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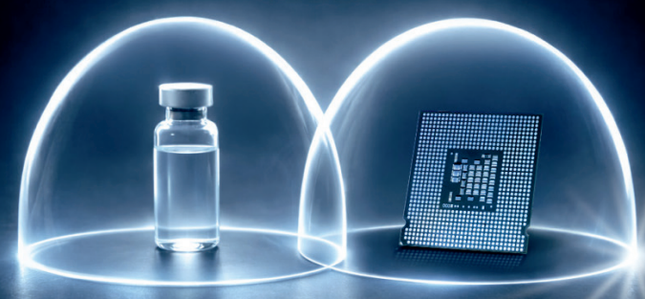

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Bio-economy to reach $1 trillion by 2047: Union Minister Dr. Jitendra Singh

Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences, MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh.

New Delhi: Union Minister of State (Independent Charge) for Science & Technology and Earth Sciences, MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh said that the 21st century will be India's century and will be driven by a biology-led economy, with the country's bio-economy projected to grow to $1 trillion by 2047.

Addressing an international conference at IIT Roorkee virtually, he said India is moving decisively towards full-spectrum technological capability, from gene to qubit, from ocean depths to outer space, supported by policy reforms, strong institutional frameworks and a rapidly expanding innovation ecosystem. The Minister was delivering the keynote address at the international conference on "Vision 2047: Prosperous and Great Bharat 2.0" held at IIT Roorkee.

Highlighting the government's policy thrust, the Minister spoke about the BioE3 policy (Biotechnology for Economy, Environment and Employment) approved in 2024, describing it as a defining step towards bio-manufacturing-led growth. He said India's bio-economy has expanded from $10 billion in 2014 to over $165 billion today, growing at nearly 18 per cent annually, with a target of $300 billion by 2030. The number of biotech start-ups has increased from around 50 to more than 11,000. He also referred to the Anusandhan National Research Foundation (ANRF) with a ₹50,000 crore corpus and the ₹1 lakh crore Research, Development and Innovation (RDI) fund, designed to provide long-term, low-cost financing for deep-tech innovation.

Dr. Jitendra Singh presented a series of major scientific advances achieved in recent years, including progress under Genome India, indigenous CAR-T cell therapy, development of mRNA vaccine platforms, India's first indigenously developed antibiotic, establishment of a National Biobank, and space biotechnology experiments carried out in collaboration with ISRO. He also highlighted the expansion of nuclear medicine facilities to deliver affordable cancer care and progress in deep ocean exploration through missions such as *Samudrayaan.*

Outlining the roadmap ahead, the Minister said clear milestones have been set for 2030, 2035, 2040 and 2047, including expansion of the bio-economy, scaling up of biotech start-ups, operationalisation of the *Bharatiya Antariksha* station, and advancement of marine biotechnology and carbon-neutral technologies. By 2047, he said, India aims to emerge among the top three global bio-economies.

Caldic appoints Smita Shetty as MD, Caldic India

Caldic has announced the appointment of Smita Shetty as Managing Director, India, effective 4th of May 2026. Smita brings close to two decades of outstanding leadership experience across the specialty chemicals and ingredients distribution industry in APAC. She has a strong track record of driving commercial growth in Caldic and previously in Connell, building high-performing teams, and leading digital and business transformation initiatives. Smita's deep industry expertise, regional perspective, and proven leadership make her well positioned to lead India business into its next phase of growth.

Zydus receives approval from DCGI to initiate Phase III trials of Zintrodiazine

Ahmedabad: Zydus Lifesciences Limited has received permission to conduct two Phase III clinical trials of Zintrodiazine in patients with uncomplicated malaria due to *Plasmodium falciparum* and uncomplicated Plasmodium vivax malaria in India.

The first Phase III and second Phase III trials will be multi-centre, randomised, assessor-blind, active-comparator studies to determine the efficacy, safety and tolerability of orally administered Zintrodiazine in patients with uncomplicated malaria due to *P. falciparum* and uncomplicated *P. vivax* malaria.

The first Phase III clinical trial will be conducted in 651 patients with uncomplicated malaria due to *P. falciparum* with the primary objective of evaluating the efficacy of Zintrodiazine as measured by PCR-adjusted adequate clinical and parasitological response (ACPR). The second Phase III clinical trial will be conducted in 390 patients with the primary objective of evaluating the efficacy of Zintrodiazine as measured by ACPR with uncomplicated malaria due to *P. vivax* mono-infection. Secondary endpoints in both clinical trials will include the incidence of recrudescence – the return of malaria symptoms and parasites in the blood because the original infection was not fully cleared, new infections, parasite clearance time and fever clearance time.

Union Minister J. P. Nadda visits NIPER

Union Minister for Chemicals & Fertilizers and Health & Family Welfare, Shri. Jagat Prakash Nadda during the visit to the National Institute of Pharmaceutical Education and Research (NIPER), Mohali, inaugurated the NIPER Medicinal Succulents Garden.

New Delhi: Union Minister for Chemicals & Fertilizers and Health & Family Welfare, Shri. Jagat Prakash Nadda visited the National Institute of Pharmaceutical Education and Research (NIPER), Mohali. During the visit, Minister inaugurated the NIPER Medicinal Succulents Garden.

Shri Nadda reviewed the institute's strategic vision, research priorities, and innovation ecosystem. A comprehensive presentation by Prof. Dulal Panda Director, NIPER Mohali, highlighted key performance indicators and the roadmap for strengthening research and industry linkages. The institute showcased its Centres of Excellence, including advanced work in biopharmaceuticals and emerging therapeutic domains, along with ongoing initiatives in technology transfer and commercialization.

Addressing the gathering, Shri Nadda underscored the importance of strengthening research infrastructure and assured continued policy support and funding to

Cohance Lifesciences appoints Umang Vohra as Chairman & Group CEO

Cohance Lifesciences Limited has appointed Umang Vohra as Chairman of the company effective from May 1, 2026. He subsequently assumed the role of Group Chief Executive Officer effective May 20, 2026. In this role, he is responsible for providing strategic direction to the group, strengthening financial and operational performance, accelerating long term growth, and enhancing value creation for shareholders. With more than 30 years of leadership experience across global pharmaceutical and healthcare organizations, Vohra brings deep expertise in strategy, financial stewardship, operations, and transformational leadership.

Vohra holds a Bachelor's degree in Computer Science Engineering from M.S. Ramaiah Institute of Technology and an MBA from T.A. Pai Management Institute.

accelerate innovation and execution in the sector. He also appreciated the institute's role in nurturing skilled, industry-ready professionals contributing to national growth.

Shri Manoj Joshi, Secretary, Department of Pharmaceuticals, interacted with faculty and students, inviting suggestions on enhancing industry collaboration, technology transfer, and translational research outcomes. He emphasized the need for reforms in the reward system to drive performance, suggesting incentives for faculty securing external funding and increasing industry-sponsored research. He also stressed the importance of transitioning from "paper patents" to real-world translation and commercialization to enhance national impact.

The introduction of new Master's programmes in Biopharmaceuticals and Regulatory Affairs was also noted as a step towards building future-ready talent.

Mankind Pharma revenue up by 11.8%

New Delhi: Mankind Pharma, India's fourth largest pharmaceutical company has announced its financial results for the fourth quarter and full year ended 31st March 2026. Revenue increased ~12 per cent YoY. Overall domestic business (ex CH) grew by ~13 per cent led by double digit growth in Mankind domestic business, led by 14.7 per cent in cardiac and 11.6 per cent in anti-diabetes (120 bps YoY increase in chronic share to ~40 per cent).

Sequential growth recovery in key acute therapies like Gastro, VMN, etc and strong double digit growth in BSVs domestic business. OTC business grew by 20 per cent led by strong growth in e-commerce; international business witnessed muted growth due to geo-political headwinds.

"We are on track in strengthening scale and advancing specialization through four key pillars - steady base business, fast growing specialty chronic, high potential OTC business, and super specialty BSV portfolio to deliver long-term sustainable growth," said Mr. Rajeev Juneja – Vice Chairman & Managing Director, Mankind Pharma.

