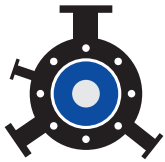


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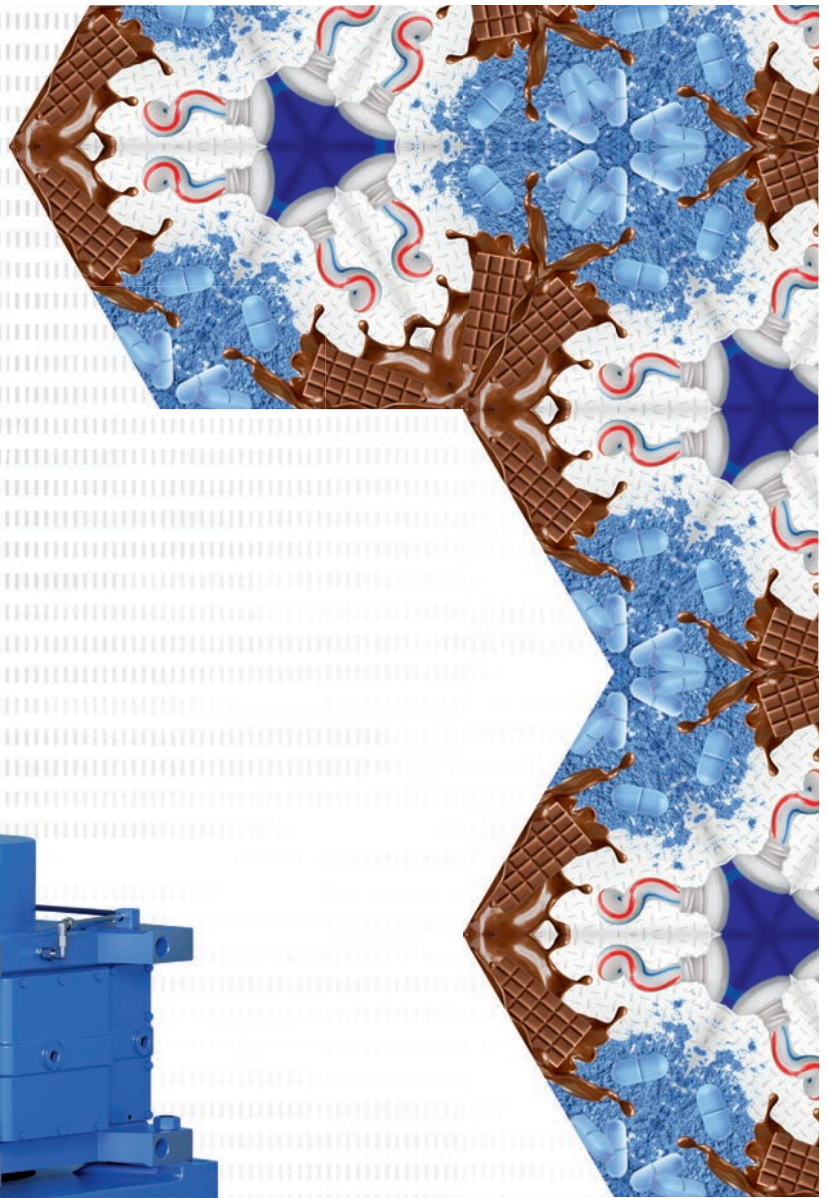


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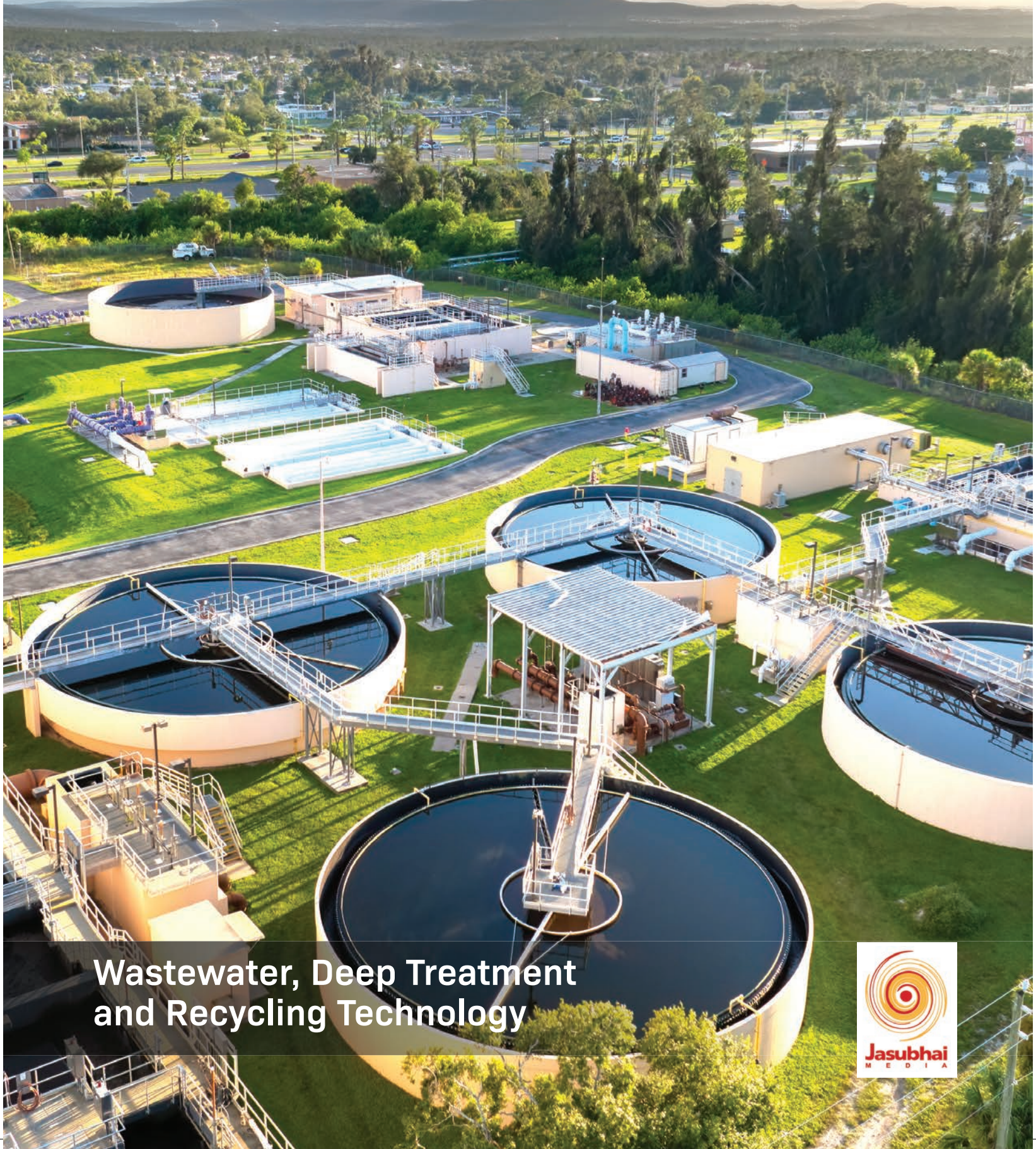
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UPCOMING ISSUE - May 2026

Filtration & Separation

The **May 2026** edition of **Chemical Engineering World** is focused on **Filtration & Separation**. The Special Edition will include technical features, guest columns, innovation write ups from industry leaders, focusing on the various filtration and separation techniques of the chemical process industry. It will also include articles on the latest trends; research and development; and the future growth of this sector, besides covering the regular features such as News, Project Updates, Impact Feature and Products.

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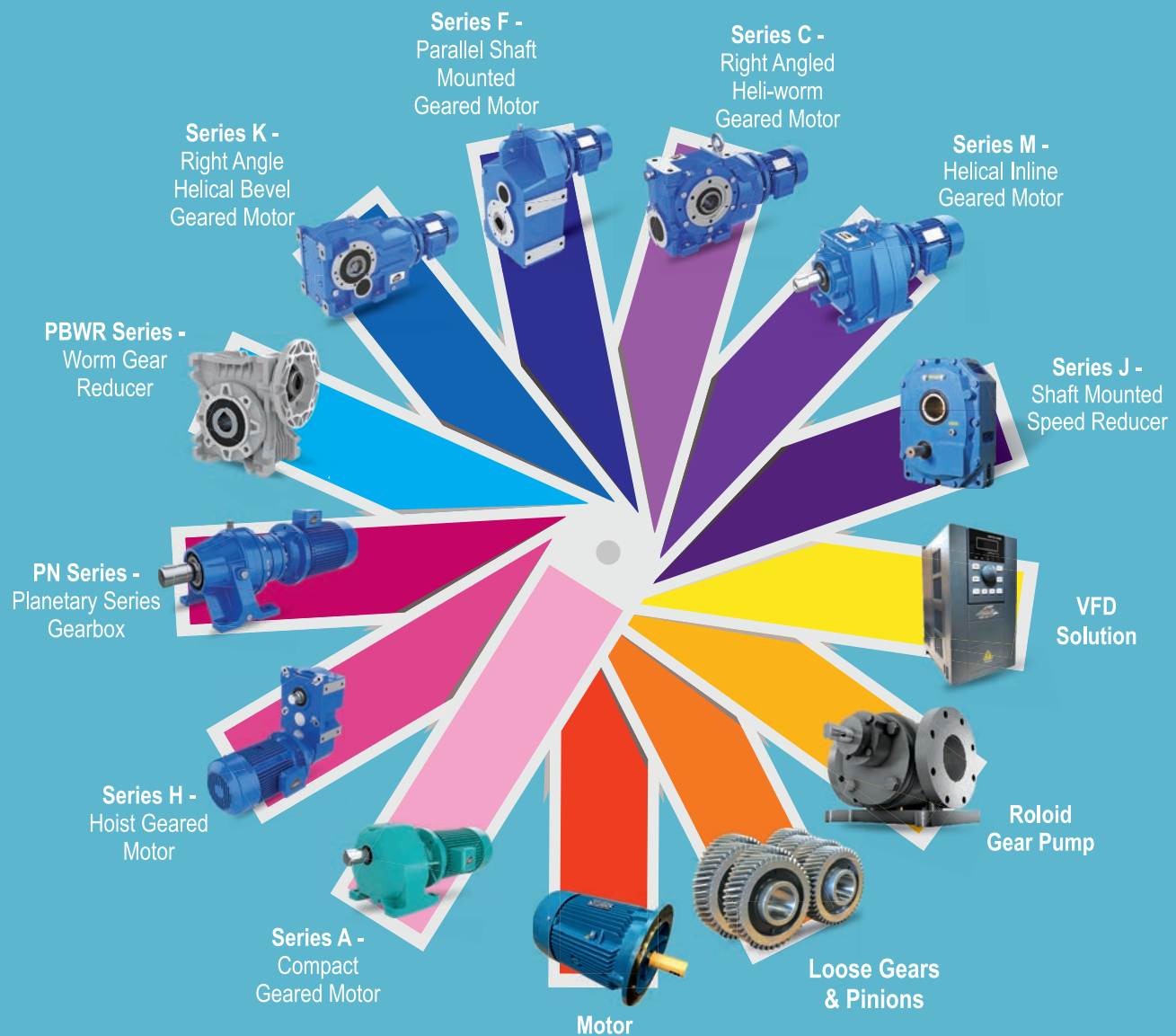
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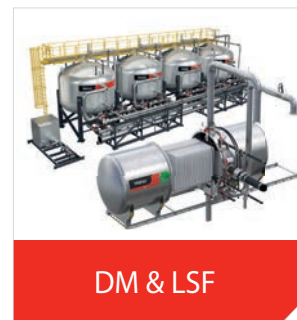
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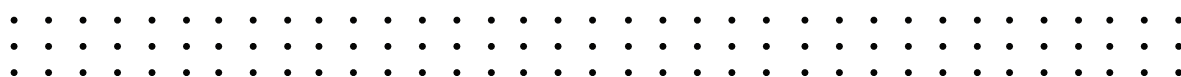
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Leadership changes at the Godrej Industries Group

Mumbai: Godrej Industries Limited, the holding company of the Godrej Industries Group, along with Godrej Agrovet Limited and Astec LifeSciences Limited, have announced leadership transitions as part of a planned generational succession.

Nadir Godrej, Chairperson of the Godrej Industries Group, will retire upon turning 75 in August 2026 and will assume the role of Chairman Emeritus. He will step down from the boards of Godrej Industries Limited, Godrej Agrovet, Godrej Consumer Products, and Godrej Properties at that time. He has also stepped down as Chairperson and Non-Executive Director of Astec LifeSciences, effective April 13, 2026.

Pirojsha Godrej, Chairperson Designate of the Godrej Industries Group, will succeed him as Chairperson of the Godrej Industries Group and Godrej Industries Limited, effective August 14, 2026. He will continue to serve as Chairperson of Godrej Properties, Godrej Capital, and Godrej Ventures.

Burjis Godrej will take on the role of Chairperson of Godrej Agrovet and will join the Board of Godrej Industries Limited as a Non-Executive Director, effective August 14, 2026. He has stepped down as Managing Director of Astec LifeSciences with immediate effect and will continue to serve on its Board as a Non-Executive Director. Vishal Sharma, CEO of Godrej Chemicals, has been appointed Chairperson of Astec LifeSciences with immediate effect. Arijit Mukherjee, currently COO of Astec LifeSciences, will be appointed Executive Director.

Tata Chemicals' Mithapur facility achieves 1 MT soda ash production milestone in FY 2025-26

Mithapur, Gujarat: Tata Chemicals Limited has announced a key operational milestone, with its Mithapur facility in Gujarat reaching 1 million tonnes of soda ash production in FY 2025-26. To mark the occasion, employees at the Mithapur site came together, with senior leadership inaugurating a commemorative plaque and unveiling the miniature of one-millionth tonne bag of soda ash. The event served as a lasting reminder of the team's commitment to operational excellence.

