recent supply chain disruptions have stressed the need for resilience and localization. Indian manufacturers are leveraging government incentives like PLI schemes and investing in backward integration to enhance resilience and competitiveness.

Simultaneously, customer expectations are evolving. Consumers are prioritizing greener, safer and more sustainable products and solutions. This demand is forcing companies to integrate sustainability metrics into product development processes and rethink about its product formulations.

Today, in many organizations, sustainability has become a top management function, with executives and board members actively involved in setting sustainability goals, formulating strategies, and overseeing implementation efforts. At LANXESS, our vision is to be a responsible and resilient company that creates long term value for its stakeholders while contributing to a more sustainable future. By integrating sustainability into the core business strategy and operations, we aim to drive positive environmental, social, and economic outcomes for both the company and society as a whole. This includes reducing emissions, enhancing resource efficiency, and developing innovative, sustainable product portfolio.

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As the specialty chemicals industry continues to evolve, sustainability will remain a key differentiator and growth enabler. While challenges persist, the industry is demonstrating a strong commitment to reducing its environmental footprint without compromising on performance or profitability.

In the coming years, increased investment is expected in green chemistry, digital integration, and value-chain collaboration. Organizations that embed sustainability at the core of their strategy, rather than treating it as a compliance obligation, will be better positioned to lead in a future that demands resilience, responsibility, and innovation. ■

Digitalization in the Chemical Industry: A Beginner's Roadmap towards the End Goal – AI/ML

Transforming a traditional chemical plant into a data-driven powerhouse may seem daunting. Yet, with narrowing adoption gaps and increasing tech accessibility, today is the perfect time for beginners to start their digital journey. This guide serves as a pragmatic companion — unpacking compelling statistics, structured roadmaps, future-ready tech, and real-world examples to help you build intelligence into your operations, one step at a time.

Why Take the Plunge? The Compelling Business Case

Market Growth & Strategic Momentum: Artificial Intelligence (AI) in the chemicals market soared from USD 652 million in 2023 to a projected USD 10.3 billion by 2032, growing at a CAGR of ~36 per cent. Globally, 60 per cent of chemical companies have adopted digital technologies, reporting 15-20 per cent productivity gains and 5-10 per cent cost savings.

India's Rapid Catch-Up: AI adoption in India's chemical industry has increased 25 per cent in two years. Broader industrial AI use in India reached 48 per cent in FY 2024, expected to climb another 5–7 pp in FY 2025. India aims to grow its chemical industry into a USD 1 trillion sector by 2040.

Operational Benefits: Predictive maintenance using AI can cut operational costs by 10-15 per cent annually, and IA users report up to 25 per cent fewer breakdowns. Quality control automation reduces manual inspection costs by ~25 per cent, as seen in Tata Chemicals. Supply chain and logistics, aided by AI, achieve up to 15 per cent faster delivery times, with 55 per cent of firms citing its critical impact.

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Five Realistic Steps for Beginners

Step 1 - Define Clear, Business-Led Objectives: Focus on real pain points — downtime, inconsistent product quality, or logistics bottlenecks. Companies with precise goals report twice the ROI of those without (McKinsey, 2023).

Step 2 - Run Focused, Low-Risk Pilots: Use IoT sensors for real-time monitoring of energy, vibration, or temperature data. Example: Reliance's IoT pilot in refineries cut unplanned downtime by 15 per cent.

Step 3 - Build a Quality Data Foundation: Approximately 55 per cent of valuable plant data is locked in outdated systems. 40 per cent of AI projects fail due to poor data quality (Gartner). Standardize, digitize logs, and centralize data for analytics.

Step 4 - Migrate Key Systems to the Cloud: Cloud enables scalable analytics, remote monitoring, and collaborative capabilities. Chemical firms report up to 30 per cent cost savings on data management via cloud platforms.

Step 5 - Integrate AI/ML in Tactical Phases: Begin with anomaly detection, predictive maintenance, or automated quality inspections. Tata Chemicals cut inspection costs by 25 per cent and boosted consistency with AI. 45 per cent of firms now use AI for process optimization, with 58 per cent seeing overall efficiency gains.

Weigh the Benefits and Risks

Benefits

- **Operational uplift:** 15-20 per cent productivity improvements.
- **Cost reductions:** 10-15 per cent savings in maintenance and operations.