Alembic Pharmaceuticals announces USFDA final approval for Fingolimod capsules

Vadodara: Alembic Pharmaceuticals Limited has received final approval from the US Food & Drug Administration (USFDA) for its Abbreviated New Drug Application (ANDA) Fingolimod capsules, 0.5 mg. The approved ANDA is therapeutically equivalent to the reference listed drug product (RLD), Gilenya capsules, 0.5 mg of Novartis Pharmaceuticals Corporation. Fingolimod is a sphingosine 1-phosphate receptor modulator indicated for the treatment of relapsing forms of multiple sclerosis (MS), to include clinically isolated syndrome, relapsing-remitting disease, and active secondary progressive disease in patients 10 years of age and older. Fingolimod capsules, 0.5 mg, have an estimated market size of US$ 145 million for 12 months ending December 2025 according to IQVIA. Alembic has a cumulative total of 237 ANDA approvals (219 final approvals and 18 tentative approvals) from USFDA.

Vasant Chemicals appoint Ganesh Venkatraman as Managing Director

Vasant Chemicals, part of WeylChem CDMO, has appointed Ganesh Venkatraman as Managing Director. Ganesh brings extensive experience in the CDMO and specialty chemicals environment, combined with a strong track record in developing business activities and leading international teams. His appointment, is expected to further strengthen Vasant Chemicals' role within CDMO platform and continue to build closer collaboration across the WeylChem Group. The focus will be on advancing structures, enhancing processes, and connecting capabilities across company global network.

Cohance Lifesciences announces Q4 and FY26 results

Hyderabad/Mumbai: Cohance Lifesciences Limited (formerly Suven Pharmaceuticals Limited), a leading global Contract Development and Manufacturing Organization (CDMO), has announced its audited financial results for the year ended March 31, 2026. FY26 reported revenue from operations at ₹22.68 billion. Gross margins improved 209 basis points. Adjusted EBITDA margins stood at 21 per cent translating to adjusted EBITDA of ₹4.8 billion. Standalone Adjusted EBITDA margins were at 24.6 per cent.

Q4 FY26 revenue from operations were ₹6.19 billion while gross margins improved to 65.4 per cent. Adjusted EBITDA at ₹1.29 billion with EBITDA margins at 21 per cent. Adjusted EBITDA for the review periods reflects the impact of subsidiary cost consolidation and muted operating leverage at the consolidated level.

Mr. Umang Vohra, Executive Chairman and Group CEO, said, "Cohance today has a strong and differentiated niche technology-led global CDMO platform spanning ADCs, nucleic acid chemistries, small molecules, and complex chemistries, with meaningful engagement across global innovator pharma companies. Over the next few years, we focus to expand Cohance's capabilities and science, the predictability of delivery, backed by strong quality and systems, a talent pool and a pipeline that matters for our partners."

India's space, biotech and startup sectors drive innovation: Dr. Jitendra Singh

New Delhi: Union Minister of State (Independent Charge) for Science & Technology, Earth Sciences, and MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh, called for India to emerge as a global leader in critical and emerging technologies, asserting that technological capability will define national strength in the coming decades.

Addressing the PAN-IIT alumni conference in Los Angeles virtually, the Minister said that India must move beyond being a consumer of technology to becoming a creator, designer, and global driver of innovation.

Dr. Jitendra Singh referred to the vision of *Viksit Bharat* by 2047, stating that India stands at a defining moment in its development journey, with science, technology, and innovation forming the foundation of future growth. He cited the expanding space programme, advancements in biotechnology, and the rise of deep-tech start-ups as indicators of India's growing capabilities.

Dr. Jitendra Singh pointed to emerging domains such as semiconductors, artificial intelligence, robotics, and quantum technologies as key to national security, economic resilience, and global competitiveness. He emphasized the need for deeper collaboration between academia, industry, and government, along with new models of education and institution-building.

He expressed confidence that with sustained effort and long-term vision, India will not only achieve the goal of a developed nation by 2047 but also contribute significantly to global progress.

Aurobindo Pharma receives USFDA Approval for Dextromethorphan Polistirex Extended Release Oral Suspension

Hyderabad: Aurobindo Pharma Limited has announced the receipt of the final approval from the US Food & Drug Administration (USFDA) to manufacture and market Dextromethorphan Polistirex Extended-Release Oral Suspension, 30 mg/5 mL (OTC), which is bioequivalent and therapeutically equivalent to the reference listed drug (RLD), Delsym Extended Release Oral Suspension, 30 mg/5 mL, of RB Health (US) LLC.

The product will be manufactured at Unit-IV of APL Healthcare Limited, a wholly owned subsidiary of the company, and will be launched in Q2FY27.

The approved product has an estimated market size of US$ 138 million for the 12 months ending February 2026, according to Nielsen. Aurobindo Pharma now has a total of 580 ANDA approvals (557 final approvals and 23 tentative approvals) from USFDA.

Dextromethorphan Polistirex Extended-Release Oral Suspension (OTC) temporarily relieves cough due to minor throat and bronchial irritation as may occur with the common cold or inhaled irritants.

India's first free rural medical college achieves national quality recognition

Karnataka: In a significant boost to rural healthcare excellence, the Sri Madhusudan Sai Institute of Medical Sciences and Research (SMSIMSR) has been awarded entry-level accreditation by the National Accreditation Board for Hospitals & Healthcare Providers.

This prestigious recognition affirms that SMSIMSR meets essential national standards in patient safety, quality care, and hospital management systems. It marks a major milestone for one of India's first fully free rural medical colleges and hospitals.

"Out of the nearly 80,000 to 90,000 hospitals in the country, only about 1.4 per cent have achieved full accreditation, while around 3 per cent hold entry-level accreditation," said Dr. Padmashree, Medical Superintendent of SMSIMSR.

She further added, "Under the guidance of Sadguru Sri Madhusudan Sai, the institute is adhering to all the standards required for NABH accreditation. Entry-level accreditation is only the first step, and we are confident of achieving full NABH accreditation in the near future."

As a teaching institution, SMSIMSR's accreditation also enhances the quality of medical education. Students are trained in an environment that emphasizes evidence-based clinical practices, standard operating procedures, and patient-centric care models.

Evinova secures ISO 27001 certification, elevating data security standards

Switzerland: Evinova, a global health tech company with proven, published outcomes for sponsors, sites, and patients, has achieved the International Organization for Standardization (ISO) 27001:2022 certification, the leading international standard for information security management systems (ISMS). This globally recognized certification confirms that Evinova follows best practices to protect data and manage risks effectively to uphold the highest standards of cybersecurity.

Evinova applies a rigorous security approach across its digital and AI-native solutions, giving sponsors and sites trusted tools to accelerate development while protecting sensitive data.

Evinova's certification was issued by the British Standards Institution.

WuXi Biologics hosts third CRDMO Day in Japan

Tokyo: WuXi Biologics, a leading global Contract Research, Development and Manufacturing Organization (CRDMO), recently hosted its third CRDMO Day in Tokyo, bringing together senior leaders and experts from Japan's biopharmaceutical industry, exchanging the latest market insights and best practices in advancing biologics innovation from IND to commercialization.

With the theme 'Ignite Future: CRDMO Day Tokyo 2026,' the gathering convened senior executives and experts from WuXi Biologics for in-depth dialogues with its Japanese partners. Discussions spanned the latest market insights and industry dynamics, integrated solutions for complex modalities, CMC best practices and manufacturing excellence. Together, the sessions highlighted not only the opportunities emerging in Japan's biopharmaceutical industry but also the breadth and depth of WuXi Biologics' capabilities in supporting them. ■

NIPER Raebareli signs MoU, CDA, and Technology Transfer Agreement with Lofty Laboratories

New Delhi: National Institute of Pharmaceutical Education and Research (NIPER), Raebareli, has signed a Memorandum of Understanding (MoU), Confidential Disclosure Agreement (CDA), and Technology Transfer Agreement with Lofty Laboratories, Hyderabad, to foster multidirectional collaboration in research, innovation, and technology commercialization.

This MoU marks a significant step towards strengthening academia-industry partnerships aimed at advancing pharmaceutical and biotechnology research. During the signing ceremony, both the organizations agreed to adopt an industry-ready technology developed at NIPER-Raebareli for further commercialization and development. The collaboration will also include joint participation in research and development activities in areas of mutual interest.