The contribution of the Marketing & Sales teams has

been instrumental in enabling this achievement. Rino Raj, Vice President and Site Head – Mithapur, Tata Chemicals Limited, said, "Reaching the 1 million tonne milestone is a direct outcome of the operational rigour and commitment demonstrated by our teams on the ground. From plant efficiency to reliability and safety, every function has contributed to ensuring consistent performance. This achievement belongs to the people at Mithapur who deliver excellence every single day."

Shri C. R. Patil launches 9th India International Water Week



New Delhi: The Ministry of Jal Shakti will organize the 9th edition of India International Water Week (IIWW-2026) on the theme 'Climate Resilient Water Management' from 22nd to 26th September 2026 at Bharat Mandapam, New Delhi. Marking the commencement of the event, Union Minister of Jal Shakti, Shri C. R. Patil, launched IIWW-2026 at Shram Shakti Bhavan, New Delhi, where he released the official brochure and made the IIWW-2026 website portal live.

In his address, the Minister highlighted the key features of the upcoming event and expressed confidence that IIWW-2026 will bring together experts, planners, innovators, and stakeholders from across the globe to share knowledge, experiences, and best practices in water management. He underlined that over 60 lakh artificial recharge and water conservation structures have already been created under the initiative and expressed confidence that the target of one crore structures will be achieved by May 2026.

The five-day conference to be held in September will feature bilateral meetings and a wide range of sessions, including Ministerial Plenary, Global Water Leaders' Plenary (GWLPLN), Water Leaders' Forum (WLF), Practitioners' Forum (PF), Country Forum, Thematic

Forum (TF), Youth Forum (YF), and Start-up Forum. The Thematic Forum will cover sub-themes such as inclusive and equitable water governance, collaboration for optimal use of water resources, technology and community for water security, water in climate-related risks, innovative financing models for water infrastructure and modernization, sustainable water resources management, and water for people and the planet.

KBL earns NABL accreditation for hydraulic research centre pump testing lab at Kirloskarvadi



Kirloskarvadi, Maharashtra: Kirloskar Brothers Limited (KBL), India's leading pump manufacturer, has secured National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation for its Hydraulic Research Centre Pump Testing Laboratory (HRC PTL), located at its Kirloskarvadi plant in Sangli, Maharashtra.

KBL is uniquely positioned as the only pump manufacturing company in the world to have received this accreditation. In compliance with the ISO/IEC 17025:2017, the international benchmark for the requirements for the competence of testing and calibration laboratories, this covers a comprehensive range of roto dynamic pumps, including centrifugal, mixed flow and axial pumps evaluated across multiple performance parameters.

For buyers across water utilities, power, irrigation, and defence, NABL accreditation converts KBL's pump performance data from a claim into independently

validated, globally accepted results, hence eliminating the need for third-party re-testing and accelerating approvals in government and regulated procurement. As a signatory to the ILAC Mutual Recognition Arrangement, NABL-accredited test results are recognised in over 100 countries, giving KBL's certifications direct international standing.

Mr. Sanjay Kirloskar, Chairman & Managing Director, KBL, said: "As India accelerates its infrastructure ambitions in energy, water management, irrigation and urban development, we are proud to offer testing capabilities that meet the highest global standards. This is a step forward for quality-driven engineering made in India."

EPL and Indovida merge to create consumer packaging leader for emerging markets

Mumbai: EPL Limited, one of the global leaders in flexible packaging solutions backed by Blackstone, and Indovida India Private Limited, one of the leading global rigid PET packaging platforms backed by Indorama Ventures, have signed definitive agreements for a merger. The merger has been approved by the Board of Directors of the respective companies and is subject to regulatory and shareholders' approvals. The merger will establish a stronger platform by combining the packaging portfolio and capabilities, expanding global access, and enhancing the addressable market size, growth potential and financial metrics.

This marks a pivotal step in EPL's evolution from a single-format flexible packaging leader to a scaled, multi-format packaging platform, purpose-built to serve global and regional customers across high-growth emerging markets. The transaction aligns with Indorama Ventures' long term strategy to expand and deepen its presence in India, leveraging the country's structural growth opportunity through an expanded and integrated packaging platform with public markets access. It is consistent with Indorama Ventures' broader strategy under its IVL 2.0 program of building leading positions in key markets through focused partnerships, and value-accretive investments.

Henkel announces new sustainability targets for 2030



Düsseldorf: Henkel is setting new mid-term targets until 2030. The company is committed to becoming net-zero by 2045 and defined a comprehensive roadmap in 2024 to achieve this goal, validated by the Science Based Targets initiative (SBTi). Henkel aims to reduce its absolute scope 1 and scope 2 greenhouse gas emissions by 42 per cent by 2030 (vs. 2021) and cut absolute scope 3 emissions by 30 per cent. Scope 1 and 2 emissions cover direct and indirect emissions from its operations, while scope 3 covers emissions that originate in the upstream and downstream value chain. The progress achieved so far shows that Henkel is on the right track: by 2025, the company achieved a 29 per cent reduction in scope 1, 2 and 3 emissions versus the 2021 base year and implemented carbon-neutral production at 37 sites worldwide. In this context, Henkel has significantly increased its share of renewable electricity to 97 per cent globally.

Another important element of Henkel's environmental protection efforts is its commitment to supporting a circular economy. The company has set clear targets for both the share of recycled materials used in its consumer goods packaging and the proportion of packaging designed for recycling. By 2030, the share of recycled materials is planned to reach at least 35 per cent, up from the current level of 28 per cent. In addition, Henkel aims for 100 per cent of its packaging to be designed for recycling by 2030, already reaching 88 per cent today.

The company also contributes to the development of recyclable packaging through specialized adhesive solutions, developed by its business unit Adhesive

Technologies. These solutions are tested in the company's dedicated "Packaging Recyclabs," which form part of Henkel's customer centres in Düsseldorf and Shanghai.

By 2030, 85 percent of Henkel's suppliers are expected to meet the company's sustainability criteria. Cross industry initiatives such as "Together for Sustainability (TfS)" alongside targeted support programs for small and medium sized suppliers, are key enabler of this ambition.

Evonik launches Innovation Factory

Essen, Germany: Chemicals company, Evonik is realigning its strategic research unit. The Evonik Innovation Factory operates as an entrepreneurial development unit, accelerating the transition of technological breakthroughs into industrial applications. As the successor to Creavis, it has a clear mandate: innovation with speed, market focus, and application relevance.

"We are aligning our innovation system to significantly shorten the time from development to market launch," says Christian Eilbracht, Chief Innovation Officer at Evonik. "The Innovation Factory is our promise to turn excellent research into tangible industrial progress – for both ourselves and our customers."

The heart of the new unit is a mandatory timeframe: each program is designed to be developed within an average of five years to the point where Evonik can transfer it to a Business Line – ready for operations and production. "The Innovation Factory operates according to a clear principle: 'Building what's next.' To achieve this, Evonik will integrate its own expertise even more closely with external impulses from academia, startup ecosystems, and industry partners," said Axel Kobus, Head of the Evonik Innovation Factory.

The Innovation Factory is an integral part of Evonik's global research strategy. It strengthens the company's global presence in leading innovation ecosystems – from Boston (USA) with the Cambridge Innovation Satellite for Life Sciences, to Singapore with biotech process solutions, and Shanghai (China) with membrane activities. ■

Ground-breaking ceremony held of India's first advanced 3D semiconductor packaging unit in Odisha



Bhubaneswar: The foundation stone for the country's first advanced 3D chip packaging unit was laid at Info Valley, Bhubaneswar. The project marks a significant step towards strengthening India's domestic semiconductor ecosystem and advancing the vision of *Atmanirbhar Bharat* in high-end electronics manufacturing.

The foundation stone of the Heterogeneous Integration Packaging Solutions project, promoted by 3D Glass Solutions, was laid in the presence of Chief Minister Shri Mohan Charan Majhi and Union Minister for Railways, Electronics & Information Technology, and Information & Broadcasting Shri Ashwini Vaishnaw.

Addressing the gathering, Chief Minister Shri Mohan Charan Majhi noted that global technology leaders such as Intel, Lockheed Martin, and Applied Materials are associated with cutting-edge packaging technologies, and their interest in Odisha reflects the state's growing industrial strength.

The Chief Minister flagged that the products manufactured in the state will support next-generation sectors such as Artificial Intelligence, high-performance computing, defence electronics, telecommunications, and advanced digital systems.

Shri Majhi informed that the company is investing nearly ₹2,000 crore in the project and the facility is expected to produce 70,000 glass panels annually, along with 50 million assembled units and around 13,000 advanced 3DHI modules.

L&T wins order for water & effluent treatment business

Mumbai: The Water & Effluent Treatment (WET) business vertical of Larsen & Toubro (L&T) has won a significant design-build-operate order from Guwahati Metropolitan Drinking Water & Sewerage Board in Assam, for a water management project.

This 24x7 water management project has been conceived to deliver safe and continuous water supply to the households in South-East Guwahati. It will improve the reliability of the city's water system.

The scope includes design, supply, installation, construction, testing and commissioning of barge-mounted intake system, raw water rising main, water treatment plant, reservoirs, booster pumping station and distribution network with household service connections. A fully integrated SCADA system for real-time monitoring and performance management, along with operation and maintenance for five years, is also in L&T's scope. This latest order win further strengthens L&T's business presence in the northeast region.

Tata Chemicals to invest ₹515 crore in new IVSD manufacturing facility in Tamil Nadu

Chennai, Tamil Nadu: Tata Chemicals Limited has announced an investment of ₹515 crore to set up a new greenfield manufacturing facility in Tamil Nadu as part of its capacity expansion and supply chain strengthening strategy. The new facility will be located at Valinokkam in the Ramanathapuram district of Tamil Nadu and will be used for the production of Iodised Vacuum Salt Dried (IVSD).

The plant will have an installed capacity of 210 kilo tonnes per annum. Tata Chemicals is expected to complete the project within 36 months and will fund the investment through internal accruals and or external financing. Currently, Tata Chemicals has an IVSD manufacturing capacity of 1.6 million tonnes per annum at its Mithapur plant in Gujarat. The new greenfield facility in South India is intended to create a second major manufacturing site for IVSD. The new facility is expected to support better distribution, reduce transit time, and improve overall operational efficiency for the company's salt business.

PROJECT UPDATES

DCM Shriram, Teknor Apex forge JV to strengthen positioning in advanced polymer compounds



New Delhi: Shriram Polytech Ltd., a subsidiary of DCM Shriram Ltd., has entered into a Joint Venture (JV) with Teknor Apex B.V., a subsidiary of Teknor Apex Company, a global leader in plastic material science solutions. The JV will operate under the brand name PolyTek.

Through PolyTek, the partnership will leverage India's strategic position to enhance supply chain resilience, improve access to cutting-edge material technologies, and elevate product performance standards across industries. The JV reflects a shared commitment to operational excellence, scale, sustainability, and responsible growth. PolyTek will focus on providing advanced polymer solutions that meet evolving customer needs while aligning with global environmental standards.

Ajay S Shriram, Chairman & Sr Managing Director, DCM Shriram Ltd., said: "This partnership reflects our strategic intent to build future-ready businesses by combining global expertise with strong domestic capabilities. India is at an inflection point in advanced technologies and manufacturing, and through this joint venture, we aim to create a platform that delivers high-performance products and solutions at scale."

Donald Wiseman, Chief Executive Officer of Teknor Apex, added: "Our collaboration combines Shriram Polytech's presence in vinyl materials with Teknor Apex's formulating expertise to deliver high-performance solutions for one of Asia's largest industrial ecosystems. By combining our strengths, we gain immediate access to a well-established local platform, deep market insight, and a strong manufacturing foundation."

BASF starts commercial production of Elastollan® Flame Retardant TPU grade in Shanghai

China: BASF has announced that its Thermoplastic Polyurethane (TPU) plant in Shanghai is qualified to produce Elastollan® Flame Retardant (FR) TPU grade. This milestone builds on the plant's 2023 localization of the Halogen-free Flame-Retardant (FHF) TPU series for customers in Asia Pacific.

With the addition of the FR series, BASF now offers enhanced FR performance designed for more stringent application conditions. With both the FHF and FR series produced locally, BASF provides a comprehensive portfolio of FR TPU solutions to support key cable sectors — including industrial automation, robotic, EV charging — in meeting local compliance requirements and addressing specialized FR needs with greater agility and confidence.

Daikin establishes Daikin Chemical India

Osaka, Japan: Daikin Industries, Ltd. has announced the establishment of Daikin Chemical India Private Limited in Gurugram, Haryana, India. The new company will handle sales, technical support, and marketing for fluorochemical products. Through this initiative, Daikin aims to strengthen its chemical business presence in India and expand its technical support and marketing activities for local customers.

With the establishment of this new company, Daikin will deepen customer engagement and enhance its technical support capabilities in India. With a view to potential local production, the company will closely monitor local demand trends and further strengthen its marketing activities. At the same time, Daikin will also work to establish a stable refrigerant supply framework for its air conditioning business, reinforcing its business foundation in the country.

Daikin's chemical business develops, manufactures, and markets high-performance materials centered on fluorochemical products, supplying essential materials that support industrial development worldwide. By advancing these initiatives in India, Daikin aims to expand its business while contributing to the country's sustainable economic and industrial growth.

Covestro (India) contributes ₹43.24 lakhs for water conservation & waste management in Cuddalore



Jeganathan Kanmani, Cuddalore Site Head, Covestro (India), presenting a demand draft to the district collector

Cuddalore: Covestro (India) has announced the handover of ₹43.24 lakhs to the Cuddalore District Administration for two key community development initiatives aimed at addressing critical environmental and sanitation challenges in the region.

Covestro (India) Cuddalore Site Head, Jeganathan Kanmani, presented a demand draft to the district collector covering two significant projects: ₹23.24 lakhs for the desilting of irrigation tanks across three panchayats, and ₹20 lakhs for obtaining Light Commercial Vehicles (LCV) for solid waste management in Cuddalore district.