- **Safety gains:** Real-time monitoring systems have cut incident rates by 40 per cent in some plants.
- **Sustainability boost:** Energy optimization technologies save up to 15 per cent, with 35 per cent using AI to support circular economy goals.

Trade-offs

- **Initial investment:** Digitization can require ~8-10 per cent of annual operating budgets.
- **Change resistance:** 35 per cent of teams initially push back due to unfamiliar workflows.
- **Cybersecurity needs**: Secure systems add ~5 per cent to digitalization budgets. Integration challenges: Legacy data silos and lack of system standardization are common roadblocks.

What's Next? Advanced Technologies to Watch

Blockchain for Traceability: Global majors like BASF and Dow use blockchain to cut supply-chain audits by ~40 per cent.

Quantum Computing for R&D: IBM reduced complex molecular simulation times by 90 per cent using quantum platforms.

Generative AI for Rapid Innovation: Evonik created new polymer lines in weeks - a 60 per cent faster R&D cycle.

Digital Twins & Predictive Optimization: Digital twins enable real-time plant simulation and improve maintenance efficiency - 39 per cent of chemical firms are piloting them. BASF's digital twin program boosted energy efficiency and competitiveness.

Robotics and Automation: AI-enhanced robotics reduce manual intervention, especially in hazardous processes – 40 per cent reduction in worker injuries.

Artificial Intelligence (AI) in the chemicals market soared from USD 652 million in 2023 to a projected USD 10.3 billion by 2032, growing at a CAGR of ~36 per cent. Globally, 60 per cent of chemical companies have adopted digital technologies, reporting 15-20 per cent productivity gains and 5-10 per cent cost savings.

AI for Supply-Chain & Inventory: AI-driven forecasting cuts excess inventory by 20 per cent, with 55 per cent of firms using AI for supply-chain risk management.

Who Can Help? Profiles of Facilitators

Collaborating with experienced partners can de-risk your digital journey. Private companies/organisations like Angiras Rasayan LLP, among others, offers process-first advisory - focusing on upgrading operational workflows before deploying technologies like IoT or ML. This ensures smoother, more effective outcomes in digital deployment. Look for support from industry–academia innovation hubs, such as ICT Mumbai or CII–McKinsey initiatives, which offer skill development, pilot guidance, and ecosystem support. India's emphasis on digital and AI excellence is reinforced by multiple centres of excellence - e.g., IndiaAI, IIT partnerships, and state-level AI/robotics parks.

Real-World Results: India and Beyond

Reliance Industries: AI-driven predictive maintenance cut downtime by 15 per cent.

Tata Chemicals: Cost savings saw inspection costs drop by 25 per cent, with consistent product quality.

CII–McKinsey: SMEs embracing digitalization stand to double EBITDA margins over time.

International examples include GE Digital's use of digital twins in chemicals and energy assets to reduce downtime and maintenance costs, and Akselos' advanced twin solutions for asset integrity.

Managing Legacy Infrastructure

Don't let legacy systems hold you back:

Modular upgrades: Start with one unit or process line at a time.

Built-in cybersecurity: Embed secure authentication, encryption, and compliance from day one.

Empower your teams: Ongoing training and cultural change ensure smoother transitions - cultural adaptation is as critical as technological adaptation.

Your Vision for a Data-Driven Industry

Analysts at Gartner predict that by 2025, AI-enabled operations could deliver a 20 per cent efficiency boost

Integrate AI/ML in Tactical Phases: Begin with anomaly detection, predictive maintenance, or automated quality inspections. Tata Chemicals cut inspection costs by 25 per cent and boosted consistency with AI. 45 per cent of firms now use AI for process optimization, with 58 per cent seeing overall efficiency gains.

and 10 per cent cost reduction in India's chemical sector.

To build on this:

- Launch pilots and iterate based on results.
- Invest in a robust digital infrastructure - data, cloud, and cybersecurity.
- Utilize government and academic support for skills and innovation.
- Advocate policy frameworks incentivizing SME adoption, tax breaks, and skill grants.

Final Takeaway

The future of chemical manufacturing is smart, efficient, and sustainable. Even for beginners, transformation is possible with stepwise action — define objectives, pilot strategically, invest in data, layer technologies, and partner wisely.

Global and Indian companies are already reaping benefits — improved uptime, reduced costs, enhanced safety, faster innovation cycles, and greener practices. With structured planning, small steps can lead to big gains.