Speaking during the occasion, the Director of NIPER-Raebareli, Prof. Shubhini A. Saraf, stated that the MoU and technology transfer agreement would enable both institutions to complement each other's research programs in multiple ways, including collaborative participation in the activities of the Institute's Center of Excellence on Novel Drug Delivery Systems (CoE-NDDS).

Prof. Saraf also highlighted the importance of the technology developed in CoE and expressed hope that several more technologies from the Institute would be ready for transfer by the end of the year.

Addressing the gathering, Prof. Nihar Ranjan, Head, CoE-NDDS, explained that commercialization of the present technology would significantly reduce the cost of gel-staining agents, which are extensively used worldwide in biology-related research, particularly in studies involving genes, cancer, and other nucleic acid-related diseases. He added that indigenous production of such novel gel-staining agents would contribute substantially towards strengthening India's pharmaceutical and biotechnology sectors.

Sun Pharma signs agreement to acquire Organon

Mumbai and Jersey City: Sun Pharmaceutical Industries Limited and Organon & Co. have entered into a definitive agreement under which Sun Pharma will acquire all outstanding shares of Organon for US$ 14.00 per share in an all cash transaction with an enterprise valuation of US$ 11.75 billion. Organon is a global healthcare company formed through a spinoff from Merck, known as MSD outside of the United States and Canada, in 2021.

Organon is a global leader in women's health (the company's portfolio includes more than 70 products across women's health and general medicines, which includes biosimilars, commercialized across 140 countries, with the U.S., Europe, China, Canada, and Brazil among its largest markets). This global footprint is supported by six manufacturing facilities across the European Union and emerging markets.

The proposed acquisition of Organon is aligned with Sun Pharma's strategy of growing its innovative medicines business. The combined company becomes a stronger player in established brands /branded generics business. The deal also enables Sun Pharma's entry into biosimilars as a top-10 global player.

SPARC announces sale of priority review voucher for US$195 million

Mumbai: Sun Pharma Advanced Research Company Ltd. (SPARC) has entered into a definitive asset purchase agreement to sell its Rare Paediatric Disease Priority Review Voucher for US $195 million upon the closing of the transaction.

PRV was granted by the U.S. Food and Drug Administration (FDA) for the approval of Sezaby® indicated for the treatment of neonatal seizures.

"The sale of the PRV will enable us to accelerate the development of our pipeline assets and strengthen our external innovation strategy, which has already delivered multiple additions to our portfolio," said Anil Raghavan, CEO of SPARC.

Stifel acted as the exclusive financial advisor to SPARC with respect to this transaction.

Agilent, C CAMP to scale access to advanced life sciences analytics

Agilent and C-CAMP leadership at the announcement of their collaboration to support life sciences and therapeutic research across India.

Bengaluru: Agilent Technologies has announced an expansion of its collaboration with the Centre for Cellular and Molecular Platforms (C CAMP), a Department of Biotechnology-supported initiative. The expanded engagement broadens access to advanced analytical and mass spectrometry based capabilities that support life sciences and therapeutic research across India.

Through this collaboration, high resolution analytical platforms will be made available via C CAMP's shared infrastructure, supporting applications such as biotherapeutic characterization, oligonucleotide research, and quantitative biomolecular analysis. The model is designed to enable researchers from startups, academia and industry to access advanced analytical workflows and deep domain expertise without the need for direct capital investment in specialized instruments or facilities.

By expanding this collaboration, Agilent and C CAMP aim to help reduce entry barriers and support reliable, reproducible science across the research to development continuum.

In another major development, Agilent Technologies, has announced a strategic collaboration with Veeda Lifesciences to strengthen regulatory aligned analytical and bioanalytical workflows supporting biopharma development, as GLP 1 and other complex therapeutic modalities continue to advance rapidly through global pipelines.

Central to the collaboration is the establishment of a joint Center of Excellence (CoE) at Veeda's biopharma facility in Bengaluru. Designed as a scalable analytics and regulatory readiness hub, the CoE will focus on the development and validation of end to end analytical workflows. The CoE will address the growing analytical demands associated with next generation therapies, including GLP 1 based drugs - where sensitivity, throughput, and data integrity are critical to support regulatory confidence and program progression.

Dr. Reddy's Laboratories launches its generic semaglutide injection in Canada

Hyderabad & Ontario: Dr. Reddy's Laboratories Ltd, has announced the launch of its generic semaglutide injection in Canada. Dr. Reddy's is among the first companies to introduce a generic Semaglutide injection in the Canadian market, following the Notice of Compliance (NOC) received from Health Canada.

Canada is the first G7 country to grant market authorization for Semaglutide injection. In Canada, Dr. Reddy's Semaglutide Injection* is indicated for the once-weekly treatment of adults with type 2 diabetes mellitus, to improve glycemic control in combination with diet and exercise. It is supplied as a sterile solution for subcutaneous injection in a pre-filled pen, available in 2 mg/pen and 4 mg/pen strengths, each delivering semaglutide at a concentration of 1.34 mg/ml.

The 2 mg/pen is designed to deliver 0.25 mg or 0.5 mg doses, while the 4 mg/pen delivers 1 mg doses per injection. Erez Israeli, Chief Executive Officer, Dr. Reddy's, said: "We are pleased to launch our generic Semaglutide Injection in Canada, within days of receiving Health Canada approval. The milestone highlights our readiness to serve the Canadian patients, supported by our deep expertise in complex drug and peptide development. The Canada launch builds on the momentum of our recent launch in India under the brand name Obeda®. As GLP-1 therapies continue to be a key focus area for us, we are actively working to expand access across multiple global markets."

Strides strengthens Africa business with acquisition of multiple generic brands from Sandoz

Bangalore: Strides Pharma Science Limited subsidiary, Strides Pharma International AG (SPIAG), has entered into definitive agreements with Sandoz AG, Switzerland and its group entities, for the acquisition and in licensing of a portfolio of branded generic products across Sub Saharan Africa (SSA).

The agreement spans four key markets — Western Sahara (covering 10 countries), Ghana, Nigeria, and Kenya. The branded generics portfolio of Sandoz, as a part of this deal, includes multiple brands across anti-infective, cardiovascular, and dermatology therapeutic segments. Several of these products individually deliver annual sales exceeding US$1 million.

The transaction includes a portfolio comprising products that are being fully acquired by Strides, as well as select products that Strides will continue to market on behalf of Sandoz. To ensure the uninterrupted availability of these critical brands, Strides will also enter into a manufacturing and supply agreement with Sandoz for their continued production and supply.

With the combined strength of Strides' existing business and the branded portfolio being acquired from Sandoz, Strides is expected to become one of the top five pharmaceutical companies in the SSA region by sales and among the top two players in the representable market.

Zydus to acquire Assertio in all-cash tender offer

Ahmedabad: Zydus Lifesciences Limited's subsidiary company, Zydus Worldwide DMCC, has signed a definitive agreement (through its wholly owned acquisition subsidiary Zara Merger Sub Inc.), with Assertio Holdings, Inc.

Assetio Holdings, a US-based pharmaceutical company, is focused on specialty and oncology supportive-care therapies. The agreement is to acquire all outstanding shares of Assertio for USD 23.50 per share in cash, representing total consideration of approximately USD 166.4 million on a fully-diluted basis, calculated using the treasury stock method.

The acquisition provides Zydus with an established US specialty oncology commercial platform, anchored by Assertio's presence in oncology supportive care. Assertio's portfolio includes ROLVEDON® (eflapegrastim xnst), approved as a BLA by USFDA for long acting G CSF biologic for the prevention of febrile neutropenia in adult cancer patients receiving myelosuppressive chemotherapy. ROLVEDON® is administered once per chemotherapy cycle in the oncology supportive care market.

Zydus intends to leverage Assertio's focused commercial infrastructure and oncology relationships to build and expand its specialty oncology presence in the US.

WACKER launches Contract Research Services for nucleic acid-based medicines

WACKER's Biotechnology Center in Munich.