The desilting project will rejuvenate irrigation tanks across three panchayats – Alambadi, Thondankurichi, and Parur – benefiting approximately 800 hectares of farmland through improved irrigation facilities. This intervention will enhance water storage capacity, support groundwater recharge, and help mitigate the effects of both floods and droughts, addressing crucial water security challenges faced by farmers in the region.

"These projects directly address two critical needs identified in the Cuddalore community – water security and effective waste management," said Jeganathan Kanmani, Site Head of Covestro (India) Cuddalore.

The Light Commercial Vehicle for solid waste management will benefit approximately 500 households, significantly improving sanitation conditions and environmental hygiene in various areas of Cuddalore district.

HIRECT announces availability of advanced copper conductors for high-power transformers from expanded facility

Nashik: Hind Rectifiers Limited has announced the commercial availability of its new, high-performance copper products - Continuously Transposed Conductors (CTC), Paper Insulated Copper Conductors (PICC), and Enameled Paper Insulated Copper Conductors (EPICC). Manufactured at HIRECT's newly inaugurated state-of-the-art copper processing plant in Sinnar, Nashik, these advanced conductors are engineered specifically to meet the rigorous demands of transformers, traction motors, and other high-power wound components.

These conductors will support key infrastructure segments including power grids, railway rolling stock and catenary power supply systems, and industrial power networks. With this development, the company aims to strengthen its position in the transformer supply chain while expanding its presence in global markets through targeted exports.

HIRECT's new production lines offer industry-leading flexibility in both conductor sizing and insulation layers - Continuously Transposed Conductors (CTC) are optimized for high-efficiency transformers, these can handle anywhere from 5 to 63 strands per conductor. Strand dimensions are highly customizable, ranging from 2.5 mm to 12.0 mm in width and 1.0 mm to 5.0 mm in thickness, with transposition pitches adjustable between 25 mm and 200 mm and the paper insulated lines can cover copper widths up to 20 mm and thickness up to 8 mm. HIRECT's enameling lines can apply four distinct types of coating insulation to suit various thermal and electrical classes. For paper insulation, the advanced machinery can tightly wrap up to 32 layers in a single pass for CTC, and up to 8 layers in a single pass for PICC. Overall insulation thickness can be precisely controlled between 0.25 mm and 5 mm. To maintain optimal manufacturing conditions for consistent quality, the entire CTC production area is housed in a dust-free and air-conditioned environment.

HIRECT's Sinnar facility is ISO 9001:2015 certified and operates extensive in-house testing labs-including dielectric dissipation (Tan Delta), high voltage breakdown, interstrand shorts, proof stress - covering all key tests related to CTC, PICC and Enameled PICC.

PROJECT UPDATES

Fluor awarded contract to engineer and design AFR facility in Texas

Irving, Texas: Fluor Corporation has been selected by America First Refining (AFR) to execute the Front-End Engineering and Design (FEED) for their large-scale refining facility in Brownsville, Texas. The AFR facility is the first new refinery to be constructed in the United States in more than 50 years.

The facility will leverage commercially proven technologies to cleanly and efficiently process American shale oil into gasoline, diesel and jet fuel. Upon completion, the refinery is expected to process more than 60 million barrels per year of domestic crude, supporting domestic energy resilience and cleaner fuel innovation. Pierre Bechelany, Fluor's Business Group President of Energy Solutions, said, "Together, AFR and Fluor bring deep technical expertise and proven project-delivery capabilities, positioning the project for successful execution. This collaboration reflects both companies' commitment to advancing the nation's refining infrastructure."

Union Minister J.P. Nadda meets industry leaders to chart growth roadmap for chemicals & petrochemicals sector



New Delhi: Union Minister of Chemicals & Fertilizers, Shri J.P. Nadda, held a meeting with captains of the Indian Chemicals and Petrochemicals industry at *Kartavya Bhawan*, New Delhi, to deliberate on a strategic roadmap for the sector. The discussions focused on outlining both short-term and long-term measures to accelerate growth and contribute towards the vision of *Viksit Bharat* by 2047. The meeting addressed the ongoing West Asian crisis, with emphasis on enhancing sectoral resilience and developing alternative supply chains to mitigate external risks. Strategies to strengthen India's

position in the global chemicals and petrochemicals value chain was also discussed during the interaction. Shri J P Nadda expressed confidence in the industry's potential and reiterated the Government's commitment to ensuring a level playing field for achieving the goal of *Atmanirbhar Bharat*. He indicated that appropriate trade remedial measures would be considered to address unfair trade practices.

Shri Tejveer Singh, Secretary, Department of Chemicals & Petrochemicals and senior officers from the Department were present in the meeting. Around 25 CEOs, Chairpersons, and industry leaders, representing diverse sub-sectors such as petrochemicals, polymers, specialty chemicals, chlor-alkali, agrochemicals, dyes and pigments, and organic and inorganic chemicals participated in the deliberations.

Prominent industry leaders from UPL Group, Deepak Group, DCM Shriram, Jubilant Group, SRF Ltd., Atul Ltd., Thirumalai Chemicals Ltd., Reliance Industries Ltd., Aarti Industries Ltd., HPCL-Mittal Energy Ltd., Indian Oil Corporation Ltd., Haldia Petrochemicals Ltd., Tata Chemicals, Sanmar Group, ONGC Petro-additions Ltd., Bharat Petroleum Corporation Limited, and GAIL (India) Ltd participated.

The Chemical and Petrochemicals sector plays a pivotal role in the Indian economy, serving as a backbone for multiple downstream industries including agriculture, pharmaceuticals, nutraceuticals, automobiles, construction, semiconductors, and electronics. Currently valued at approximately USD 220 billion, the sector aims to scale up to USD 1 trillion by 2040 and further to over USD 1.5 trillion by 2047. ■



Shri Sanjay Khanna appointed as CMD of BPCL

Bharat Petroleum Corporation Limited (BPCL), has announced that the Appointments Committee of the Cabinet has approved the appointment of Shri Sanjay Khanna, currently Director (Refineries), as the Chairman & Managing Director (C&MD) of the company. Shri Khanna will assume charge, effective from the date of assumption of office, and will hold the position till his superannuation on May 31, 2029, or until further orders. Shri Sanjay Khanna is a seasoned industry leader with over three decades of experience in refinery operations and technical services. A Chemical Engineering graduate from National Institute of Technology Tiruchirappalli and a postgraduate in Finance Management from University of Mumbai, Shri Khanna has played a pivotal role in strengthening BPCL's refining and petrochemical capabilities. ■

Jochen Grundmann is new Managing Director of Röhm GmbH

Jochen Grundmann has been appointed as new Managing Director of Röhm GmbH, alongside CEO Gerhard Glanz and COO/CTO Martin Kaufmann. Before joining Röhm, Grundmann held senior positions including member of the executive management team at Bauer Maschinen GmbH, CEO of BAUER Equipment America, and earlier roles at the tooling specialist MAPAL. The mechanical engineering graduate and MBA (General Management) is regarded as a proven sales expert with deep expertise in process engineering, engineering, value stream analysis, and business development. The new Managing Director will emphasize international perspectives and clear market and customer orientation. ■



Shri Subhankar Sen, Director (Marketing), takes over additional charge as Director (HR) of BPCL

Bharat Petroleum Corporation Limited (BPCL), has announced that Shri Subhankar Sen, Director (Marketing), has taken over the additional charge of Director (Human Resources) of the company. Shri Subhankar Sen is a graduate of the University of Calcutta and holds a Post Graduate Diploma in Executive Management from S. P. Jain Institute of Management & Research, Mumbai. With over three decades of rich and diverse experience at BPCL, he has led and contributed across key marketing verticals including Retail, LPG, Lubricants, Aviation, Industrial & Commercial, Gas, and Consumer Retailing. ■



Hind Rectifiers appoints Chidambaram Balakrishnan as Chief Global Growth Officer

Hind Rectifiers Limited, has announced the appointment of Chidambaram Balakrishnan as Chief Global Growth Officer of the company. In his new role, Chidambaram will lead Hirect's global growth initiatives, with a focus on expanding the company's global footprint, strengthening strategic partnerships, and identifying new opportunities for business growth across key global markets. He will play a pivotal role in shaping the company's global growth strategy and driving long-term value creation. Balakrishnan brings with him over three decades of rich and diverse experience in global business development, strategic partnerships, market expansion, and revenue growth across multiple geographies. Over the course of his career, he has held several leadership positions, including Managing Director at Caterpillar Rail and Regional Director (South Asia) at GE Transportation. ■

Shri Tejveer Singh assumes charge as Secretary, Department of Chemicals and Petrochemicals

Shri Tejveer Singh has assumed charge as Secretary, Department of Chemicals and Petrochemicals (DCPC), Ministry of Chemicals and Fertilizers. Prior to his appointment as Secretary, DCPC, Shri Singh was serving as Additional Chief Secretary, Department of Technical Education and Industrial Training, Government of Punjab.

Shri Singh, a 1994-batch IAS officer from Punjab Cadre, has an extensive administrative career.

He has held several key assignments in the Government of Punjab, including Principal Secretary to the Chief Minister and Secretary to the Chief Minister. He has also served as District Magistrate in various districts. ■



Ketjen announces new CEO to lead next growth phase

Ketjen Corporation, a leader in catalyst and specialty chemicals innovation, has announced that André Lanning has been appointed Chief Executive Officer, succeeding retiring CEO Michael J. Simmons. As CEO of Ketjen, Lanning will focus on accelerating Ketjen's strategic priorities, driving continued operational excellence and delivering industry-leading solutions, service and quality to customers worldwide. Lanning is an experienced industry leader with 35 years of senior management experience in the chemicals industry, including 10 years in refining catalysts. Most recently, he served as CEO of TFL Ledertechnik, a global leader in leather chemicals. ■

Cabinet approves NBS rates for Kharif Season, 2026 on Phosphatic and Potassic fertilizers

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has approved proposal of the Department of Fertilizers for fixing the Nutrient Based Subsidy (NBS) rates for Kharif season, 2026 (from 01.04.2026 to 30.09.2026) on Phosphatic and Potassic (P&K) fertilizers. The tentative budgetary requirement for Kharif season 2026 would be approximately ₹41,533.81 crore. This is approximate ₹4,317 crore more than the budgetary requirement for Kharif 2025 season. The budget for Kharif 2025 was ₹37,216.15 crore.

This proposal aims to make fertilizers available to farmers at subsidized, affordable and reasonable prices.

Government is making available 28 grades of P&K fertilizers including DAP to farmers at subsidized prices through fertilizer manufacturers/importers. The subsidy on P&K fertilizers is governed by NBS Scheme w.e.f. 01.04.2010. In view of the recent trends in the international prices of fertilizers and inputs like Urea, DAP, MOP and Sulphur, Government has decided to approve the NBS rates for Kharif 2026 effective from 01.04.2026 to 30.09.2026 on Phosphatic and Potassic (P&K) fertilisers including DAP and NPKS grades.

BPCL introduces MAK ADJOL AGRI UNIVERSAL to enhance crop protection and sustainable farm productivity

Mumbai: Bharat Petroleum Corporation Limited (BPCL), a Fortune Global 500 company and a Maharatna PSU, has introduced MAK ADJOL AGRI UNIVERSAL, an advanced agricultural adjuvant spray oil designed to improve spray performance, optimize pesticide use, and support sustainable farming practices across range to crops and fruits.

At a time when Indian agriculture is navigating rising food demand, climate variability, and increasing sustainability expectations, efficient crop protection has become critical. Studies indicate that nearly 30–70 per cent of sprayed inputs are lost due to drift, runoff, evaporation, and inadequate leaf coverage — leading to higher costs, inconsistent pest control, and environmental concerns.

MAK ADJOL AGRI UNIVERSAL addresses these challenges by acting as a performance enhancer within Integrated Pest Management (IPM) systems. Developed using patented technology, it improves wetting, spreading, adhesion, penetration, and rainfastness, thereby maximizing the effectiveness of applied agrochemicals without increasing chemical dosage.

The product has undergone extensive field validation across diverse crops and agro-climatic zones in collaboration with leading agriculture institutions. Results demonstrate enhanced spray efficiency, improved pest control efficacy, and zero phytotoxicity, delivering tangible benefits for example but not limited:

- **Banana:** ~36 per cent yield improvement; ~68 per cent reduction in leaf spot disease
- **Tea:** Up to 20 per cent yield increase; ~30 per cent improvement in pesticide efficacy
- **Citrus (Orange):** Up to 20 per cent improved efficacy against psylla; ~10 per cent against aphids
- **Cotton:** ~10 per cent yield improvement and efficacy enhancement
- **Cardamom:** ~20 per cent reduction in pesticide usage; ~30 per cent savings in water consumption

MAK ADJOL AGRI UNIVERSAL is biodegradable, non-phytotoxic, and safe for beneficial organisms, aligning with sustainable agriculture goals while preserving ecological balance. The product is suitable for organic farming and NSF certified, reinforcing its quality and safety standards.