Don't wait — begin your digital journey today. The chemical plant of tomorrow is built on data, intelligence, and foresight. Your transformation should start now. ■

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Driving Precision & Efficiency: Schmalz Gripping Systems for India's Diverse Automated Manufacturing Future

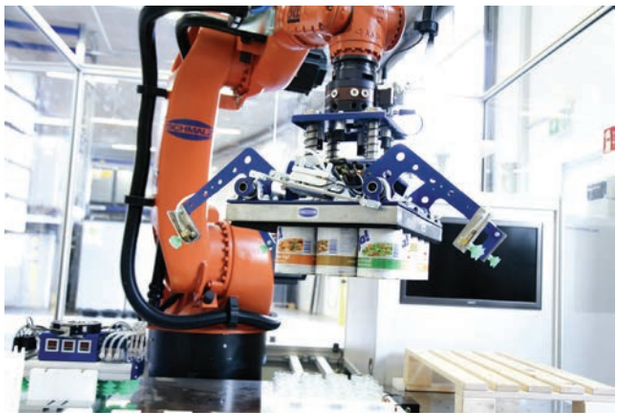
As India rapidly embraces Industry 4.0, automation and robotics are no longer optional — they are essential tools for increasing productivity, ensuring consistent quality, and staying competitive in global markets. Whether in automotive plants, electronics assembly lines, logistics warehouses, or food processing units, robots are transforming how materials are handled, assembled, and packed. But the performance of these robots depends not only on their speed or programming—it hinges on how reliably they can pick, hold, and place parts. This is where gripping systems, especially vacuum-based solutions, play a defining role.

The gripper is the robot's physical link to the workpiece. It determines how safely a carton, a metal plate, or a glass vial is picked without damage. It affects cycle time, placement accuracy, and whether a robot can switch quickly between different parts or products. A poorly chosen gripper can cause slippage, misalignment, or even production stoppages. That's why Schmalz, a global leader in vacuum automation, is at the forefront of developing smart, adaptive, and efficient gripping systems for a wide range of manufacturing tasks. Their solutions are not just tools — they are enablers of seamless automation, tailored to meet the growing diversity of Indian manufacturing industries.

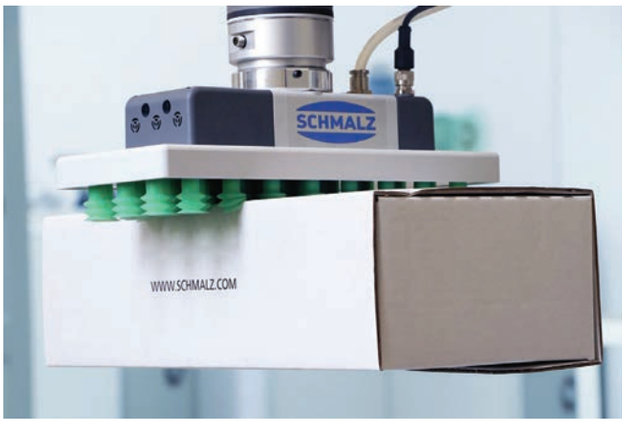
In high-speed material flow applications like palletizing and de-palletizing — common in logistics, automotive, or food & beverage sectors — Schmalz offers the Vacuum Layer Gripper SPZ, engineered to lift entire layers of cartons, cans, or bags quickly and securely. What makes the SPZ unique is its large-area vacuum contact and ability to gently yet firmly grip even slightly uneven surfaces without damaging packaging.

For production environments that require picking and placing varied or fragile items — like electronics boards, glass packaging, or delicate consumer goods — the FQE Area Gripper delivers reliable performance with maximum flexibility. Its broad sealing surface conforms to different product shapes, while the integrated ejectors ensure fast gripping and release cycles. The FQE is also highly compact and lightweight, which allows faster robot movements and energy-efficient operation. Importantly, its smooth contours and safety-compliant design make it suitable for collaborative use, such as in shared workspaces between humans and robots in light assembly or quality inspection cells.