Munich: WACKER has launched Contract Research Services (CRS) for biotech and biopharma customers worldwide. The new offering complements the contract development and manufacturing services of WACKER subsidiary Wacker Biotech, a biologics CDMO with GMP (Good Manufacturing Practice) sites in Germany (Halle, Jena), the Netherlands (Amsterdam) and the United States (San Diego).

CRS are delivered by a dedicated team of scientists based at the WACKER Biotechnology Center, a state-of-the-art facility opened last year on the group's corporate R&D campus in Munich. The team supports customers with R&D-grade production of small quantities of plasmid DNA (pDNA), RNA (ribonucleic acid) and lipid nanoparticles (LNPs) for preclinical in vitro and in vivo studies, with a clear pathway for later scale-up to GMP clinical supply.

In addition to producing pDNA, RNA and LNP formulations, WACKER's CRS team offers construct design services, including plasmid and RNA construct design as well as RNA engineering and optimization via trusted partners (UTR, poly(A) and cap optimization). The scientists also conduct lipid library screening and lipid nanoparticle formulation and provide functional assays and analytical services.

By integrating early-stage R&D support with a globally interconnected GMP manufacturing network, CRS helps customers streamline development and reduce supply-chain fragmentation. ■

GUEST COLUMN

Digital Eye Strain to Myopia Explosion: Are Screens Creating a Generation with Poor Vision?

Dr. Sanjana Chilukuri
Cataract & Refractive Surgeon
Sharat Maxivision Eye Hospitals
Warangal

It is increasingly common to hear people say their eyes feel "tired" by the middle of the day. What was once an occasional complaint has now become routine across age groups. Children move from online lessons to games, college students spend hours on laptops, and working professionals often end their day on the same phone which they began with. ***Dr. Sanjana Chilukuri, Cataract & Refractive Surgeon, Sharat Maxivision Eye Hospitals****, further emphasizes on the fact that building better habits at home, in schools and at workplaces can help prevent today's screen dependence from becoming tomorrow's vision crisis.*

Patients frequently report dryness, irritation, headaches, or blurred vision after long hours on screens. Some also experience difficulty focusing or a feeling of heaviness around the eyes. These symptoms are often ignored as normal tiredness, especially when they improve after rest. However, repeated episodes suggest that the eyes are struggling to keep pace with the demands placed on them. A major reason is reduced blinking. While looking at a screen, people blink less often and sometimes do not blink fully. This makes the tear film unstable and leaves the eyes feeling dry, gritty or watery.

Myopia Is Showing Up Earlier

Many parents now report that their child needs glasses at a much younger age than expected. This is not only because children are studying more; it is also because much of their learning and recreation has shifted indoors and onto screens. Long periods of near work, combined with reduced outdoor play, can increase the risk of myopia or worsen existing myopia.

Glasses may help a child see clearly in the moment, but they do not address how quickly the number is changing.

In some children, the power keeps increasing year after year, which is where careful follow-up becomes important. When myopia progresses unchecked, it can quietly raise the likelihood of problems involving the retina and other deeper structures of the eye later in life.

Small Warning Signs Matter

Children do not always have the words to describe what they are seeing. Instead, the signs show up in small, everyday behaviours. Sitting unusually close to the television, bringing books or screens too near the face, rubbing the eyes repeatedly, or losing interest in reading tasks can all be subtle indicators. Headaches after school or avoidance of classroom work are also often overlooked clues.

In adults, warning signs can include blurred vision by evening, burning eyes, neck discomfort, frequent use of lubricating drops, or difficulty shifting focus from the laptop to distant objects.

Prevention Starts with Daily Habits

The answer is not to remove screens completely. That is neither realistic nor necessary. The focus should be on making screen use more responsible. Children should take frequent breaks during online learning or gaming. The 20-20-20 rule is useful: every 20 minutes, look at something 20 feet away for 20 seconds.

Comfort while using screens is often ignored. A screen that feels too bright or too dull tends to strain the eyes over time, even if it is not immediately noticeable. Holding devices too close, or looking slightly upwards or downwards for long periods, can also add to the discomfort. Reading on a small phone screen for extended periods, especially in low light, makes the eyes work harder than necessary.

Outdoor time is equally important. Daily exposure to natural light and physical play can support healthy visual development in children.

Regular Eye Checks Are Non-Negotiable

Many eye problems develop quietly. A child may not know that blurred vision is abnormal. An adult may keep adjusting screen brightness instead of seeking help. This is why regular eye examinations are essential, particularly for school-going children and people who work long hours on computers.

The focus should be on making screen use more responsible. Children should take frequent breaks during online learning or gaming. The 20-20-20 rule is useful: every 20 minutes, look at something 20 feet away for 20 seconds.

Timely eye checks often do more than just update a prescription. They help identify early shifts in vision, allow intervention before the condition advances, and give individuals a clearer understanding of how their daily habits may be affecting their eyes.

A Screen-Smart Future

Screens are now part of education, work and social life. The concern is not technology itself, but unchecked use without breaks, posture awareness or eye care. Building better habits at home, in schools and at workplaces can help prevent today's screen dependence from becoming tomorrow's vision crisis. ■

GUEST COLUMN

India's Pharma Exports Hinge on Cold Chain Overhaul

Sagar Puranik
National Head, Leasing (Gateway)
Welspun One

India's pharmaceutical exports are increasing exponentially; however, there is a looming crisis at bay. The systems supporting the exports are not developing at the same pace as the growth of the export rate. There is no longer an issue of production capacity or market demand but rather maintaining product quality during transit to the destination market. As pharmaceutical exports become more sophisticated, cold-chain logistics is emerging as a critical determinant of India's export competitiveness. This shift is not incremental. It is structural, emphasizes ***Sagar Puranik, National Head, Leasing (Gateway), Welspun One.***

Cold-chain infrastructure is no longer merely a supporting layer behind pharmaceutical exports. Increasingly, it is becoming a front-end capability that directly influences market access, supply chain reliability and the ability of exporters to compete in high-value pharmaceutical segments.

From Volume-Driven Expansion to Value-Driven Exports

While the Indian pharmaceutical industry seeks to achieve an approximate jump from $28 billion to $65 billion or as per certain data $130 billion in export revenues by 2030, such a growth strategy cannot rely on generics anymore. In reality, the global pharmaceutical market is steadily transitioning towards biologics and specialty drugs, which already account for over 40 per cent of pharmaceutical revenues globally and are expected to contribute an even larger share in the coming years. The change involves more than just values; it also involves complexities, which necessitate more sophisticated processes of handling, compliance, and tracing along the chain.

This trend is crucial because, unlike conventional drugs, biologics are highly susceptible to temperature

fluctuations. These products need to be kept under strict conditions, often ranging from 2°C to 8°C, and in some cases, even lower. In other words, Indian exports are increasingly reliant on temperature integrity management.

As export volumes rise and delivery cycles become more time-sensitive, the importance of infrastructure located near major ports and trade corridors is also becoming more apparent. Faster coordination between storage, compliance processes and cargo movement can significantly improve responsiveness while reducing the risk of disruption across export cycles.

Are Cold Chain Failures a Market Entry Risk?

The price of failure is high. The International Air Transport Association reports that almost 20% of temperature-sensitive medicines suffer damage due to cold chain failures. In fact, India's own supply chains are already exhibiting stress, with double-digit excursion rates reported across pharma shipments, pointing to systemic gaps rather than isolated failures.

This is more than wastage. When dealing with tightly controlled markets like those of the United States and Europe, any deviation from the prescribed temperature range means that the product cannot be used and the company risks being blacklisted. For Indian exporters seeking to expand into these markets, cold chain management is no longer an internal issue but an entry requirement.

Moreover, there is now increasing pressure from international consumers to provide proof of compliance via digital documentation, ensuring traceability and transparency are key aspects of export preparedness.

This is increasing the need for infrastructure environments where monitoring, compliance and logistics operations can function in a more integrated manner, particularly within ecosystems connected to major ports, trade corridors and multimodal logistics networks.

Fragmentation is Leading to Invisible Losses

Apart from the infrastructure gaps that affect cold chains, fragmentation is another factor that is reducing

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the efficiency of cold chains. Warehousing, transport, and distribution are typically managed separately, thereby increasing chances of temperature variations during handovers.