As agriculture increasingly shifts toward precision and efficiency, MAK ADJOL AGRI UNIVERSAL offers a smarter, sustainability-driven solution —delivering better outcomes with optimized inputs and reduced environmental impact. The recommended dosage ranges from 0.25 per cent to 1 per cent, depending on crop type and application requirements. ■

CHEMTECH LEADERSHIP & EXCELLENCE AWARDS 2026

Chemtech Leadership and Excellence Awards are conferred to esteemed leaders for their excellence and exceptional contribution in their respective fields. Over the last few decades, it has built an elite group of Chemtech award recipients who have graced the industries with their work. The winners of Chemtech Leadership & Excellence Awards 2026 are:



- **Dr. Purnendu Chatterjee, Chairman & Founder, The Chatterjee Group (TCG)**
HALL OF FAME AWARD
- **Mr. Deepak C. Mehta, Chairman & Managing Director, Deepak Nitrite Limited**
LIFETIME ACHIEVEMENT AWARD
- **Mr. Ashwin Shroff, Executive Chairman, Excel Industries Limited**
BUSINESS LEADER OF THE YEAR SPECIALTY CHEMICALS
- **Ms. Vartika Shukla, Chairman & Managing Director, Engineers India Ltd**
WOMEN ACHIEVER OF THE YEAR AWARD
- **Mr. Hital Meswani, Executive Director, Reliance Industries Limited**
BUSINESS LEADER OF THE YEAR - REFINING & PETROCHEMICALS

- **Mr. B. S. Rajpurohit, Chairman Emeritus, Chemical Process Piping Private Limited**
BUSINESS LEADER OF THE YEAR - MSME
- **Dr. Ashish Lele, Director, CSIR- National Chemical Laboratory**
OUTSTANDING ACHIEVEMENT - RESEARCH & INNOVATION
- **Mr. Davendra Kumar, Managing Director - India, Technip Energies**
BUSINESS LEADER OF THE YEAR - ENGINEERING SERVICES
- **Bharat Heavy Electricals Limited**
BUSINESS LEADER OF THE YEAR - PLANT & MACHINERY
- **PI Industries Limited**
BUSINESS LEADER OF THE YEAR - ESG
- **Padcare**
OUTSTANDING ACHIEVEMENT - START-UP

DR. PURNENDU CHATTERJEE, CHAIRMAN & FOUNDER, THE CHATTERJEE GROUP

HALL OF FAME



Dr. R. A. Mashelkar, FRS, Former Director General, CSIR, & Jury Chairman, Chemtech Leadership & Excellence Awards 2026, presenting the Hall of Fame award to Dr. Purnendu Chatterjee, Chairman & Founder, The Chatterjee Group (TCG).

Dr. Purnendu Chatterjee, a visionary who transitioned from a celebrated career as a global management consultant to an industrialist driven by a singular conviction: that real impact comes from ownership and long-term commitment. He founded The Chatterjee Group (TCG) to build Indian institutions that compete globally and serve the nation's long-term development. Motivated by a love for his home state of West Bengal and a promise made to his mother to contribute to the region's growth, Dr. Chatterjee revived Haldia Petrochemicals (HPL) by restoring confidence, empowering people, and anchoring the organization in operational discipline. Similarly, under his guidance, MCPI transformed from a stressed asset into a resilient, forward-integrated polyester player, proving that an Indian workforce could operate complex global assets to world-class standards.

MR. DEEPAK C. MEHTA, CHAIRMAN & MANAGING DIRECTOR, DEEPAK NITRITE LTD

LIFETIME ACHIEVEMENT AWARD

Mr. Deepak C. Mehta has led Deepak Nitrite for over four decades, guiding its expansion from a trusted domestic manufacturer into a diversified global conglomerate. He was the architect of Deepak Phenolics, a landmark initiative that successfully substituted massive imports of Phenol and Acetone, securing the feedstock for India's pharmaceutical and agrochemical sectors. Continuing this legacy of self-reliance, he is now spearheading India's first fully integrated Polycarbonate project, a massive ₹5,000 crore investment that promises to reduce the nation's dependence on imported engineering plastics.

In recognition of his pioneering role in building national assets, his foresight in material innovation, and his lifelong dedication to "Make in India," the Chemtech Foundation bestowed the CHEMTECH Leadership & Excellence Award 2026 for Lifetime Achievement, upon Mr. Deepak C. Mehta.



Dr. R. A. Mashelkar, FRS, Former Director General, CSIR, & Jury Chairman, Chemtech Leadership & Excellence Awards 2026, presenting the Lifetime Achievement award to Mr. Deepak C. Mehta, Chairman & Managing Director, Deepak Nitrite Limited.

MR. ASHWIN SHROFF, EXECUTIVE CHAIRMAN, EXCEL INDUSTRIES LIMITED
BUSINESS LEADER OF THE YEAR - SPECIALTY CHEMICALS



Dr. R. A. Mashelkar, FRS, Former Director General, CSIR, & Jury Chairman, Chemtech Leadership & Excellence Awards 2026, presenting the Business Leader of the Year - Specialty Chemicals award to Mr. Ashwin Shroff, Executive Chairman, Excel Industries Limited.

Mr. Ashwin Shroff represents a rare bridge between India's industrial history and its sustainable future. Having joined Excel Industries in 1965, his journey of six decades is deeply rooted in the 'Swadeshi' spirit instilled by the founders in 1941: a belief that Indian industry must serve a 'purpose beyond profit' and act as a trustee for society. Under his guidance, Excel has transformed raw materials once considered abundant into value-added solutions, becoming a pioneer exporter of chemicals from India. His leadership style is best captured by the description given by a senior colleague: "Kum Bolo, Dhima Bolo, Mitha Bolo" (Speak less, speak softly, speak sweetly). In recognition of a lifetime dedicated to indigenous science, sustainable agriculture, and ethical leadership, the Chemtech Foundation conferred the CHEMTECH Leadership & Excellence Awards 2026 - Business Leader of the Year: Specialty Chemicals, upon Mr. Ashwin Shroff.

DR. ASHISH LELE, DIRECTOR, CSIR - NATIONAL CHEMICAL LABORATORY (NCL)
OUTSTANDING ACHIEVEMENT - RESEARCH & INNOVATION

Since taking charge as Director, Dr. Ashish Lele has steered CSIR-NCL with a singular focus: bridging the "Valley of Death" that often separates laboratory science from industrial reality. Recognizing that industry needs technologies at Technology Readiness Levels 8-9, not just early-stage research, he operationalized the NCL Roadmap 2030, anchoring the institute's work in seven themes of national priority, including clean energy, circular economy, and sustainable chemicals. Under his leadership, NCL's fuel cell technology, licensed to KPIT, has been deployed in India's first fuel cell bus and the fuel cell catamaran now ferrying passengers in Varanasi. Similarly, addressing India's energy security, he has championed Dimethyl Ether (DME) as a clean substitute for LPG and diesel. NCL has not only developed this "world-beating technology" but scaled it to a pilot plant, successfully demonstrating its use in cooking stoves and autorickshaws.



Dr. R. A. Mashelkar, FRS, Former Director General, CSIR, & Jury Chairman, Chemtech Leadership & Excellence Awards 2026, presenting the Outstanding Achievement - Research & Innovation award to Dr. Ashish Lele, Director, CSIR - National Chemical Laboratory.

WATER MANAGEMENT

The River Basin Management Scheme: Strengthening Water Governance

Water is one of the most critical natural resources, supporting ecosystems, livelihoods, and economic development. It plays a central role in agriculture, industry, energy generation, and overall human well-being. As societies continue to rely on water for multiple purposes, the need for efficient and coordinated use of water has become increasingly important.



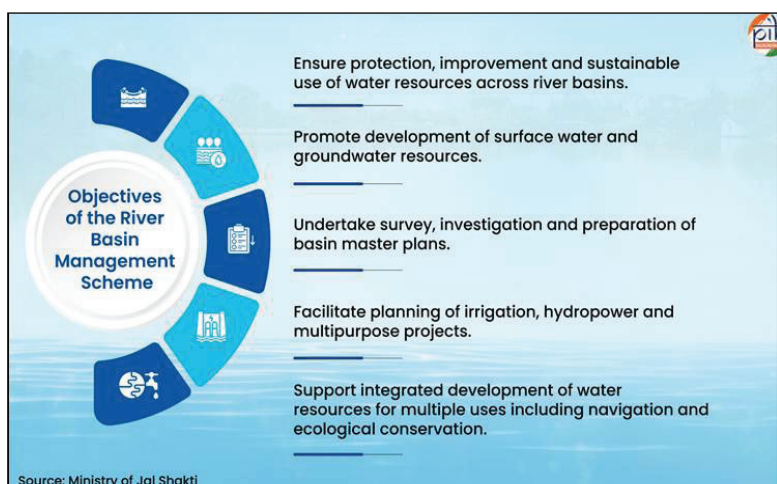
River Basin Management (RBM) is a comprehensive scheme for the management, protection, improvement, and sustainable use of water resources across river basins. These resources include rivers, lakes, streams, groundwater, and associated ecosystems. The approach emphasizes integrated planning and development of water resources to ensure optimal utilization. In India, where river systems are complex and interlinked, basin-level planning has become essential for addressing challenges such as floods, erosion, uneven water distribution, & ecological degradation. Recognizing these challenges, the River Basin Management (RBM) Scheme is being implemented in a structured and scientific manner.

Overview

RBM is a central sector scheme of the Department of Water Resources, River Development, and Ganga Rejuvenation under the Ministry of Jal Shakti. The scheme aims to facilitate integrated planning, investigation, and development of water resources at the river basin level, including both surface water and groundwater systems. It is implemented through three key organisations—namely, the Brahmaputra Board, the Central Water Commission (CWC), and the National Water Development Agency (NWDA) — and supports activities such as the preparation of basin master plans, the survey and investigation of projects, and the planning of multipurpose projects.

Geographical Scope and Priority Areas

The RBM scheme primarily focuses on strategically important and water-rich but underdeveloped regions, particularly North Eastern Region river basins, Indus Basin in Jammu & Kashmir / Ladakh and key basins such as Brahmaputra, Barak, Teesta, and Indus. These basins are prioritised due to



STRATEGIC IMPORTANCE OF RBM

- National water security
- Cross-border river management
- Flood-prone regions of the North East
- Hydropower potential in Himalayan rivers

Source- Ministry of Jal Shakti



irrigation, hydropower, and flood management. These objectives guide the overall planning & implementation of the scheme.

Development Gains

The River Basin Management (RBM) Scheme has led to measurable improvements in water resource planning and infrastructure development across key river basins. These outcomes reflect the scheme's contribution to sustainable water management and regional socio-economic development.

Conclusion

The River Basin Management framework represents an important step toward strengthening India's capacity to manage its river systems in a coordinated and forward-looking manner. By promoting scientific assessments, infrastructure readiness, and institutional collaboration, the initiative has laid the groundwork for more resilient water systems across strategically important regions. Its continued

Outcomes of RBM

- Improved irrigation infrastructure.
- Increased hydropower generation.
- Better flood and erosion control along with infrastructure development.
- Sustainable water resource management.
- Socio-economic upliftment of regions, especially in the North East and Himalayan areas.

Source: Ministry of Jal Shakti



their importance in National water security, Cross-border water management, Flood control and erosion management and ecological stability. The scheme also addresses capacity gaps in states such as Jammu & Kashmir, Sikkim, Mizoram, Manipur, and Nagaland, which require central support for project planning and development.

Objectives of the Scheme

The River Basin Management Scheme is designed to address the diverse challenges associated with water resource planning and development at the basin level. The objective of the scheme is to focus on promoting sustainable use of water while supporting

implementation will play a vital role in addressing emerging challenges such as climate variability, population growth, and increasing demand for water across sectors. At the same time, sustained technical support and targeted investments will help vulnerable and remote regions build stronger systems for flood protection, water storage, and resource utilization. In the long run, the success of River Basin Management will depend not only on physical infrastructure but also on sustained coordination among institutions, adoption of modern technologies, and community participation. Together, these efforts contribute to improved water security, greater regional stability, and more balanced socio-economic growth across the country. ■

NUCLEAR ENERGY

Kirloskar Brothers Limited Powers India's Nuclear Milestone: Kalpakkam Fast Breeder Reactor Achieves Criticality

India marks a historic milestone in its nuclear energy journey as the Kalpakkam Fast Breeder Reactor (FBR) successfully attains criticality, an essential step in the nation's ambitious three-stage nuclear power program. This achievement reinforces India's commitment to sustainable and self-reliant energy.

At the heart of this breakthrough lies the contribution of Kirloskar Brothers Limited (KBL). The company has engineered and supplied primary and secondary heat transport pumps, critical components, and the only

Bharat and reflects KBL's century-long legacy of engineering excellence and nation-building.

In addition to these high-performance reactor pumps, KBL has also supplied Concrete Volute Circulating Water Pumps for this nuclear power plant. Developed using advanced seismic and Computational Fluid Dynamics (CFD) techniques, these pumps are uniquely designed to integrate seamlessly with the KBL-engineered compact intake system, ensuring efficient and reliable water management. Each of these pumps delivers 9,500

litres per second of seawater, and their reliability has eliminated the need for a standby pump. This is the first time in the world that such pumps have been used for circulating water application for a fast breeder nuclear reactor.

Further strengthening the plant's safety infrastructure, KBL has implemented a comprehensive firefighting system, safeguarding critical operations and enhancing overall plant resilience.

KBL's association with the nation's nuclear programme spans over four decades, during which it has consistently delivered critical pumping solutions across key facilities. This landmark accomplishment would not have been possible without the

dedicated efforts of Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI), Department of Atomic Energy (DAE), Nuclear Power Corporation of India Limited (NPCIL), and all stakeholders involved. ■



rotating equipment within the reactor system. These pumps, each weighing approximately 135 tonnes, are constructed using exotic materials to withstand extreme operating conditions. They are designed to handle liquid sodium at temperatures exceeding 500°C.

KBL stands among a select group of just four companies globally with the capability to design and manufacture such advanced nuclear-grade pumping systems. This achievement underscores the spirit of Atmanirbhar

National Academy of Agricultural Sciences Organizes a Brainstorming Session to Develop a Roadmap for Achieving *Atmanirbharta* in Fertilizers



Dr. M. L. Jat, Secretary, Department of Agriculture Research and Education, during the brainstorming session.

The National Academy of Agricultural Sciences (NAAS) recently organized a Brainstorming session (BSS) to develop a roadmap for achieving *Atmanirbharta* (self-reliance) in fertilizers. Representatives from concerned Government departments, academia, fertilizer industry and farmers participated in the discussions, and opined unequivocally the necessity of *Atmanirbharta* in this critical sector.