For dedicated collaborative robotics (cobot) applications, Schmalz has developed the FXCB and FMCB series, specially designed to work alongside people. These grippers combine a safe, rounded design with smart functionality—like built-in vacuum generation,

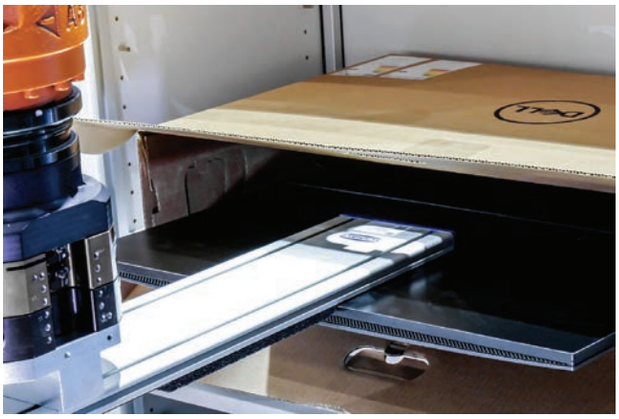


Vacuum Layer Gripper SPZ



FQE Area Gripper

FXCB series



Vacuum Area Gripping System - FEL

lightweight construction from 3D-printed materials, and plug-and-play integration using standard robot flanges. Whether in automotive kitting, pharmaceutical packaging, or food-grade environments, these grippers enable robots to perform repetitive or ergonomic tasks safely while maximizing their payload and reach. Their simplicity in setup and quick changeovers allow manufacturers to deploy cobots flexibly, without needing in-depth programming or custom hardware each time a new product is introduced.

For automation tasks involving flat, sealed workpieces, the Vacuum Area Gripping System FEL offers a lightweight and cost-effective solution. Designed for efficient handling of uniform surfaces, the FEL is ideal for picking items such as delicate electronic components like laptop, tablet, mobile, small display screens and flat-glass elements. Its compact design integrates vacuum generation directly within the unit, eliminating the need for external ejectors and simplifying installation — especially in space-constrained robotic arms or gantry systems. The gripper's rigid housing and replaceable foam sealing pad ensure consistent suction and reliable surface contact without damaging sensitive parts. As a result, the FEL is being used in industries ranging from electronics assembly and packaging to intralogistics and light industrial automation, where ease of integration, cycle-time stability, and part safety are critical.

Meanwhile, the SLG Lightweight Gripper is ideal for customized handling of small components using cobots or compact robotic arms. Thanks to additive manufacturing, the SLG can be tailor-made to match the shape, spacing, and handling needs of the specific parts being moved. This makes it particularly suitable for electronics, plastics, cosmetics, and consumer goods industries, where product shapes vary frequently. Despite being extremely lightweight, the SLG delivers reliable holding force and supports high dynamic movements. Its modular, ready-to-connect design speeds up integration, allowing automation experts to quickly deploy and redeploy it across

SLG Lightweight Gripper

different workstations without sacrificing performance or precision.

What ties all these gripping systems together is the tangible benefit they offer to Indian manufacturers. With Schmalz grippers, users see faster cycle times, fewer product defects and increased throughput—whether handling 50-gram vials or 50-kg component layers. Their modular and lightweight designs mean easier integration into existing lines, while the robust construction ensures long service life and minimal downtime. More importantly, these systems reduce physical strain on human operators by automating repetitive, heavy, or awkward manual handling tasks—supporting a safer and more productive shop floor.

In a market that demands speed, agility, and reliability, Schmalz gripping systems are enabling the next generation of Indian automation — built on smarter gripping, not just smarter robots.. ■

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Role of Innovative R&D in Steam Turbine Manufacturing

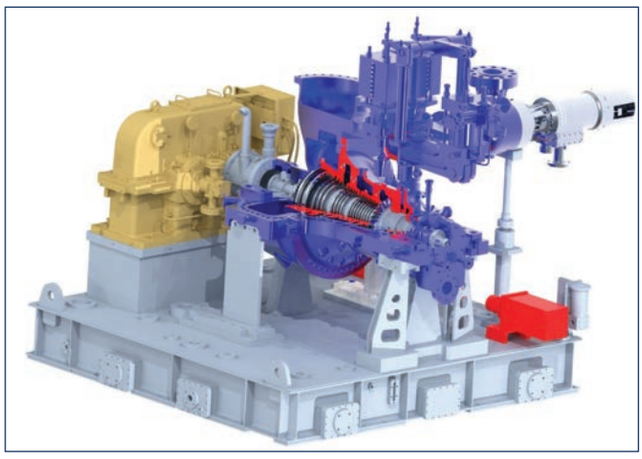
The steam-turbine industry is undergoing a transformative shift, driven by rapid technological advancements and the global transition toward cleaner energy. At the core of this evolution is forward-looking Research and Development (R&D), which is redefining turbine design, efficiency, manufacturing processes and lifecycle support. This article explores how cutting-edge R&D is shaping the future of steam-turbine production — highlighting the role of digital tools, automation, smart factories, workforce upskilling and sustainable practices in building a more resilient and efficient energy landscape.