Every link in the chain carries an element of risk, especially for a nation that has a varied climate with great distances between destinations. According to several studies, inefficiencies in India's cold chain cost the country ₹92,651 crore every year. This figure pertains to several industries, including pharmaceuticals, where a slight problem can result in a huge loss of money and reputation.

What is becoming increasingly evident is that isolated logistics assets are no longer sufficient for the needs of modern pharmaceutical trade. The requirement now is for integrated ecosystems where warehousing, monitoring, transportation, compliance and distribution operate in closer alignment. Such environments can reduce handling inefficiencies, improve visibility across the supply chain and support faster, more reliable movement of temperature-sensitive products.

Increasingly, this is also creating demand for infrastructure ecosystems that combine logistics capability with operational coordination, connectivity and proximity to major ports. As pharmaceutical supply chains become more compliance-intensive, the ability to integrate multiple functions within a single ecosystem is becoming operationally more valuable than fragmented infrastructure spread across locations.

GUEST COLUMN

Key Highlights

- **The International Air Transport Association reports that almost 20% of temperature-sensitive medicines suffer damage due to cold chain failures.**
- **According to several studies, inefficiencies in India's cold chain cost the country ₹92,651 crore every year.**
- **This is creating demand for infrastructure ecosystems that combine logistics capability with operational coordination, connectivity and proximity to major ports.**
- **Cold-chain infrastructure is increasingly becoming a front-end capability that directly influences market access, supply chain reliability and the ability of exporters to compete in high-value pharmaceutical segments.**

From a Cost Centre to a Strategic Asset

Cold chain spending tends to be approached from a financial perspective. Yet its effect on the ability to compete abroad is strategic in nature. According to the World Bank enhanced cold chains can decrease wastage by as much as 30-40 per cent. In the case of drug exports, this results in higher quality batches, lower waste rates, and increased profitability. But more crucially, it fosters trust, a non-quantifiable but extremely important aspect of international pharma business.

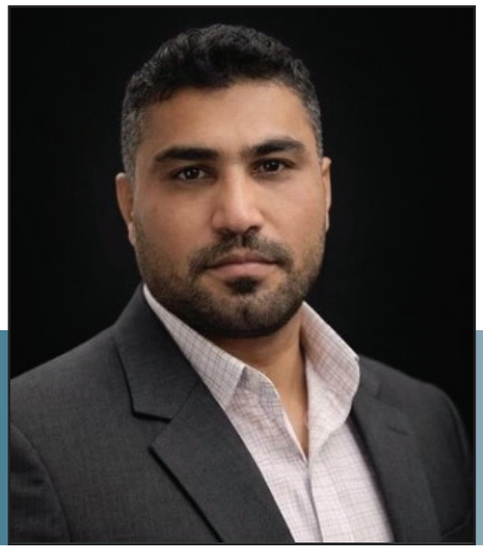
For exporters, this results in fewer instances of product rejection, greater reliability in contracts, and improved positioning in very competitive international sourcing environments. With customers demanding transparency and regulatory compliance, logistics capability is becoming a competitive advantage. This is also shifting the role of infrastructure itself. Cold-chain ecosystems are no longer being viewed simply as storage assets, but as integrated trade and operational environments capable of supporting faster movement, better coordination and stronger compliance across pharmaceutical supply chains.

Building the Backbone of Pharma Growth

It is in the logistics corridors where India's ambitions in the pharmaceuticals industry are destined to be put to their ultimate test. While expansion of cold storage capacity is certainly critical, it is still not enough to solve the whole problem. The need of the hour now is for the development of an infrastructure for integration, rather than isolation. That is, from assets that operate individually into ecosystems of warehousing, transportation, and monitoring which work together as one. The need, too, is for an infrastructure which is designed to evolve in line with changes in regulatory and demand factors. Just as crucially, it is now time to shift focus away from viewing the cold chain logistics process as being reactive to proactive in nature. As pharmaceutical trade becomes increasingly globalised and time-sensitive, infrastructure located near major ports and trade corridors will play an increasingly important role in reducing turnaround times, improving shipment coordination and maintaining temperature integrity throughout export cycles. The ability to bring together logistics infrastructure, operational coordination and trade connectivity within a single ecosystem is likely to become a defining advantage for the sector. The reason for this is becoming increasingly clear.

The more sophisticated pharmaceutical supply chains become and the greater their value content, the smaller the room for logistical error. India has already demonstrated its manufacturing capabilities at scale. Future growth will depend on how effectively those capabilities are supported by infrastructure built for precision, coordination and compliance. In that sense, the future of pharmaceutical exports is unlikely to be shaped by standalone cold storage assets alone, but by integrated port-linked ecosystems capable of bringing together cold-chain capability, connectivity and operational coordination within a single environment. ■

How Strategic Leadership is Accelerating the Next Wave of Bioprocessing



Ashok Kumar
Head - Single Use and Integrated Platform Solutions,
Customer Applications - APAC
Merck Life Science

India is continuously strengthening its position as a global biopharma hub spanning across segments such as biosimilars, vaccines, and emerging modalities like mRNA and cell and gene therapies. This article offers a timely perspective on a critical industry challenge: the widening gap between rapid scientific innovation and the manufacturing capabilities needed to deliver these therapies at scale. ***Ashok Kumar, Head of Single Use and Integrated Platform Solutions, Customer Applications - APAC, Merck Life Science****, emphasizes how strategic leadership and technology adoption can help bridge existing infrastructure gaps while enhancing global supply chain resilience.*

Innovation in the biopharma sector is now entering into an era that is quite exceptional. Monoclonal antibodies, cell therapies, gene therapy and mRNA platforms have been revolutionizing the treatment of several diseases across sectors such as oncology, autoimmune diseases and rare genetic conditions. However, there appears to be a mismatch between the speed of scientific discoveries and manufacturing capabilities within the industry.

The statistics will clearly demonstrate why. The global biologics manufacturing industry is expected to grow USD 140.6 billion by 2033, growing at an impressive rate of almost 17 per cent per annum, owing to the surge in the production of advanced biologics. Furthermore, the monoclonal antibody category alone represents more than 40 per cent of all biologics manufacturing requirements in 2024.

At the same time, we see the rapid scaling of technology supporting these therapeutic approaches, including continuous processing and single-use systems. We are seeing the continuous bioprocessing market grow from approximately USD 414 million in 2025 to nearly USD 1.9 billion by 2034. This shift towards more efficient and flexible manufacturing models means there is an increasing amount of structural reality for this industry, as innovative biology is moving faster than the infrastructure that creates it. Therefore, there needs to be investment in technology and strategic leadership, which means being proactive about building for the future versus building for today.

Anticipatory Bioprocessing vs. Reactive Manufacturing

Traditionally, biomanufacturing has been an ongoing process of optimizing outputs and scaling processes, while simultaneously meeting the requirements of regulations and quality standards. However, the introduction of complicated modalities, including gene therapy, viral vectors and personalized treatments, calls for a change in this process.

In order for biomanufacturing to keep up with these changes, the concept of anticipatory manufacturing is likely to dominate. It means that, in addition to traditional optimization and scaling of manufacturing, more emphasis should be placed on the design of the drug molecule and processes to manufacture the treatment beforehand, not afterwards.

Digitisation, analytics, and PATs are hastening this change. Monitoring in real time, predictive modelling and automation in control systems are facilitating early detection of variances, process optimization and faster development cycles. What emerges as a consequence of all this is efficiency in operations and increased assurance about scale-up of therapy from lab to commercial manufacturing.

Leadership is indispensable in the transition to this modality. Strategic leadership involves reconciling aspirations from science with pragmatism from industry to facilitate innovation in manufacturing pipelines.

Addressing the Gap between Innovations and Manufacturing

One of the biggest problems the biopharmaceutical industry has been grappling with in recent times is the growing gap between innovations and manufacturing.

Many biotech companies currently have hundreds of advanced therapies undergoing clinical trials. The problem, however, is that many of them are encountering difficulties in getting the therapies to patients due to the complexities associated with manufacturing. At other times, the advanced therapy may work effectively during experiments, but it becomes difficult for the company to manufacture it on a large scale.