After the session, Secretary, Department of Agriculture Research and Education under Ministry of Agriculture and Farmers Welfare and DG, Indian Council of Agriculture Research and President, NAAS, Dr. M. L. Jat, addressed a press conference. In his address, he said that India has set a target of achieving *Atmanirbharta* by 2047, and the agricultural sector will play a pivotal role in this journey. While fertilizers were instrumental during the green revolution in boosting production, the current challenge lies in declining fertilizer use efficiency and their indiscriminate application.

Dr. Jat further added that with the country consuming nearly 33 million tonnes of fertilizers annually, a significant share of which is imported, reducing import dependency has become imperative. He said addressing this issue requires a comprehensive approach spanning short-term, medium-term, and long-term strategies. He said that the strengthening initiatives like the soil health, promoting balanced and need-based fertilizer application, and enhancing awareness among farmers are important steps in this direction.

Dr. Jat informed that we must leverage modern technologies such as precision nutrient management, artificial intelligence, and sensor-based systems to optimize fertilizer use. Crop diversification towards pulses and oilseeds, recycling organic waste under the waste-to-wealth initiative, and increasing the use of biological sources will further contribute to reducing dependence on chemical fertilizers, he added.

Speaking about the brainstorming session, he informed that it was advised by the participants to adopt a

multi-pronged strategy with short, medium and long-term R&D goals, and enabling policies to achieve the same. The roadmap should emphasize strengthening fertilizer research for development of smart alternate fertilizers, utilization of unexploited indigenous minerals (glauconite, phosphate rocks, mica, polyhalite) and industrial by-products, increased use of biologicals, exploiting the potential of soil microbiome, improved composting techniques, crop breeding for enhanced NUE, good agricultural practices (GAP) involving precision nutrient management integrating fertilizers and organics, soil health restoration, crop diversification and residue recycling.

Mission Mode Program

It was also emphasized that there is need to launch a Mission Mode Program to promote Integrated Nutrient Supply and Management (INSAM). The goal of proposed mission would be to replace at least 25 per cent of current mineral fertilizer use with organic manures in the next 3 years. An aggressive round-the-year technology transfer using digital tools such as AI platform Bharat VISTAAR would help largescale adoption of the proven technologies. Weak extension lays greater emphasis on increasing fertilizer use and not on its efficient use.

The representatives reached a consensus that a paradigm shift is needed in the current fertilizer policies, especially bringing urea in the ambit of nutrient-based subsidy, repurposing fertilizer subsidy as an incentive for adoption of GAP, linking subsidies with soil health card, and exploring the possibility to disbursing subsidy to the farmers as direct cash transfer. Availability of cheap urea is a principal disincentive to make its efficient use or to stop making its over-use. Proportionally underuse than recommended of more expensive fertilizer P and K provokes their deficiencies in soil and crops.

Overview

Fertilizers have been central to India's agricultural transformation since the Green Revolution, significantly increasing food grain production and ensuring national food security.

However, the sector remains heavily import-dependent, especially for phosphorus and potassium, leading to high foreign exchange outflows and a substantial subsidy burden, which reached nearly ₹1.71 lakh crore in 2024–25. Inefficient and imbalanced fertilizer use

Key Highlights

- Agricultural sector will play a pivotal role in the journey towards *Atmanirbhar Bharat* by 2047: Dr. M. L. Jat, Secretary, DARE
- Reducing fertilizer import dependence is imperative; strengthening soil health, balanced use, and farmer awareness key to sustainable agriculture: Dr. Jat

further constrains productivity, as crops utilize only a fraction of applied nutrients — about 30–50 per cent of nitrogen, 15–25 per cent of phosphorus, and 50–60 per cent of potassium—while the remainder is lost through leaching, runoff, volatilization, or soil fixation. This low nutrient-use efficiency (NUE) increases production costs, escalates subsidies, and contributes to soil and water degradation.

Total fertilizer ($N+P_2O_5+K_2O$) consumption reached 32.93 million tonnes in 2024–25, with a fertilizer use intensity of 151 kg/ha. Around 80 per cent of natural gas used in urea production is imported, further underlining dependence on imports even in domestically produced fertilizers. The recent development in the west Asia should not be taken as a short-term supply chain crisis with respect to fertilizers and raw materials. But, it is a wake-up call to rethink and realign our policies and R&D priorities towards self-reliance. ■

Veolia Celebrates 25 years at Hoskote in Bangalore



Veolia celebrated a landmark moment in its India journey on 1st April with the inauguration of its new Customer Experience Center at the company's Hoskote plant in Bangalore, a world-class hub for membrane manufacturing, specialty chemicals and advanced water technologies. The event also marked the 25th anniversary of the Hoskote manufacturing and technology facility and the launch of a solar panel decarbonization initiative – underscoring Veolia's long-term commitment to India as a global hub for water technology, innovation, and sustainable operations.

Anne Le Guennec, CEO of Veolia's water technologies activities, said, "India holds a unique place in Veolia's global strategy, not only as a dynamic market, but as a true center of excellence for engineering, digital innovation and manufacturing. Today's milestones at Hoskote reflect 25 years of dedication, talent and ambition, in line with our GreenUp strategic program. Water is at the heart of environmental security, and as India faces growing water challenges, we are committed to delivering the technologies and solutions that will

help cities and industries become more resilient, more efficient and more sustainable."

The Hoskote plant: A Quarter Century of Innovation

Established in 2001, the Hoskote plant has evolved into a world-class hub for membrane manufacturing, specialty chemicals and technology development, exporting to more than 20 countries. Its co-located Technology Center stands as a unique asset for global innovation, having generated over 100 patents.

As part of Veolia's GreenUp strategy and its broader commitment to ecological transformation, the Hoskote plant has also inaugurated a new solar panel installation, marking a significant step in its decarbonization journey. The installation is expected to avoid more than 600 tonnes of CO₂ equivalent per year, a tangible demonstration of Veolia's determination to reduce the carbon footprint of its own operations while guiding customers towards the same goal: transforming sustainability pledges into measurable results.



Inauguration of Veolia Customer Experience Center

The newly inaugurated Customer Experience Center at Hoskote will serve as a hub for collaboration, knowledge exchange and joint innovation with customers across South Asia and beyond. The center brings together an interactive technology showcase spotlighting Veolia's smart water solutions with live demonstrations of remote monitoring, data analytics and digital systems.

Visitors can engage directly with industry experts, explore service and support capabilities — from onsite engineering to remote inspection, auditing and operator training — and experience firsthand the innovations

that are shaping the future of water management. A dedicated training facility accommodating up to 50 participants further cements the center's role as a place for learning and capability-building.

Veolia in India: A Track Record of Excellence in Water Technologies

As the largest industrial water company in South Asia, Veolia has delivered more than 500 projects for municipalities and industries across the region, spanning drinking water, sewage treatment and zero liquid discharge (ZLD). Recent municipal contracts in Mumbai — including the Bandra wastewater treatment project, one of India's largest greenfield sewage treatment plants using advanced membrane bioreactor technology, and the Bhandup drinking water plant upgrade integrating smart clarifier technology and real-time monitoring — demonstrate Veolia's growing footprint in India's urban water infrastructure.

Irshaad Hakim, Executive Vice President of Veolia's Water Technologies Activities in Asia Pacific, said, "South Asia faces a pivotal moment in its pursuit of water security. The magnitude of the challenge, from declining groundwater to undertreated municipal wastewater, demands bold, scalable solutions. Our goal is clear: to deliver performance and sustainability while supporting safe, healthy communities across the region." ■

Key Milestones

- **25 years of innovation at Hoskote:** Veolia celebrates a quarter century of manufacturing, technology development and global exports from its flagship plant near Bangalore, now a world-class hub for membrane manufacturing, specialty chemicals and advanced water technologies, exporting to more than 20 countries and supported by a Technology Center with over 100 patents.
- **A new benchmark for customer engagement:** Inauguration of the Veolia Customer Experience Center, a hub for collaboration, digital innovation and co-creation with customers across South Asia.
- **Committed to a greener future:** Launch of a solar panel installation at Hoskote, reflecting Veolia's GreenUp strategy and its mission to decarbonize its own operations.

Hydraulic Intelligence: The Next Frontier of Sustainable Industrialism



Dr. Kamlesh Fondekar

Head - R&D
Godrej Agrovet Limited

*Water has traditionally been treated as a utility in chemical manufacturing. It enters the system, supports reaction and separation, and exits as effluent to be treated before discharge. This linear model - use, treat, dispose - has shaped plant design for decades. That model is now under strain, emphasizes **Dr. Kamlesh Fondekar, Head - R&D, Godrej Agrovet Limited.***

Water availability is becoming less predictable across several industrial regions. At the same time, discharge norms are tightening, and the cost of compliance is rising. In this context, the question is no longer limited to how efficiently water can be treated after use. It is increasingly about how dependence on fresh water can be reduced within the process itself.

This is where the idea of hydraulic intelligence begins to take shape. India already has one of the world's largest water and wastewater treatment markets, valued at around \$11 billion and expected to cross \$18 billion in the near term¹, reflecting the scale at which water reuse and recovery are becoming embedded in industrial systems.

From Disposal to Recovery

The first shift is conceptual. Wastewater is no longer viewed only as a liability. It is being examined as a

recoverable stream. Industrial effluent contains not just contaminants, but also residual heat, dissolved salts, and in some cases, reusable process inputs. Treating it purely for safe discharge overlooks this embedded value. Recovery-focused systems attempt to retain and reintroduce usable fractions back into the process. This changes how treatment is positioned. Instead of being an end-of-pipe requirement, it becomes a part of the process loop.

Technologies such as Zero Liquid Discharge (ZLD) and closed-loop recycling systems have accelerated this transition. This shift is also visible in investment patterns, with cumulative spending on water and wastewater infrastructure in India projected at over \$120 billion between 2022 and 2030², much of it directed toward reuse and advanced treatment systems. ZLD systems, in particular, aim to eliminate liquid discharge altogether by combining membrane separation, evaporation, and crystallization. Though energy-intensive, they offer a pathway to near-

complete water recovery in operations where discharge is no longer viable. Closed-loop systems operate on a similar principle, though with greater flexibility. Water is treated and recirculated within defined sections of the plant, reducing dependency on external sources. The challenge lies in integration. Retrofitting these systems into existing plants requires careful balancing of energy use, recovery efficiency, and process compatibility.

Operational Risks and Economics of Reuse

In water-stressed regions, water availability is no longer a background condition. Public investment is also scaling accordingly. In 2024 alone³, India added hundreds of millions of liters per day of sewage treatment capacity under national programs, underscoring how water management is now tied to infrastructure expansion and industrial reliability. Production schedules, plant capacity, and regulatory approvals are increasingly influenced by access to water. Interruptions in supply, whether seasonal or structural, can affect continuity. For industries with continuous processes, even short disruptions carry disproportionate cost. Circular water systems reduce this exposure.

Water reuse systems are often evaluated against their capital and energy requirements. ZLD, for example, involves significant investment and operating costs. However, this assessment changes when viewed over time. Reduced freshwater intake lowers procurement costs. Lower discharge volumes reduce treatment and compliance expenses. There is also less visible cost and regulatory uncertainty. Plants that depend heavily on freshwater withdrawals are more exposed to changes in policy and allocation. Systems that recycle water internally are less affected by these shifts. The economics, therefore, are not static. They evolve with regulation, resource availability, and scale.

Integrating Hydraulic Thinking into Process Design

Circular water management cannot be added as a standalone system. It requires alignment with process design. Reaction pathways, separation strategies, and material balances all influence how water moves through the plant. Cleaner reactions reduce

contamination load. Efficient separations reduce the need for repeated washing. Process intensification reduces intermediate handling. When these elements are considered together, water use begins to decline at source rather than being corrected downstream. This is where hydraulic intelligence differs from conventional treatment. It is not limited to recovering water. It is about designing processes that require less of it.

A Shift in How Water is Valued

Water is moving from being a low-cost input to a managed resource. This shift is gradual, but it is already visible in how projects are evaluated and approved. In many cases, circular water systems are no longer driven only by environmental mandates. They are being considered as part of risk management and long-term planning. Resource security, compliance stability, and operational continuity are now linked. This changes the role of water within industrial systems. It is no longer peripheral. The transition from linear to circular water use is not uniform across the industry. It depends on sector, location, and process complexity. Not all systems can be closed entirely, and not all recovery pathways are viable at scale.

Even so, the direction is clear. Water is becoming a constraint that must be designed around. Technologies such as ZLD and closed-loop recycling provide part of the answer. The larger shift lies in how processes themselves are structured. Hydraulic intelligence, in this sense, is not a single solution. It is a way of thinking about water within industrial systems — where use, recovery, and reuse are treated as part of the same equation. ■

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Designing Water-Efficient Processes in Specialty Chemicals



Vishal Sharma

ED & CEO

Godrej Industries Ltd (Chemicals)

Water is present in almost every stage of chemical manufacturing. It is used in reactions, in washing, in separation, and often in ways that are not fully tracked. In many plants, its use is assumed rather than designed. That assumption is getting harder to sustain, opines Vishal Sharma, ED & CEO, Godrej Industries Ltd (Chemicals).

Government assessments show India's per capita water availability is around 1,500 cubic meters¹, already within the 'water-stressed' category, and continuing to decline with rising demand. We support nearly 18 per cent of the global population² but get access to only about 4 per cent of freshwater resources, placing sustained pressure on industrial water use.

Availability is uneven. Discharge limits are stricter. In some locations, the cost of treating water now rivals the cost of certain raw materials. For specialty chemicals, where processes are already multi-step and tightly controlled, this introduces a different kind of pressure. Reducing water use is no longer only a utilities issue. It is becoming a process design question.

Where does the Water Actually Go?

A large part of water consumption does not sit inside

the reaction itself. It appears in between steps - Washing intermediates, Removing impurities and Neutralizing streams. Each stage adds volume.

In older process routes, this is built-in. Dilution is used to manage reactions. Separation is handled later. That structure carries forward, even when conditions change. Reworking these pathways is not straightforward. It requires looking at how each step connects to the next, and whether some of those steps can be reduced or removed.