Efficiency remains the foremost benchmark for steam turbine performance. Today's Research and Development (R&D) efforts focus on innovative thermodynamic cycles, optimized blade profiles and advanced sealing solutions to minimize leakage.

Enhancing Efficiency through Advanced Design

By leveraging Computational Fluid Dynamics (CFD) and Finite Element Analysis (FEA), engineers can digitally simulate flow dynamics, thermal behaviour and structural stress significantly accelerating the design and optimization process.

Exciting concepts such as 3D-contoured blades, advanced sealing and variable-nozzle geometries are already pushing turbines to higher output, lower heat rate and longer life.



PLM Automation & CAD Integration for Manufacturing Accessibility

Modern turbine R&D integrates Product Lifecycle Management (PLM) systems with advanced Computer-Aided Design (CAD) tools, creating a continuous digital thread from concept to production. Automation within PLM enables real-time data sharing across engineering, procurement and manufacturing teams accelerating decision-making, enhancing collaboration and reducing rework.

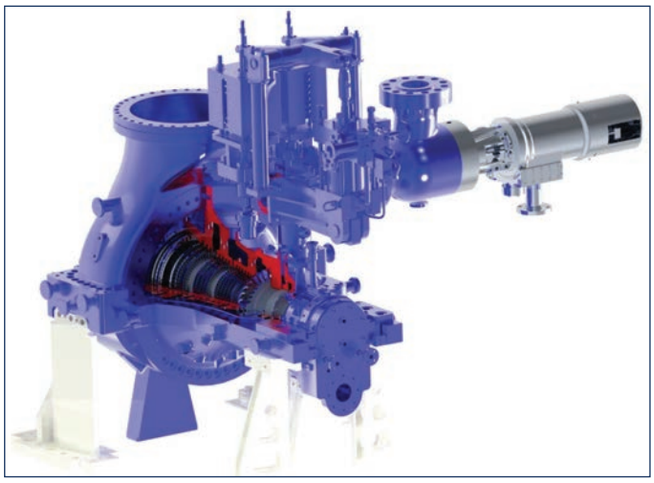
A standout element of this setup is the exploded assembly view that engineers embed directly in the CAD model. Spreading the turbines parts outward in the drawing reveals fit, orientation and clearance in one clear snapshot, letting assembly crews:

- Grasp how each piece relates to the others
- Follow the same step-by-step routine every time
- Spot the tools they need and where they work
- Catch small misalignments before they matter.

Those exploded views then flow into manuals, training videos and real-time shop-floor screens, keeping everyone on the same page whether they are building, servicing, or taking the unit apart.

Robotics in Blading & Turbine Assembly

Robotic automation is reshaping turbine manufacturing by boosting accuracy, speed and consistency, especially during blading and assembly steps.



Key innovations include:

Robotic Blade Installation: Guarantees exact positioning and the same torque across parts, cutting mistakes and saving time.

Robotic Blade Hardening: Delivers steady, even heating along each blade, to improve fatigue strength and overall life.

Collaborative Robots (Cobots): Work beside staff, lifting heavy pieces and perfecting alignments without safety worries.

Automated Guided Vehicles (AGVs): Move materials between stations on schedule, keeping the line running smoothly.

Robotic Welding & Inspection: Make clean, repeatable seams and check quality in real time with built-in sensors.

Together, these advances raise assembly standards, boost reliability and slash rework, meeting today's steam turbine goals.

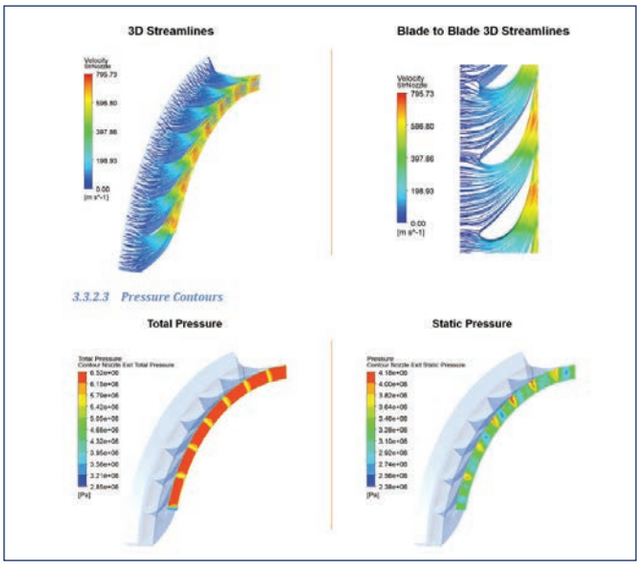
Materials Development for Durability & Performance