With the ongoing incorporation of single-use systems, the transition to continuous processing and the application of modular manufacturing sites, companies are affecting their approach to capacity planning. The developments provide manufacturers with the ability to respond more effectively to shifts in demand and reduce the initial financial outlay necessary to manufacture biological drugs.

It will take more than new technologies to define the future of bioprocessing. What will ultimately shape the direction of bioprocessing is a leadership team that understands that manufacturing has transitioned from being a downstream production process to being an integral part of innovation.

In addition to these pioneering technologies, the establishment of collaborative ecosystems, composed of biopharma innovators, technology suppliers and manufacturing partners, is creating opportunities for all parties to design integrated solutions together as early in the process as possible. By working collaboratively, companies can reduce their time to market and improve their chances of producing breakthrough treatments at an appropriate level for the world.

Leadership for the Next Era of Biomanufacturing

It will take more than new technologies to define the future of bioprocessing. What will ultimately shape the direction of bioprocessing is a leadership team that understands that manufacturing has transitioned from being a downstream production process to being an integral part of innovation. As therapeutic pipelines become increasingly complex and personalized, the ability to design manufacturing platforms that are predictive, scalable, and digitally integrated will dictate the speed at which new therapies are developed.

In summary, the future of bioprocessing depends on strong leadership that connects innovation with smart, forward-thinking manufacturing. As therapies become more complex, leaders must shift from reacting to problems to planning ahead. By adopting new technologies, working closely with partners and building flexible, digital systems now, the industry can speed up development and bring life-changing treatments to patients faster. This bold, strategic approach will drive the next leap in bioprocessing and transform healthcare for the better. ■

Blast freezer system container installed at a pharma client site for enhanced product stability and quality assurance.

Akash Agarwal
CEO
Crystal Cold Chain

When the Cold Chain Breaks, So Does the Batch

Cold chain solutions are a significant part of the pharmaceutical industry and contribute to maintaining quality assurance and quality control standards within the pharmaceutical and laboratory ecosystem. ***Akash Agarwal, CEO, Crystal Cold Chain,*** *through this article emphasizes, why reefer containers and blast freezers are becoming central to pharmaceutical quality assurance in India's extreme summers.*

GUEST COLUMN

A vaccine vial that loses potency between the manufacturer's dispatch dock and a rural cold room is not a logistics failure. It is a quality failure. And in pharmaceuticals, the two are no longer distinguishable.

Every batch released from a pharmaceutical facility carries a certificate of analysis, a stability profile, and a label claim built on the assumption that the product will be stored and shipped within a defined temperature range — 2°C to 8°C for most biologics and vaccines, −20°C or colder for many mRNA products, plasma derivatives, and active pharmaceutical ingredients (APIs). The moment that range is breached, the molecule does not care whether the excursion happened inside the plant or on a highway outside Nagpur in May. The data deviation is the same. The investigation is the same. And in many cases, the batch is the same — rejected.

This is the reality Indian pharmaceutical manufacturers, CDMOs, and distributors are confronting with growing urgency. Ambient temperatures across large parts of the country now routinely cross 45°C between April and June. Transit lanes between manufacturing hubs in Gujarat, Telangana, Himachal, and Sikkim and end-markets in metros, Tier-2 cities, and rural PHCs are getting longer, not shorter. And regulators — CDSCO, USFDA, EU GDP inspectors, WHO PQS auditors — are asking sharper questions about what happens between batch release and patient administration.

Quality Assurance No Longer Ends at the QC Lab

For decades, the pharmaceutical industry treated Quality Assurance as something that lived inside the four walls of a plant: cleanroom classifications, in-process controls, finished product testing, batch record review. Cold chain was a logistics line item.

That framing is now outdated. Under WHO Good Distribution Practices, EU GDP Guidelines (2013/C 343/01), USP <1079>, and India's Schedule M revisions, temperature-controlled distribution is treated as a direct extension of GMP. Every reefer container, every blast freezer, every last-mile box must be qualified, mapped, and monitored with the same rigour as a stability chamber inside the plant. A temperature excursion in transit is now a deviation. A deviation triggers a CAPA. A CAPA, if it points to systemic gaps, can trigger a Form 483, an EIR escalation, or an import alert.

In short: the cold chain has become a regulated extension of the manufacturing line.

What Pharma Actually Needs from a Reefer Container

"Reefer" in pharmaceutical logistics is not the same as "reefer" in general cargo. A pharma-grade reefer container is expected to deliver three things that ordinary refrigerated transport often cannot:

- Tight setpoint control — typically ±2°C around the target, whether the target is +5°C for vaccines, −20°C for plasma, or −25°C for certain biologics and APIs.
- Mapped, validated airflow — because the average temperature on a data logger means very little if the corner pallets are sitting 6°C warmer than the centre of the container.
- Continuous, calibrated monitoring with audit-ready data — multi-point loggers, real-time GPS-linked telemetry, and an unbroken chain of custody that an auditor can reconstruct months later.

At Crystal Cold Chain, our reefer infrastructure is engineered to hold temperatures down to −25°C even when the world outside the container is at 46°C. That delta more than 70 degrees between cargo and ambient is not a marketing number. It is the operational reality of moving biologics, vaccines, and temperature-sensitive APIs across an Indian summer.

Where Blast Freezers Enter the Conversation

Reefers move product. Blast freezers protect it at the most vulnerable points: the dispatch staging area, the regional hub, and the pre-loading buffer. For pharmaceutical applications, blast freezing is not about freezing fast for its own sake. It is about pulling product temperature down through the critical zone quickly enough that ice crystal formation, protein denaturation, and aggregation are minimised.

For mRNA vaccines, monoclonal antibodies, certain insulins, plasma fractions, and sensitive APIs, the difference between a controlled rapid freeze at −40°C and a slow, uneven freeze can be the difference between a stable product and an out-of-specification result at the next stability pull. Our blast freezer

systems are designed to operate at temperatures down to −40°C with the airflow uniformity and recovery times that pharmaceutical applications demand not just refrigeration, but qualified ultra-low-temperature preservation.

The Summer Stress Test

Every Indian summer is, in effect, a live audit of a pharmaceutical company's distribution network. The questions it asks are uncomfortable:

- What happens to a 2–8°C shipment that sits on an unshaded loading bay at 2 p.m. in Ahmedabad waiting for paperwork?
- How does a vaccine consignment behave during a four-hour delay at a state border check post in peak May?

These are not theoretical questions. They show up in deviation reports, in temperature mapping studies, in regulator queries, and increasingly in the conversations that QA heads, supply chain directors, and qualified persons are having with their distribution partners.

From Cooling to Compliance

The shift we see across the Indian pharmaceutical sector is precisely this: companies are no longer purchasing refrigeration. They are purchasing compliance, traceability, and audit defensibility. A well-run cold chain today is expected to deliver:

- Temperature stability within qualified ranges, demonstrated through documented mapping studies.
- Excursion management protocols including pre-agreed escalation paths and stability budget calculations.
- Backup and redundancy planning for compressor failure, power loss, and route disruption.

This is a meaningfully different conversation than the one the industry was having even five years ago. It reflects how serious cold chain risk has become, as portfolios shift toward biologics, biosimilars, cell and gene therapies, and complex injectables categories, where a single temperature excursion can render an entire batch unusable and a single batch can be worth several crores.

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Quality does not End at Batch Release

The most expensive moment in a pharmaceutical product's life is not when it is manufactured. It is when something goes wrong after manufacturing because by then, the cost of the API, the excipients, the labour, the energy, the QC testing, and the regulatory clearance is already sunk. A cold chain failure does not just spoil a product. It writes off everything the company invested to make it.

That is why temperature-controlled infrastructure has quietly moved from the logistics ledger to the quality ledger. Reefer containers holding −25°C across a 1,400-kilometre route, and blast freezers pulling product to −40°C before it ever sees a truck, are no longer support functions. They are part of how a pharmaceutical company protects the molecule, the patient, and the licence to operate.

At Crystal Cold Chain, this is the lens we build for: not refrigeration, but pharmaceutical-grade reliability under Indian summer conditions. Because quality assurance, in this industry, does not end when the batch is released.