Process intensification is often discussed in terms of efficiency. In practice, it shows up as fewer stages and less handling. When conversions are higher, there is less need to isolate and clean intermediates. That directly affects water use - Fewer wash cycles, Smaller volumes and Less material to treat at the end. Some processes are now being redesigned to avoid dilution altogether. Reaction conditions are kept tighter. Inputs

are controlled more precisely. This reduces the need to correct the system later with additional water. The gains are not always dramatic in one place. They build across the process.

Solvent Choices and their Knock-on Effect

Water use is closely linked to solvent use. Organic solvents often require removal, and that removal usually involves washing or phase separation. Reducing solvent dependency changes this pattern. In some cases, reactions are carried out without a bulk solvent. This is not universal, but it is being applied where control can be maintained.

Aqueous systems present a different route. Running reactions in water avoids certain solvent steps, but introduces its own constraints. Solubility, reaction rate, and separation all behave differently. This has limited adoption in the past. Recent work in catalyst systems and reaction control is making these routes more practical. The trade-offs remain, but they are easier to manage than before.

Yield and Water do not Move Independently

Lower water use cannot come at the cost of yield. In specialty chemicals, losses are not easily absorbed. A small drop in conversion can affect both cost and consistency. This is where selectivity becomes important. Cleaner reactions generate fewer side products. Fewer side products mean fewer correction steps. That reduces washing and separation requirements.

In India, industrial water demand is expected to increase significantly over the coming decade³, with projections indicating a 2 to 3x rise in demand from sectors such as chemicals, power, and manufacturing, placing greater emphasis on process-level efficiency.

Enzymes and downstream load

Enzymatic routes are being explored in a number of specialty segments. They are not a replacement for all catalytic systems, but they offer some specific advantages. Enzymes tend to operate under milder conditions. They are also more selective. That reduces

the formation of unwanted compounds, which in turn simplifies downstream steps. Less downstream processing usually means less water, fewer washes and fewer separations. In some cases, fewer stages altogether. The limitations are known. Stability, cost, and scale need to be addressed. Where these are managed, the impact on overall process load is noticeable.

Looking at Downstream Differently

A large share of water use sits after the reaction is complete. This is where purification, neutralization, and cleaning take place. Reducing this load requires changes upstream. If the reaction is cleaner, the need for correction falls. If fewer intermediates are isolated, fewer washing steps are needed.

In some cases, separation is built into the reaction itself. This reduces the need for later intervention. The shift is gradual. It does not apply to every system. But it changes how water is treated in the process, from a default input to a controlled one. Water has not always been treated as a limiting factor in chemical process design. Current assessments indicate that India is already operating under water stress thresholds⁴, with availability levels below the 1,700 cubic meter benchmark used to define stress conditions. That is changing. The constraint is not only availability, but also handling, treatment, and compliance.

For specialty chemicals, the adjustment is more complex because processes are less forgiving. Reducing water use requires changes in how reactions are run, not just how streams are managed. The direction is clear, even if the pace varies. Processes that use less water, or use it more deliberately, are becoming easier to justify. Not only from an environmental standpoint, but from an operational one as well. ■

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The Missing Link in Innovation: Translating Global Science into Local Value



Dr. Rahul Misra

Sr. Director Corporate Technology
IMEA, Lubrizol

*India's specialty chemicals sector is currently facing a critical moment of strategic decision making. Three major forces are converging in the sector. These are global supply chain realignment, robust domestic consumption fueled by the growth of industrial and consumer segments. Lastly, the structural upgrading of value proposition from commodity grade output to differentiated, high performance chemical solutions. A thorough analysis of specialty chemicals production across the country indicates clear signs of a metamorphosis in line with increased opportunities, emphasizes **Dr. Rahul Misra, Sr. Director - Corporate Technology, IMEA, Lubrizol.***

The gap between what the world has already discovered and what Indian manufacturing plants can effectively turn into commercial value, is exactly the missing link in innovation. It is not a lack of ambition, nor a lack of scientific awareness. It is a lack of execution. Besides, in the field of specialty chemicals, real competition is created through multiple factors at the same time including cost efficiency, yield optimization, energy consumption, quality consistency, safety measures, and regulatory compliance, so closing this link is much more than an increment change in the improvement of the situation.

It is the difference between merely getting a share

of the global market and defining your position in it. Changes of even one point from this perspective could lead to significant gains in manufacturing efficiency and global competitiveness.

The 'Missing Link': When World-Class Science Meets Indian reality

Specialty chemicals innovation travels well on paper. What often gets missed, however, is that these technologies arrive pre-validated under assumptions that do not always map to Indian operating realities. India's operating context is distinct in ways that matter profoundly for chemical processes. Feedstock variability and impurity swings can alter reaction

pathways and shorten catalyst life in ways that global benchmarks simply do not account for. Scale-up asymmetries are a persistent challenge, where a solution that performs reliably on a pilot skid frequently fails to replicate its behaviour at full plant throughput.

Water chemistry constraints, including hardness, chloride levels, silica content, and microbial load, compound further with external environmental conditions such as high ambient heat and humidity, collectively exerting significant and often underestimated impact on product performance and process stability. Add to this the reality that maintenance ecosystems and spares availability in India differ considerably from the idealized conditions assumed in global vendor playbooks, and the gap between promised performance and delivered performance becomes apparent.

The technology may still work. But more often than not, it works below its potential, or it works in ways that are not financially competitive at Indian scale and cost structures.

The missing link, therefore, is not invention. It is translation: the rigorous, systematic conversion of global science into India-ready process designs, market economics, context-specific validation protocols, and operating models that sustain performance reliably over time. And the ability to do this quickly is not just an operational advantage. It is a competitive imperative.

Why India-Specific R&D, Testing, and Validation are Essential Especially in Chemicals

In specialty chemicals, local validation cannot be a token trial or a vendor demonstration. The plant is the product, and chemistry is unforgiving in ways that boardroom presentations rarely capture. Ability to realign quickly and pivot has never been that important and critical as it is today to stay on top of the innovation curve in today's rapidly changing geopolitical alignments and constantly evolving supply chains.

Chemistry is fundamentally context-sensitive. For example, small but meaningful changes in impurity profiles can shift selectivity, accelerate side reactions,

India-specific R&D is, in the truest sense, the multiplier that makes global science financially viable and operationally sustainable at Indian scale. Without it, the best technologies in the world remain underperforming assets. With it, they become engines of differentiated, durable competitive advantage.

introduce colour bodies or odour, or alter polymer molecular weight distribution in ways that are difficult to predict and costly to reverse. A world-class recipe, transplanted without rigorous local validation, can rapidly become an inconsistent one. The consequences are not merely technical. They are commercial, reputational, and in some cases, safety-critical.

This is precisely where India-specific R&D plays its most vital role. It is not about duplicating global science or reinventing what already exists. It is about quantifying process sensitivities early, before they manifest as plant-floor failures, and redesigning operating windows around real feedstock ranges, real utility conditions, and real supply chain realities. It is about converting a globally proven concept into a locally bankable process.

India-specific R&D is, in the truest sense, the multiplier that makes global science financially viable and operationally sustainable at Indian scale. Without it, the best technologies in the world remain underperforming assets. With it, they become engines of differentiated, durable competitive advantage.

How Translation Accelerates Industrial Performance: Yield, Energy, Uptime & Quality

In specialty chemicals, competitive advantage is built through compounding gains. A few percentage points in yield, a few percent in energy reduction, and fewer shutdown hours can change EBITDA more than a new product SKU.

GUEST COLUMN

- **Yield and Selectivity: Turning Science into Margin**

Global advances in catalysts, enzyme routes, and reaction engineering can deliver breakthrough selectivity. But without local translation it will not turn in improving business margins. Translation means engineering the whole system to suit local operating conditions.

- **Quality Consistency: Protecting Customer Trust**

Specialty chemicals win on specification discipline. Translation frequently requires stronger process analytical technology (PAT), tighter control loops, and operator decision support that works in challenging India-specific operating complexity.

- **Sustainability-aligned, Efficiency-driven Technologies are no Longer Optional**

Sustainability in specialty chemicals is increasingly an operating imperative. Customers want lower footprints; regulators want tighter controls; boards want energy risk reduction. But sustainability centric technologies must survive Indian conditions to deliver real impact. The industry doesn't need more "green pilots." It needs cost neutral, green performance at scale, engineered through translation.

The Real Unlock Deep Collaboration with Indian OEMs, Manufacturers, and Innovators

Translation cannot be done by one company function or one imported solution. It requires ecosystem collaboration.

- **With Indian OEMs:** Co-engineer systems that are resilient, serviceable, and optimized for India envelopes, not bolt-on retrofits.
- **With Manufacturers and Suppliers:** Design for manufacturability, local sourcing, quality consistency, and scale economics.
- **With Innovators and Startups:** Accelerate sensing, analytics, and digital twins — structured so pilots become products with clear ROI metrics tied to yield, energy, uptime, and compliance.

The winning coalition for India's specialty chemicals sector is not built on any single capability. It is built on

The winning coalition for India's specialty chemicals sector is not built on any single capability. It is built on the purposeful integration of five elements working in concert: Global science, Indian domain insight, OEM capability, Manufacturing scale, and Digital agility. Organizations that can assemble and orchestrate this coalition will not merely compete. They will lead.

the purposeful integration of five elements working in concert: global science, Indian domain insight, OEM capability, manufacturing scale, and digital agility. Organizations that can assemble and orchestrate this coalition will not merely compete. They will lead.

Innovation's Real Test is Context

The next era of leadership in Indian specialty chemicals will not be defined solely by capacity additions or backward integration, important as those remain. Nor will it be won by choosing between imported technology on one hand and homegrown invention on the other. That is a false choice, and an increasingly irrelevant one.

India's next leap will come from mastering the discipline of translation, where global science is systematically adapted, rigorously validated, and confidently scaled into solutions that thrive within India's unique and demanding operating complexity. This discipline is not glamorous. It does not generate headlines the way a new plant inauguration does. But it is where sustainable competitive advantages are quietly and decisively built.

That is the missing link. The organizations that invest in building this capability locally, through India-specific innovation, rigorous local validation, agile execution excellence, cost competitiveness, sustainability-embedded process design, and deep collaborative partnerships with OEMs and manufacturers, will not simply participate in India's growth story. They will define it. ■

Agrochemicals Market in India: Present & Future Growth Story



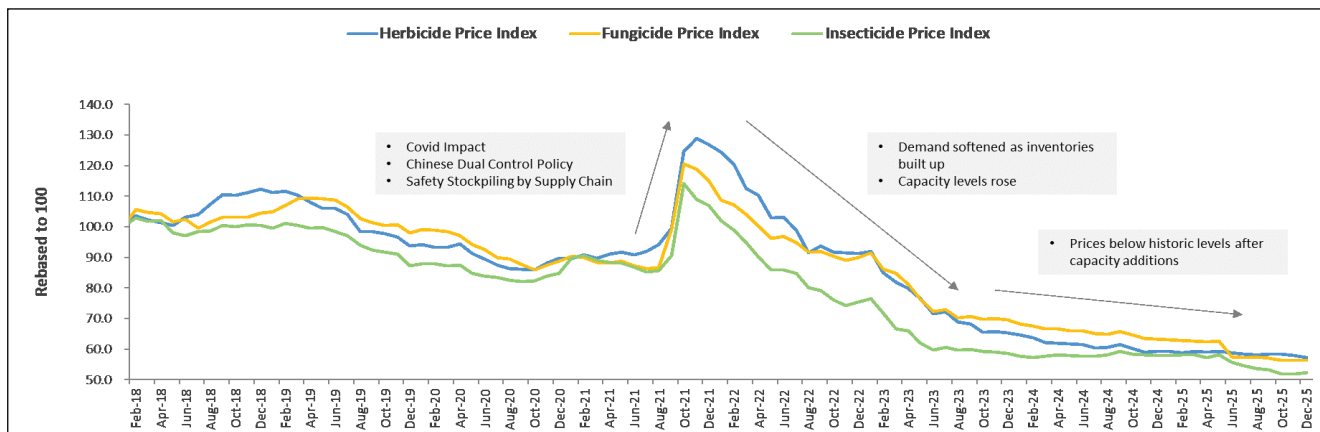
Munish Aggarwal

Managing Director &
Sector Lead Industrials
Equirus Capital

For Indian agrochemicals, this year has been a story of early momentum meeting fresh uncertainty. The rains arrived early, sowing got a head start, field activity picked up, and most agrochemical companies benefited from healthier channel inventories and a longer application window. But that momentum was partly offset by floods in several states, which disrupted demand on the ground and led to higher-than-usual returns from channel partners.

Just as things were starting to get steady, renewed tensions in the Middle East introduced a fresh layer of uncertainty around raw material sourcing. So far, the effect has not shown up meaningfully, partly because Q4 is a relatively smaller quarter and most companies appear to have secured supplies for Q1FY27. The real concern is whether any prolonged disruption extends into Q2, the sector's most important quarter. On the weather front, El Niño is now expected to emerge in June-Aug'26 (62 per cent probability) and will be a key factor to watch out from a domestic demand perspective.

*In many ways, both narratives are true at once, and together they define the current state of Indian agrochemicals, a sector navigating volatile weather, geopolitical disruptions and global price cycles while still consolidating its structural edge. **Munish Aggarwal, Managing Director & Sector Lead Industrials, Equirus Capital**, throws more light on the current and future scenario.*



Source: Agbio, Equirus Research

Price Index of Herbicide, Fungicide and Insecticide

At the global level, the industry is still working its way through the later stages of a cyclical downturn. After two years of inventory indigestion and China-led price deflation, the market contracted in both 2024 and 2025, with global market size settling at roughly USD 70 billion in 2025. While volumes, after declining in 2024, started to recover in 2025, continued price erosion more than cancelled out that gain, resulting in another year of value contraction. Depressed commodity prices, lower input costs, declining farmer incomes (from their 2022 peak), and only mild growth in global crop areas were the major factors.