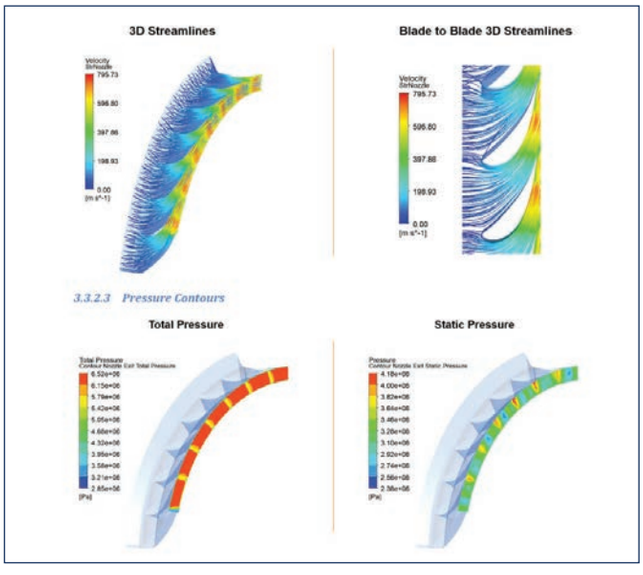
Steam turbines operating in extreme conditions demand materials with exceptional strength, fatigue resistance and thermal stability. To meet these challenges, advanced R&D labs are qualifying nickel-based superalloys, ceramic-matrix composites and thermal-barrier coatings. These innovations enable higher operating speeds while maintaining critical component temperatures within safe limits. Meanwhile, additive manufacturing (or 3D printing) is quickly becoming the preferred method for complex parts, allowing engineers to build lighter, stronger structures with less scrap.

Digitalization & Smart Monitoring

Parallel to materials work, R&D teams are digitizing turbine fleets with smart sensors, cloud analytics and predictive-maintenance platforms. Digital twins - vital, living replicas of each unit simulate loads, troubleshoot faults and adapt control rules without taking hardware offline.

In the field, compact data loggers now pair with AI to scan operating patterns, flag early wear and suggest corrective actions before failures occur. This automated, 24-7 surveillance boosts uptime and stretches the service life of high-value components.





Sustainability & Environmental Compliance

Environmental regulations are increasingly shaping turbine innovation. R&D efforts now prioritize emission reduction, enhanced thermal efficiency and integration into low-carbon hybrid systems. Modern turbine installations increasingly incorporate technologies such as Carbon Capture and Storage (CCS), Waste Heat Recovery (WHR) and Combined Heat and Power (CHP) to support sustainable energy objectives. Material circularity, energy-efficient manufacturing processes and longer maintenance intervals further improve the environmental performance of turbine systems. As part of a larger decarbonization effort, research and development is also driving innovations in sustainable sourcing and resource use. This includes:

- Sourcing raw materials from scrap to reduce mining and extraction impacts
- Maximizing efficiency during part manufacturing
- Tracking the lifecycle of components from production through service and disposal
- Implementing end-of-life recovery and recycling programs to reclaim valuable materials and cut down on landfill waste

These practices contribute to a circular economy framework, lowering the overall carbon footprint of steam turbine manufacturing and operation.

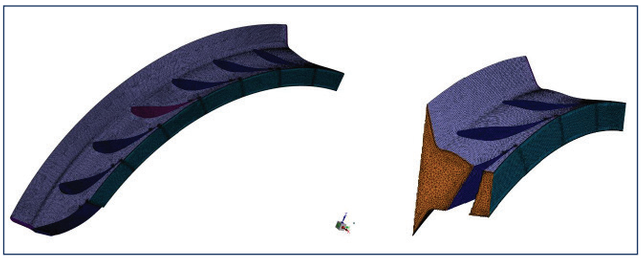
Customization, Modularization & Smart Workshops

Turbines today must meet a wide range of needs — from industrial cogeneration to nuclear power and geothermal applications. Research and development enable the creation of modular and customizable turbine platforms, allowing manufacturers to quickly adjust to different project scopes. In workshops, EyeTech barcode technology is now used for inventory control and component tracking. By scanning barcodes on raw materials and subassemblies, the system ensures real-time visibility of stock and streamlines production logistics, reducing human error and material waste.