It ends when the patient receives a product that performs exactly as the label promises. ■

Suraj Limited: Dedicated towards Technical Excellence & Quality Products

Suraj Limited, is an ISO-9001:2015, 14001:2015, OHS AS 45001:2018 certified company, PED approved and Government Recognized Export House and one of the world's leading producers and exporters of stainless steel, alloy steel, carbon steel seamless pipes, tubes, fittings and flanges. With over three decades of expertise, we serve critical industries including Oil & Gas, Petrochemicals, Power, Nuclear, Defense, Fertilizers, and Water Treatment across 60+ countries.

Manufacturing Infrastructure

Suraj Limited operates from two state-of-the-art plants in Gujarat, India:

- **Thol Plant:** Dedicated to seamless pipes, tubes, and fittings with hot extrusion, cold pilgering, and finishing facilities.
- **Chandarda Plant:** Specialized in carbon and alloy steel forged fittings and flanges with advanced forging, heat treatment, and machining lines.

Our total installed capacity exceeds 24,000 MT per annum.

Quality Assurance

We have our own in-house testing laboratory with modern testing equipment to carry out all mandatory as well as optional tests on the products. Complex tests for which we do not have in-house facilities will be conducted at an external third party approved test house. Products will also be supplied under third party inspection where customer demands.

Certifications & Approvals

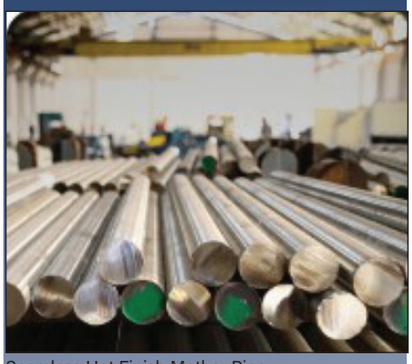
- Our manufacturing is PED 2014/68/EU approved, and we hold product approvals from IBR, EIL, ONGC, BHEL, NTPC, and major global EPCs.
- We are also approved by international inspection agencies like Bureau Veritas, DNV, TUV, Lloyd's, and SGS.

Commitment

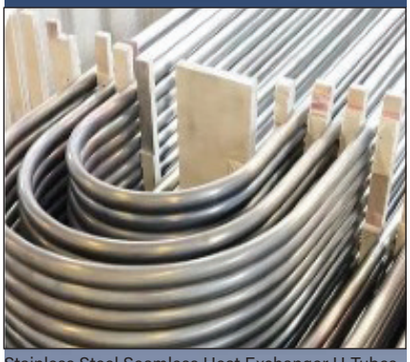
At Suraj Limited, we believe every customer has unique needs. Our technical and commercial teams work closely with clients to offer customized solutions, reliable delivery, and dedicated after-sales support.

Key Highlights

- **Gujarat-based Suraj Limited is one of the world's leading producers and exporters of stainless steel, alloy steel, carbon steel seamless pipes, tubes, fittings and flanges.**
- **SO-9001:2015, 14001:2015, OHS AS 45001:2018 certified company.**
- **PED approved and Government Recognized Export House.**
- **Operates from two state-of-the-art plants in Gujarat.**
- **Company's total installed capacity exceeds 24,000 MT per annum.**


Seamless Hot Finish Mother Pipe

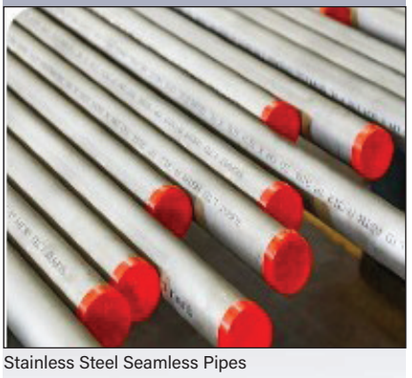

Stainless Steel Seamless Buttweld Fittings


Stainless Steel Seamless Heat Exchanger U-Tubes


Stainless Steel Seamless Heat Exchanger Tubes


Stainless Steel Flanges


Stainless Steel Forged Rings


Stainless Steel Seamless Pipes

Product Range

- **Stainless Steel Seamless Pipes:** 1/8 NPS to 6 NPS
- **Stainless Steel Seamless Butt-weld Pipe Fittings:** ½ NPS to 12 NPS
- **Stainless Steel Seamless Stubends (Type A):** ½ NPS to 12 NPS
- **Stainless Steel Flanges:** ½ NPS to 40 NPS
- **Stainless Steel Forged Rings:** Max. 1200 mm OD
- **Heat Exchanger Tubes:** 6.00 mm to 101.60 mm OD
- **Heat Exchanger 'U' Tubes:** 12.70 mm to 50.80 mm OD
- **Hydraulic & Fuel Injection Tube:** 6.00 mm to 114.00 mm OD

Grades: AISI-304, 304L, 304H, 304N, 304LN, 309, 310, 310S, 316, 316L,316H, 316Ti, 316N, 317, 317L, 321, 347, 405, 410

Duplex: UNS-S32750, S32760, S31803, S31500, S32205, S32304 and Its Equivalents in DIN, NFA, JIS, etc.

Length: Pipes up to 11.800 meter long and tubes up to 20 meter long

For detailed product information, please visit : www.surajgroup.com ■

Bio-X India 2026: Glimpses of Panel Discussion on BioE3 Policy

Chemtech organized Bio-X India World Expo & Conferences 2026, powered by ABLE (Association of Biotechnology Led Enterprises), on 4th February 2026 at Bombay Exhibition Centre, in Mumbai. The Bio-X India World Conference was based on the theme – 'Reimaging the Future of Biotech in India'. The conference was organized under the Chairmanship of Dr. Rajesh S. Gokhale, Secretary, Department of Bio Technology, Government of India. The one-day conference witnessed five sessions apart from the inaugural session. In this edition of *Pharma Bio World*, we present glimpses from the first session – a panel discussion on BioE3 Policy.

The Bio-X India event was supported by

- Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India
- Department of Biotechnology, Ministry of Science & Technology, Government of India
- Association of Biotech Companies, Czech Republic and
- Indian Drug Manufacturers Association, amongst others

Inaugural Session

The inaugural session was graced by Mr. Nadir Godrej, Chairperson, Godrej Industries Group and Chairperson and Managing Director, Godrej Industries; Dr. P.M. Murali, Chairman, Jananom Group & President, Council of Presidents, ABLE; and Dr. Rajesh S. Gokhale, Secretary, Department of Bio Technology, Government of India & Chairman – Central Advisory Board, Bio-X India World Expo & Conferences 2026.

Inaugural session of BioX India Conference

(L-R) Mr. Nadir Godrej, Chairperson, Godrej Industries Group and Chairperson and Managing Director, Godrej Industries; Mr. Maulik Shah, Chairman & Chief Executive, Jasubhai Group & Chemtech Foundation; Dr. P.M. Murali, Chairman, Jananom Group & President, Council of Presidents, ABLE; Mr. Hemant Shetty, CEO, Jasubhai Group & Chemtech Foundation; Dr. Rajesh S. Gokhale, Secretary, Department of Bio Technology, Government of India & Chairman – Central Advisory Board, Bio-X India World Expo & Conferences 2026, during the lighting of the lamp at the inaugural session of Bio-X India World Expo & Conference 2026.

Session I – Panel Discussion on BioE3 Policy

Following the inaugural session, the first session was a panel discussion held on the topic - Translating BioE3 Policy role out and Bio manufacturing Investments.

The panel discussion was moderated by Dr. Shambhavi Naik, Head-Research, Takshashila Institution. The panellists comprised Dr. P.M. Murali, Chairman, Jananom Group & President, Council of Presidents, ABLE; Dr. Jitendra Kumar, MD, BIRAC; Dr. Arun Harish, CSO, CPI, UK; Dr. Vaishali Panjabi, Scientist 'F', DBT, GoI and Prof. Sharmila Bapat, BRIC-National Centre for Cell Science, Pune.