Destocking Phase: Nearing End

That said, the destocking phase now seems to be nearing its end, with volumes steadily normalizing. Pricing power, however, could remain elusive for a while given the global overcapacity created by large-scale additions during 2020-22. As of December 2025, China's active ingredients remain well below their 7-year averages - herbicides ~33 per cent down, fungicides ~34 per cent down, and insecticides ~30 per cent down. Glyphosate (active ingredient), the most widely traded and tracked product, is down nearly 67 per cent from its October 2021 peak.

The domestic backdrop is far more supportive. With real GDP growth projected at 7.1 per cent in fiscal 2027 (after 7.4 per cent in fiscal 2026, and the country advancing from the world's fifth-largest to the fourth-largest economy), global manufacturers have tangible reasons to look at India more closely on account

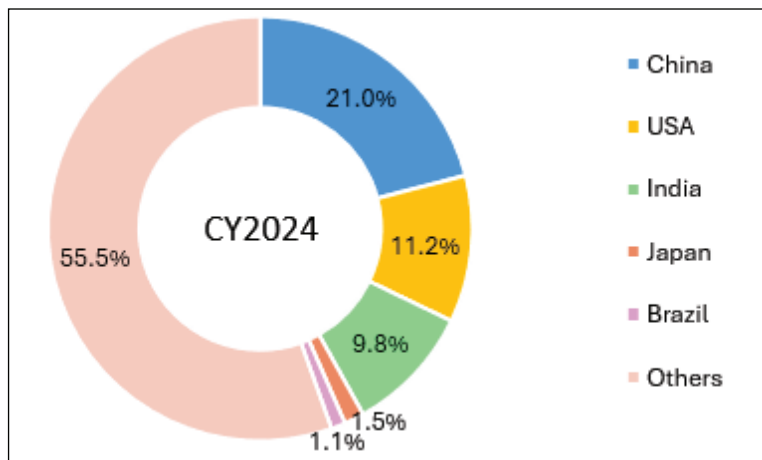
of cost advantages, improving infrastructure and logistics, and expected policy momentum. Despite the global contraction, India's volumes have continued to rise. Multinationals are actively evaluating India, either directly or through joint ventures, for fresh capacity additions.

The Indian agrochemicals industry is essentially split into two main drivers - domestic consumption and exports. Today, India's agrochemical usage stands at just 0.5-1 kg per hectare, one of the lowest globally, despite having the second-largest arable land base and being among the top producers of rice, wheat, cotton, and horticultural crops. The gap represents real headroom as farming practices modernize and scale.

India: Third-Largest Exporter

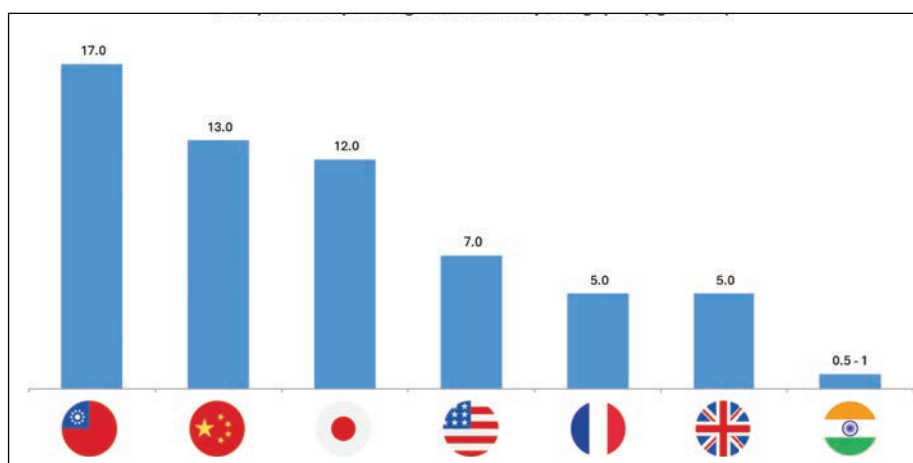
On the export front, India has emerged as the world's third-largest agrochemical exporter, reaching USD 3.3 billion in value in fiscal 2025. Brazil was the country's largest export destination in fiscal 2024, accounting for 24 per cent of exports, followed by the US at 22 per cent. That said, Brazil still buys roughly three times more in value terms from China than from India. China has sharpened its focus on Latin America, which now makes up 31 per cent of its agrochemical exports, while North America accounts for just 8 per cent.

The interim trade deal between the US and India, which cuts US tariffs on Indian goods to 18 per cent from 50 per cent, does provide near-term relief for Indian agrochemical companies, especially given the



Global export - breakup by country (value)

strategic importance of the US market. At the same time, companies are increasingly looking to diversify into other regions such as Latin America, Africa and Southeast Asia, while also moving up the value chain through more specialized chemistries. With continued innovation and a broader global footprint, the sector appears well placed to absorb shocks and sustain its growth momentum over the long run.



Per Capita consumption of agrochemicals in major geographies (Kg/hectare)

Looking Ahead: Next Leg of Growth

India's next leg of growth needs to come from creating intellectual property and plants with world-scale technical capacities, not just capacity for formulations of commodity products. That begins with forging partnerships that develop and scale new products locally, making India a natural hub for joint innovation. It also means building indigenous IP from complex technicals to differentiated formulations. Around that, India needs the support system to make it work:

strong research clusters, faster and simpler approvals, reliable protection for ideas, and funding that backs research, capacity building over working capital to tide over long working capital cycles.

If the sector steadily lifts R&D spending over the next three to five years, from the current level of under 2 per cent to around 5 per cent, today's cost advantage could turn into a lasting edge. The payoff would be stronger customer relationships, greater pricing power through cycles, and a reputation for leading

the market rather than reacting to it. India can also set the pace in green chemistry, much like China did when it became the first mover and eventual leader in EV drivetrains.

Over the next 12 to 18 months, the industry is set to turn steadier. Prices seem to have bottomed out and will gradually firm up as demand normalises. Margin recovery will come not just from higher volumes but

also from a better product mix, with Indian companies moving into more complex, value-added products while the domestic branded business provides steady support. Biopesticides and PGRs will help in deepening customer relationships. Weather will continue to cause some volatility, but the bigger growth drivers of higher yields, greater use of pesticides for labour substitution, smarter pest

management, and better product quality will help in setting up a stronger FY27 than FY26 for most players in the industry.

Over the past three years, growth as well as profitability have slowed down in the overall chemicals sector which has adversely impacted capital flows into the sector. We expect the trend to reverse led by investors with a mid-to-long investment horizon and ability to tide over near-term challenges posed by supply-side disruptions caused by the Middle Eastern war and El Niño-related impact on domestic demand. ■

Navigating the Geopolitical Squeeze: The Impact of West Asian Volatility on India's Chemical and Paints Sectors



Yogesh Jambhale

Senior Manager - Research
Rubix Data Sciences

*The ongoing geopolitical conflict involving Israel, the US, and Iran has placed the Indian chemical and paints industries in the eye of an unfolding supply chain storm. As these sectors grapple with a complex matrix of global dependencies, the extended hostilities threaten to impart profound macroeconomic consequences. Current estimates suggest the conflict could reduce India's overall GDP growth by approximately 1 per cent while simultaneously driving up inflation by 1.5 per cent. For manufacturers, this macro-level turbulence translates directly into a localized 'double whammy' of skyrocketing input costs paired with severe logistical bottlenecks. **Yogesh Jambhale, Senior Manager - Research, Rubix Data Sciences**, throws more light on the current market scenario.*

The Indian chemical industry operates with a deep structural integration into Middle Eastern supply chains, relying heavily on the region for primary energy and critical chemical feedstocks. The vulnerability of this trade route is stark, with 50 per cent to 55 per cent of India's crude oil and Liquefied Natural Gas (LNG) transiting through the increasingly volatile Strait of Hormuz.

As geopolitical risk premiums are priced into the market, commodity chemicals, including naphtha,

ethylene, and benzene, have witnessed immediate and sharp price surges, moving in tandem with Brent crude benchmarks that recently jumped toward the \$90 to \$110 per barrel range.

The specific feedstock risks highlight the precarious nature of India's import basket. India carries an 87.7 per cent exposure to the Hormuz corridor for methanol, a critical solvent indispensable for Active Pharmaceutical Ingredients (APIs) and specialty chemical manufacturing. The risk profile is even

As geopolitical risk premiums are priced into the market, commodity chemicals, including naphtha, ethylene, and benzene, have witnessed immediate and sharp price surges, moving in tandem with Brent crude benchmarks that recently jumped toward the \$90 to \$110 per barrel range.

steeper for ethylene glycol, which is effectively 100 per cent linked to the Hormuz corridor, severely threatening downstream automotive coolant and polyester production.

The cascading effect of these disrupted supply lines is already evident in base materials, with polymer prices for PE, PP, and PVC recording hikes of 6 per cent to 8 per cent in early March 2026 alone.

The Paints Squeeze: TiO₂ and Petro-Derivatives

The paints sector is facing an identical inflationary squeeze, exacerbated by its heavy reliance on petrochemical derivatives. According to CRISIL Ratings, approximately 30 per cent of the production costs in the paints and specialty chemicals sector are tethered directly to crude oil prices. This crude linkage cascades into significantly higher procurement costs for foundational raw materials, particularly solvents and resins.

Compounding the pressure on the petrochemical side is the surging cost of Titanium Dioxide (TiO₂), the essential white pigment used in nearly all architectural and industrial coatings. As of late March 2026, the titanium dioxide index published by Shanghai Metals Market (SMM) had risen 4.6 per cent since the beginning of the year, indicating tightening supply conditions in a key global production hub. China, being the largest global supplier of titanium dioxide, plays a pivotal role in influencing international prices. Amid low inventories and strategic production cuts, TiO₂ producers implemented two consecutive rounds of price increases in March, raising selling prices across all grades, including a 500 yuan/mt increase in domestic base prices and a \$100/mt surge in export

prices, with some factories suspending new orders entirely. Given that India relies on China for 30 per cent of its TiO₂ imports, such developments are expected to elevate input costs for domestic paint manufacturers, potentially exerting pressure on margins and necessitating calibrated price pass-throughs.

Margin Contraction and the Demand Trap

While input costs escalate rapidly, the ability of chemical and paint manufacturers to protect their margins remains severely constrained. Intense competitive intensity within the industry (as explained in Rubix Industry Insights: Paints and Coatings), coupled with suppressed downstream demand, limits the ability of companies to pass these elevated input prices onto customers, thereby directly impacting profitability.

For the paints industry, any attempt to forcefully raise end-product prices risks softening demand further, particularly in the highly price-sensitive retail and home improvement segments. This creates a demand trap fueled by the broader inflationary environment. As inflation rises, construction and domestic consumption naturally slow down, directly affecting paint volumes. Similarly, the broader stagnation in industrial activity suppresses the demand for specialty and commodity chemicals, leaving manufacturers caught between rising operational costs and shrinking order books.

Strategic Imperatives

The current crisis underscores a critical vulnerability in the operational models of Indian chemical and paint enterprises. The extreme reliance on single-chokepoint trade routes like the Strait of Hormuz dictates that the industry must aggressively pursue supply chain diversification. Moving forward, maintaining profitability will require a strategic pivot from hyper-optimized 'just-in-time' inventory models toward more resilient procurement strategies, hedging mechanisms, and an accelerated transition toward alternative, non-petroleum-based raw materials. ■

Efficient Biogas Production in Digestion Tower by means of Reliable Claw Compressors

From a wastewater treatment plant to an energy factory – Vallei en Veluwe Wastewater Association’s vision has become a reality. The ultra-modern RWZI Amersfoort wastewater treatment plant is one of eight Vallei en Veluwe wastewater treatment plants that use the energy released during wastewater treatment to generate electricity from biogas and produce artificial fertilizer with the phosphate produced. Part of the biogas produced in a circulating system is returned to the digestion tower in order to increase the effectiveness of the fermentation process in the digestion towers. This process uses MINK claw compressors from Busch Vacuum Solutions. These oil-free compressors are ATEX certified and guarantee the safe and constant circulation of the biogas. **Uli Merkle, Former Head of Marketing Services, Busch Dienste GmbH**, explains the case study of efficient biogas production.