Artificial Training Programs for Human Capital Development

As turbine systems become more complex, workforce development is being reshaped by AI-driven training programs. These programs use augmented reality (AR), virtual reality (VR) and interactive simulation platforms to train teams in:

- Component identification and awareness
- Assembly techniques
- Site erection logistics and sequencing
- Commissioning procedures and safety compliance



These digital learning environments improve retention, lower field errors and prepare workers for both normal and emergency operations without needing costly physical mock-ups.

Collaborative Innovation Ecosystems

Research and development in steam turbine manufacturing is becoming more collaborative, involving OEMs, academic institutions, startups and government bodies. These ecosystems speed up breakthroughs in design, materials and digital systems, while also helping to standardize safety, interoperability and emissions regulations across the industry.

Conclusion

The steam turbine industry is undergoing a resurgence, fuelled by innovation in design, manufacturing and lifecycle management. Robotics-assisted blading, PLM-integrated CAD systems, smart workshops with barcode tracking, AI-powered training and predictive diagnostics are redefining industry standards. These advancements enhance efficiency, reliability and sustainability reinforcing the steam turbine's vital role in a flexible, future-ready energy landscape.

Triveni Turbines stands at the forefront of this transformation, exemplifying how an R&D-driven, homegrown approach can achieve global excellence in steam turbine manufacturing. ■

Author

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Triveni Turbine Limited

BYK brings in Innovative UV Stabilizer for Durable Polyamide Applications

BYK-MAX LS 4128 application in an automotive front bumper (image source: Adobe Stock).

BYK, one of the leading global supplier of specialty chemicals, brings in an innovative solution for the long-term UV stabilization of polyamides and polyolefin composites - BYK-MAX LS 4128. The new additive was specifically developed to preserve the properties and surface quality of plastics in the long term when exposed to light, since polyamide-based components suffer a deterioration of their properties and surface quality when subjected to longer-lasting exposure to light. Besides deterioration in the physical properties, this often also results in changes in color and gloss.

On account of their mechanical strength, temperature resistance and versatility, polyamides are indispensable in a great many sectors – from the automotive industry, construction materials, and consumer and leisure products all the way to fibers and textiles. But UV radiation can lead to discoloration, loss of gloss, and material degradation.

BYK-MAX LS 4128 addresses this challenge with a synergistic additive of highly concentrated stabilizers that effectively hinders light-induced degradation pro-cesses in the polyamide. In doing so, the additive acts as a radical catcher and peroxide decomposer, protecting both the visual and the mechanical properties of the materials. The new BYK product is a granulated, organic UV stabilization system that was specially developed for use in polyamides as well as in polyolefins. It is especially well suited for outdoor applications. The high level of active ingredients it contains minimizes the need for carrier resins, thereby reducing the overall costs for customers. ■

Clariant launches innovative PFAS-free polymer processing aids

Clariant has launched new AddWorks PPA product line, a new generation of PFAS-free polymer processing aids designed specifically for polyolefin extrusion applications. This innovative solution addresses the industry's growing need for more sustainable alternatives to conventional fluoropolymer-based processing aids while maintaining strong performance standards.

The new range includes AddWorks PPA 101 FG, primarily focused on EMEA, Americas, and SEAP markets, and AddWorks PPA 122 G, targeted for Greater China and SEAP regions.

The innovative formulations are completely free of per- and polyfluoroalkyl substances (PFAS), as well as inorganic, silicone, or polysiloxane materials. This composition ensures broad regulatory compliance, including suitability for food contact and food packaging applications, addressing a critical need in the packaging industry. Additionally, these PFAS-free solutions support recyclability requirements under the upcoming EU Packaging and Packaging Waste Regulation (PPWR), further aligning with the industry's sustainability objectives.

The products maintain neutral behaviour regarding optical and mechanical properties, with no negative impact on dyne level, sealability, or coefficient of friction – critical factors for downstream converting operations. AddWorks PPA 101 FG features a 100 per cent active fine grain composition that can be easily incorporated via host resin, masterbatch, or concentrate. AddWorks PPA 122 G comes in a convenient masterbatch form for easy handling, requiring the same dosing level as traditional polymer processing aid masterbatches, simplifying the transition for manufacturers. ■

Lewatit MDS TP 108 from LANXESS removes short-chain PFAS from water

Specialty chemicals company LANXESS has introduced Lewatit MDS TP 108, a new ion exchange resin for removing short-chain fluorinated components (PFAS) from water. These PFAS, with three or fewer carbon atoms, are the smallest members of this substance class and are often the most difficult to remove during water treatment. The new product also enables users to save a considerable amount of material and disposal costs, because it lasts about twice as long as conventional ion exchange resins or alternative technologies such as activated carbon adsorption.

"With Lewatit MDS TP 108, we are setting new standards in water treatment and ideally complement our product portfolio for the removal of PFAS. At the same time, we help to protect water as a valuable resource," says Dr. Dirk Steinhilber, Application Technology Manager in the LANXESS Liquid Purification Technologies business unit. ■

Agilent launches InfinityLab Pro iQ Series Mass Detectors

Agilent Technologies has launched its InfinityLab Pro iQ Series mass detectors in India. The highly anticipated series — designed for next-generation liquid chromatography-mass detection (LC-MS) — is poised to transform how Indian scientists detect and analyze impurities, trace contaminants, and complex biomolecules with unprecedented ease and sensitivity.

The InfinityLab Pro iQ Series – comprising the Pro iQ and Pro iQ Plus – represents a significant leap forward in LC-mass detection. These intelligent, compact systems are designed to meet the evolving needs of modern analytical laboratories. They offer triple quadrupole-level sensitivity within a single quadrupole system, enabling highly sensitive and accurate detection. The systems incorporate smart automation features that ensure ease of use and consistent performance across workflows. Additionally, they integrate seamlessly with Agilent's InfinityLab LC portfolio and the OpenLab software suite, creating a unified and efficient analytical environment.

Together, these capabilities empower users to manage a wide range of workflows, including impurity profiling, biomolecule characterization, trace-level detection, and mass-based purification. The systems are equally effective for small molecule analysis and for complex biologics such as oligonucleotides, peptides, and intact proteins. ■

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WATER

In the **August 2025** issue of **"Chemical Engineering World,"** we plan to focus on the key issues and challenges, innovation and growth trends, in the **water industry.**

The issue will also carry regular features such as News, Project Updates, Products and Interview to equip professionals with the knowledge needed to stay ahead in a rapidly evolving sector.

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Bio Pharma World Expo 2026
Refining & Petro CHEMICALS 2026
Industry AUTOMATION & Control 2026
PVF Pumps, Valves & Fittings WORLD EXPO 2026
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- Plant Machinery & Industrial Consumables
- Engineering Consultants
- OEMs for Chemicals & Pharmaceutical Processing Equipment
- Metals & Metallurgy
- Bioprocessing Equipment
- Construction Services Providers
- Plant Maintenance Services Providers
- Logistics & Supply Chain Solutions Providers
- Instrumentation & Process Control
- Industry Automation (Process & Factory)
- Systems Integration & ERP Solutions Providers
- Water & Waste Water Treatment Consultants
- Environment Solutions Providers
- Waste Management Consultants
- Financial Institutions
- Fire & Safety Solutions Providers
- Material Handling Solutions
- Certification Bodies
- Welding Solutions
- Quality Health & Environment Solutions
- Analytical & Laboratory
- Packaging Materials, Machinery & Systems
- Business Consultants

Scope for Biopharma World Expo 2026

- Materials Processing
- Pharma Machinery
- Pharma Ingredients
- Plant Engineering, Process Plants & Equipment
- Laboratory & Analytical Solutions
- Process Measurement & Inspection
- Sterilization & Clean Room Solutions
- Biopharma R&D And Manufacturing
- IT Solutions
- Water & Waste Treatment Solutions

Scope for Specialty Chemicals World Expo 2026

- Agrochemicals Intermediates
- Adhesives & Sealants
- Agrochemicals & Crop Protection
- Bulk Drugs & Intermediates
- Enzymes
- Colorants, Dyes & Pigments
- Cosmetics & Personal Care Ingredients
- Hygiene & Cleaning Chemicals
- Laboratory Chemicals
- Surfactants
- Water Treatment Chemicals
- Catalysts
- Electronic Chemicals
- Flavours & Fragrances
- Contract Manufacturers

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