The RWZI Amersfoort conventional wastewater treatment plant (Figure 1), which has existed since 1973, was completely renovated in 2009. In 2014, the wastewater treatment plant was converted into an ‘energy factory’ with a population equivalent

of 300,000. The production of biogas generates 1,200 kW of electricity per hour in three cogeneration plants. This electricity supplies the wastewater treatment plant completely self-sufficiently and can also feed enough electricity to the public



Figure 1: RWZI Amersfoort is one of a total of eight Vallei en Veluwe wastewater treatment plants that also produce electricity and artificial fertilizers as ‘energy factories.’ ©RWZI Amersfoort

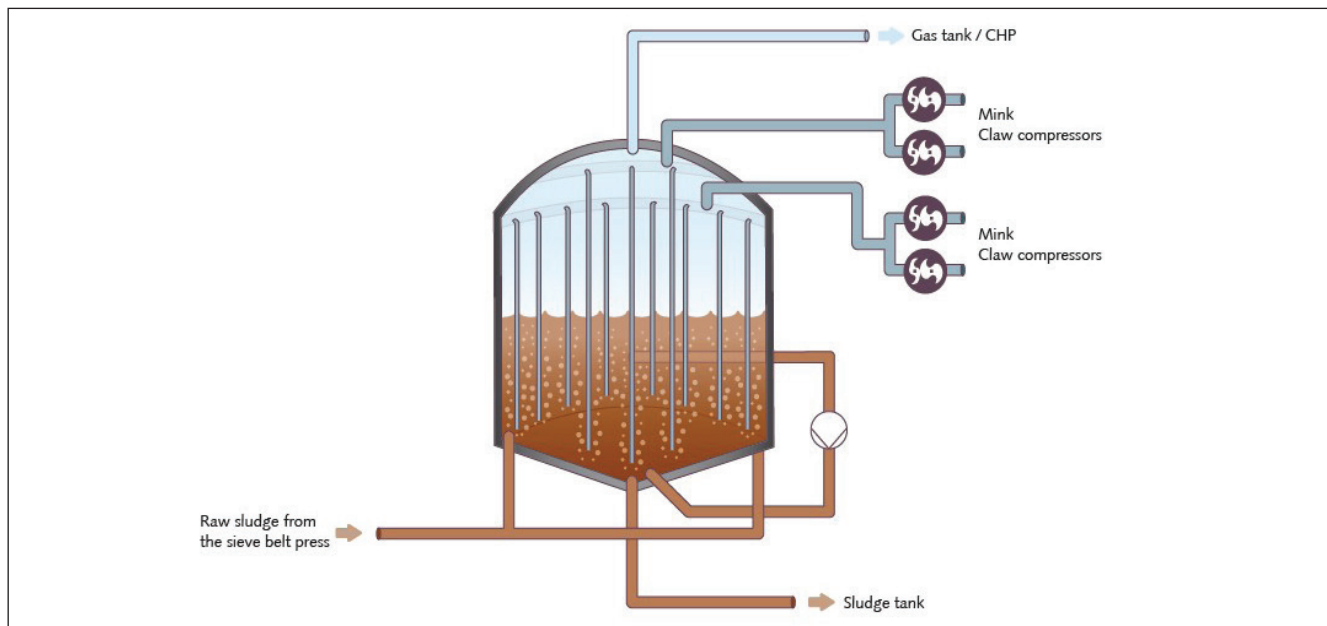


Figure 2: Functional diagram of a digestion tower at RWZI Amersfoort. MINK compressors are used to transport part of the biogas produced in the cycle. ©Busch Dienste GmbH

grid to meet the needs of around 600 households.

Raw materials such as phosphate or nitrogen are also recovered during the fermentation process and while draining the sludge. Phosphate is also obtained from the filtrates of the sieve belt press or the centrifuge. This is used to produce high-quality fertilizer directly in the wastewater treatment plant, where it is then packaged as granulate. With this process, the plant produces and sells around 900 tons of high-quality artificial fertilizer each year.

Three digestion towers are in operation at RWZI Amersfoort. The organic carbon compounds are removed from the raw sludge – which is pre-thickened by dehydration beforehand – by means of microbiological degradation processes. This produces digester gas, a gas mixture whose essential component is methane and is used as biogas for operating cogeneration plants. In order to achieve the highest possible biogas yield, part of the sewage sludge is pumped out of the digestion tower via a ring line, heated up and fed back in again. This increases the temperature in the digestion tower, which should ideally be between 36 and 37 degrees Celsius. Part of the resulting biogas is circulated (Figure 2) in order to provide an even temperature distribution.

Biogas from the upper part of the digestion tower is conveyed by MINK compressors via lances to the bottom of the digestion tower and is then introduced into the sewage sludge. As the gas bubbles rise in the

sewage sludge, it is mixed with the circulating sludge to achieve a homogeneous temperature distribution. Heating the biogas inside the MINK compressors then causes a further increase in the temperature of the sewage sludge. This process produces between 450 and 500 cubic meters of biogas per hour in the three digestion towers.

Until 2015, oil-lubricated rotary vane compressors were used for biogas circulation in the digestion towers. These compressors caused one major disadvantage for technical manager Fons Houtveen because the moisture transported along with the biogas accumulated in the oil circuit of the rotary vane compressors. This reduced the lubricating and sealing properties of the oil in the compressors and prevented safe operation at a constant overpressure. The only way

Since they were put into operation in 2017, the MINK compressors have been operating without any malfunctions, let alone failures. Fons Houtveen therefore praises the reliability, with which they ensure continuous biogas circulation around the clock and thus contribute to effective biogas production. In addition, they also helped to significantly reduce the maintenance effort and maintenance costs.

CASE STUDY

to minimize this problem was to refill or replace two liters of oil per compressor every day.

Fons Houtveen was looking for a technical solution and heard about another wastewater treatment plant that had already successfully switched to oil-free MINK compressors from Busch (Figure 3) and was very satisfied with the solution. Fons Houtveen then contacted Busch BV. Busch's application specialists took a close look at the application and recommended four MINK compressors in two different sizes with an ATEX certified design (category 3/2 IIA T2 (i/o)) for biogas circulation. They have been in use since August 2017.

The biogas is circulated in each digestion tower for 20 minutes. All four MINK compressors are in operation during this process. The two compressors with the higher volume flow transport the biogas near the ground to the middle of the digestion tower, where the filling level of the sewage sludge can be up to 20 metres. Two MINK compressors with lower volume flows transport the biogas into the lances near the edge of the digestion tower, where the filling level is lower due to the conical bottom. After 20 minutes, the automatic control system switches on the four MINK compressors for the next digestion tower via valves.

The maximum pressure at which the biogas is introduced to the sewage sludge is 2 bar overpressure. The completely operating fluid-free compression with MINK compressors means that the biogas does not come into contact with any operating fluid. The relatively high temperature inside the compressors in turn prevents the moisture in the biogas from condensing out during the compression process.

Fons Houtveen is surprised by the nearly maintenance-free operation of these dry compressors. Initially, he used to check the condition and quality of the oil in the gears of every MINK compressor every day. However, he stopped doing so after just one month once he had realized that there were not any visual changes to the oil and the oil quantity remained the same.



Figure 3: Compression and thus transport of biogas by means of four Busch MINK compressors.
©Busch Dienste GmbH

Maintenance work is merely performed once a year by a Busch service technician as a preventive measure.

In this process, the gear oil is changed in the MINK compressors. The filling quantity is one liter in each MINK compressor – this is half the daily quantity that was required in the past.

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Author



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Former Head of Marketing Services
Busch Dienste GmbH

Engineering a Complete Power Transmission Ecosystem: Power Build's Full Product Spectrum



Series M



Series C



Series F



Series K



Series PBWR



Loose Gear



Series A



Series PN



Series J

Power Build has engineered one of the most diverse and powerful portfolios in mechanical power transmission. Built on decades of precision engineering, reliability, and innovation, the company's comprehensive range of geared motors, gearboxes, pumps, and drive systems delivers tailored solutions to industries across the globe.

At the core of Power Build's offerings are the four flagship geared motor series:

Series M - Compact Helical Inline Geared Motors delivering up to 160kW and 20,000 Nm torque, ideal for high-efficiency, space-conscious applications.

Series C - Right-angled Heli-Worm Geared Motors, combining quiet operation and high torque up to 10,000 Nm, perfect for constrained environments.

Series F - Parallel Shaft Mounted Geared Motors with integral torque arms, widely used in material handling and steel industries.

Series K - Right-angle Helical Bevel Geared Motors offering up to 50,000 Nm torque, trusted in heavy-duty sectors like cement, power, and mining.

Complementing these are specialized series tailored for unique industrial requirements:

Series PBWR - A universal-mount Worm Gear Reducer crafted from aluminium and cast iron, ideal for compact drive solutions with gear ratios up to 100:1.

Series H - Hoist-duty geared motors supporting lifting capacities up to 12.5 tons, equipped with crane-specific features and brake options.

IMPACT FEATURE

Series PN – PN Series is a compact yet powerful planetary gearbox solution offering 23 sizes and gear ratios from 3.6:1 to 2250:1. Available in inline and right-angle configurations, it features a wide range of input/output options and mounting styles. Designed for high torque, flexibility, and space efficiency, it's ideal for automation, material handling, and heavy-duty applications. The PN Series reflects PBL's commitment to engineering excellence, durability, and smart power transmission.

Series A – Compact, grease-filled geared motors with a small footprint, perfect for light industrial use and available across India through retail partners.

Series J – Shaft Mounted Speed Reducers featuring the user-friendly KIBO mounting system, favored in industries like ceramics, paper, and mining.

Further enhancing its product ecosystem, Power Build offers:

Loose Gears & Pinions – Manufactured up to DIN Class 6 precision and 1000 mm diameter, supporting customized solutions across sectors like defense, railways, and construction.

Roloid Gear Pumps – Rugged and reliable pumps built for lubrication, cooling, fuel, and viscous fluid transfer in complex industrial setups.

PBL VFD Solutions – Variable Frequency Drives (up to 400 kW) with built-in high-duty ratings, enabling precise speed, torque, and energy control across all motor products.

This cohesive and wide-ranging product suite positions Power Build not merely as a component supplier, but as a complete transmission partner delivering customized, high-performance solutions that keep industries in motion across the globe. ■

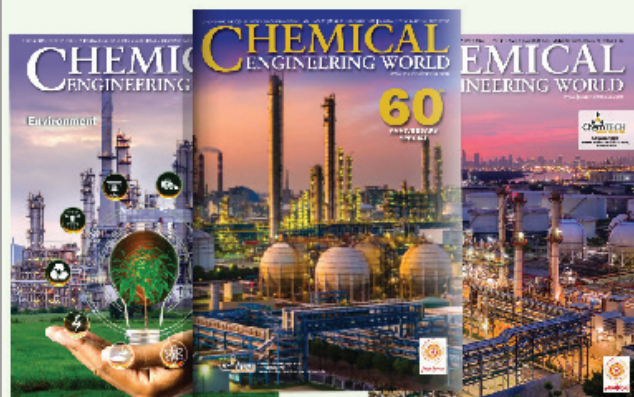
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M E D I A

Transforming Textile Workflows with Ergonomic Vacuum Technology



India's textile industry is a vital economic engine, yet the manual handling of heavy yarn packages continues to strain workers and slow production. Ergonomics offers the key to safer, healthier workplaces while boosting efficiency and productivity. The Schmalz Vacuum Tube Lifter Jumbo combines advanced vacuum technology with ergonomic design to revolutionize yarn handling in textile mills and weaving plants. **Niranjan Bhangale, Industry Segment Manager - Handling Systems, Schmalz India Private Limited**, shares more details about the new product.



Efficient yarn handling in textile mills with vacuum tube lifters jumbo

Yarn is the backbone of textile production, but managing cones, bobbins, and packages is demanding. Workers in spinning mills lift thousands of packages daily, each weighing 10–50 kilograms. This repetitive manual handling causes fatigue, musculoskeletal strain, and injuries. Beyond the human cost, manual lifting slows production, increases errors, and affects product quality. For an industry driven by efficiency and precision, this is a serious challenge.

Ergonomics as the Solution

Poor ergonomics in yarn handling leads to repetitive strain injuries, reduced efficiency, and high turnover. A tired workforce cannot sustain modern production

demands. Industry leaders now recognize that worker safety and ergonomics directly impact productivity and profitability. Schmalz emphasizes ergonomics as a strategic investment: healthier employees mean fewer absences, lower costs, and higher output.

How the Jumbo Works

The Vacuum Tube Lifter Jumbo operates on a simple principle: vacuum suction grips and lifts loads, while the vacuum tube itself serves as the lifting element. The operator moves an ergonomic control handle, adjusting the vacuum level to contract or extend the tube, smoothly lifting or lowering the load. With no motors or hydraulics, the system is reliable, low maintenance, and ideal for textile environments.

IMPACT FEATURE

Cycle time is a major advantage. A worker who manually lifts 3-4 cones per minute can handle 8-10 cones with the Jumbo. For mills managing thousands of cones daily, this efficiency translates into significant productivity gains, reduced fatigue, and smoother workflows.

Product Range

Schmalz offers three versions of the Jumbo, each tailored to textile needs:

- **JumboFlex (up to 50 kg):** One handed operation, intuitive controls, and compact design make it ideal for small yarn cones or packages.
- **JumboErgo (up to 85 kg):** Built for heavier cones, bobbins, or cartons. Its ergonomic handle and optional swivelling feature simplify stacking in different positions.
- **JumboSprint (up to 85 kg):** Optimized for compact workpieces, with an all around operator handle for dynamic control in fast paced environments.

Each system is modular, including lifting unit, operator handle, vacuum pump, and gripper. Customization allows handling of cones, bobbins, cartons, or rolls. A vacuum reservoir secures loads even during power failure, while simple controls reduce training time.

Where Can I use Jumbo in Yarn Process?

The Jumbo can be applied at multiple critical stages:

- **Spinning mills:** Lifting yarn cones directly from winding machines.
- **Packing stage:** Moving cartons from conveyors to pallets for storage or dispatch.
- **Weaving/ Knitting plants:** Handling bobbins, cones, or rolls for feeding into machines.
- **Warehouse & Logistics:** Stacking, palletizing, and transporting yarn packages safely.

By integrating Jumbo Vacuum Tube Lifters, mills achieve:

- **Faster handling:** Doubling speed compared to manual lifting.
- **Reduced strain:** Operators work with minimal effort, lowering injury risks.
- **Consistent quality:** Gentle handling prevents

damage to yarn cones and cartons.

- **Lower Costs:** Fewer accidents, reduced absenteeism, and higher efficiency.
- **Workforce Loyalty:** Demonstrating responsibility toward employees strengthens reputation.

In spinning mills, yarn packages are packed into cartons before being moved from conveyors to pallets. Traditionally done manually, this stage exposes workers to heavy loads and repetitive strain. With Jumbo, cartons can be lifted and stacked ergonomically, ensuring smooth supply chain flow from yarn producers to fabric manufacturers.

For textile mills, adopting the Jumbo is more than a technical upgrade — it is a strategic move. Productivity rises as workers handle more packages in less time. Yarn quality is preserved through consistent handling. Workplace safety improves, reducing injuries and absenteeism. Costs fall due to fewer accidents and faster operations. Most importantly, companies show responsibility toward their workforce, strengthening loyalty and competitiveness.

From my years in the textile industry, I have seen how the Jumbo Vacuum Tube Lifter transforms operations. Mills that implement this technology not only solve immediate handling challenges but also set themselves up for sustainable growth. By focusing on ergonomics and innovation, Indian textile leaders can align future growth with worker well being, operational efficiency, and global competitiveness. ■

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