Glimpses from the event:

(L-R) : Dr. Shambhavi Naik, Head-Research, Takshashila Institution and Moderator for the panel discussion; Dr. Vaishali Panjabi, Scientist 'F', DBT, GoI; Dr. Jitendra Kumar, MD, BIRAC; Dr. P.M. Murali, Chairman, Jananom Group & President, Council of Presidents, ABLE; Dr. Arun Harish, CSO, CPI, UK; and Prof. Sharmila Bapat, BRIC-National Centre for Cell Science, Pune, on the dais.

Dr. Shambhavi Naik

Dr. Vaishali Panjabi

Dr. Jitendra Kumar

Dr. P.M. Murali

Dr. Arun Harish

Prof. Sharmila Bapat

Pharmaceutical Industry

NIPER Hajipur signs MoU with IPC & Boehringer Ingelheim

The National Institute of Pharmaceutical Education and Research (NIPER), Hajipur has signed a Memorandum of Understanding (MoU) with the Indian Pharmacopoeia Commission (IPC), Ghaziabad, under the Ministry of Health & Family Welfare, Government of India, to promote collaboration in the areas of pharmaceutical standards, regulatory science, and patient safety.

NIPER Hajipur, signs MoU with IPC to strengthen pharmaceutical standards and patient safety.

The collaboration aims to foster cooperation in areas of mutual interest, with a focus on strengthening pharmacopeial standards, enhancing patient safety, and advancing scientific research across pharmaceuticals, medical devices, and related healthcare products.

Under the MoU, NIPER Hajipur and IPC will undertake joint research initiatives in key areas, including impurity profiling and safety correlation of drugs, development and validation of advanced analytical methods, and establishment of quality control protocols. The partnership will also support the development of reference standards for complex biologics, biosimilars, and emerging therapeutic products, including cell and gene therapies, facilitating their inclusion in the Indian Pharmacopoeia.

The MoU further envisages capacity building and training initiatives in specialized domains such as biosimilars, cell and gene therapy, and blood and blood-related products, with the objective of strengthening national capabilities in these critical areas.

MoU with Boehringer Ingelheim

In line with the growing emphasis on strengthening industry–academia partnerships to drive innovation and translational research in India's pharmaceutical sector, the National Institute of Pharmaceutical Education and Research (NIPER) Hajipur has signed a Memorandum of Understanding (MoU) with Boehringer Ingelheim India Pvt. Ltd., marking a significant step towards fostering collaborative research and accelerating healthcare solutions.

Under this partnership, Boehringer Ingelheim will provide researchers access to its opnMe® open science platform, enabling wider scientific exchange and accelerating healthcare innovation. The collaboration will build research capacity at NIPER Hajipur, provide students with hands-on training, and generate early-stage proof-of-concept data that can be scaled into preclinical development. By harnessing a resource-efficient, integrated research framework, the partnership aims to translate scientific discoveries into viable therapies.

NIPER Hajipur signs MoU with Boehringer Ingelheim to advance pharmaceutical research collaboration.

The collaboration between NIPER Hajipur and Boehringer Ingelheim is expected to foster synergy between academia and industry and contribute to the development of next-generation therapies and support the broader objective of building a robust, innovation-driven healthcare ecosystem in the country. ■

Free Trade Agreement

India-New Zealand FTA opens 8,284 tariff lines as trade crosses USD 1 billion mark: Rubix Data Sciences

India and New Zealand signed a landmark Free Trade Agreement (FTA), concluding one of India's fastest trade negotiations in under a year. The agreement is expected to provide greater stability and predictability to trade flows while creating a framework for long-term growth. A new analysis by Rubix Data Sciences positions the agreement as a timely intervention in a bilateral trade relationship that has shown strong growth, but also recent signs of moderation.

Product	Share in FY2022	Share in FY2026*
*Pharmaceutical Products	9%	10%
Passenger Vehicles	2%	5%
Refined Petroleum Products	0%	5%
Bed Linen	3%	3%
Jewellery Articles	2%	3%
Others	84%	74%
Total	100%	100%

** Pharmaceutical products refers to finished packaged medicaments and excludes raw materials Note: FY2022 and FY2026 refer to 11-month periods of April–February of the respective periods. Source: Directorate General of Foreign Trade, Ministry of Commerce and Industry*
Major products exported by India to New Zealand.

The FTA introduces comprehensive tariff liberalisation and enhanced market access across goods, services, and investment. New Zealand will eliminate tariffs across all 8,284 tariff lines, granting Indian exports full duty-free access from the outset. This is expected to strengthen the competitiveness of sectors such as textiles, apparel, leather, and footwear, while also supporting growth in engineering goods, automobiles, pharmaceuticals, electronics, and chemicals.

Agricultural trade is set to benefit from improved access for products such as fruits, vegetables, spices, cereals, and processed foods, alongside collaborative initiatives aimed at enhancing productivity and integrating farmers into global value chains. In services, New Zealand has offered commitments across 118 sectors, alongside expanded technical cooperation in areas including healthcare, traditional medicine, tourism, and audiovisual industries. The agreement also strengthens investment and mobility linkages, supported by a long-term investment commitment of USD 20 billion and new pathways for students and skilled professionals.

Product	Share in FY2022	Share in FY2026*
Wood Logs	6%	13%
Ferrous Scrap	7%	13%
Aluminium Scrap	8%	9%
Coal	4%	8%
Raw Wool	10%	8%
Others	65%	49%
Total	100%	100%

Note: FY2022 and FY2026 refer to 11-month periods of April-February of the respective periods.
Source: Directorate General of Foreign Trade, Ministry of Commerce and Industry
Major products imported by India from New Zealand.

India's exports to New Zealand are becoming more concentrated in value-driven sectors. The share of pharmaceutical products has increased, while passenger vehicles and refined petroleum products have gained prominence. On the import side, there is a growing concentration in core raw materials. The share of wood logs and ferrous scrap has risen significantly, alongside increases in aluminium scrap and coal, reflecting demand linked to construction, recycling, and industrial energy needs. This shift in trade composition suggests deeper alignment with industrial requirements and supply chain linkages between the two economies. ■

Biotechnology

India, Vietnam Agree to Accelerate Joint Engagement in Science, Technology and Innovation

Union Minister of State (Independent Charge) for Science & Technology, Earth Sciences, and Minister of State for PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh (R), with Prof. Dr. Vu Hai Quan, Minister of Science and Technology of the Socialist Republic of Vietnam.

Union Minister of State (Independent Charge) for Science & Technology, Earth Sciences, and Minister of State for PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr. Jitendra Singh held bilateral talks with Prof. Dr. Vu Hai Quan, Minister of Science and Technology of the Socialist Republic of Vietnam, in New Delhi, with both sides agreeing to deepen cooperation in emerging technologies, innovation, research and startup ecosystems.

Dr. Jitendra Singh referred to India's rapidly expanding startup ecosystem and proposed stronger engagement between startups, innovators and research institutions of the two countries. He said India and Vietnam can work together to create new opportunities for entrepreneurs and young researchers in emerging technology sectors.

The discussions focused on advancing collaboration in Artificial Intelligence, cybersecurity, deep technologies, semiconductors, robotics, biotechnology, digital technologies and innovation-led research, while also strengthening institutional mechanisms between the two countries in science and technology.

Welcoming the Vietnamese delegation, Dr. Jitendra Singh described India and Vietnam as civilizational partners connected by nearly two thousand years of shared cultural and historical linkages. He said the Comprehensive Strategic Partnership between the two countries has gained new momentum over the last decade and acquired greater depth following the visit of Prime Minister Pham Minh Chinh to India in August 2024.

The Minister said Vietnam remains an important partner in India's Act East Policy and Indo-Pacific vision, adding that the growing India-ASEAN engagement in science, technology and innovation provides a strong foundation for collaborative research, innovation and technology-driven growth. He said the present engagement offers an important opportunity to further elevate bilateral cooperation in frontier areas of science and technology.

Vietnamese and Indian delegation during the meeting.

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The Minister also referred to Vietnam's active participation in India-ASEAN Science, Technology and Innovation programmes. Around ten researchers from Vietnam have availed fellowships under the India-ASEAN Research and Training Fellowship programme, while several joint projects are currently underway in different domains of science and technology. Vietnamese innovators and women scientists have also participated in innovation and scientific forums organised under regional cooperation frameworks.

The two sides discussed the proposed next India-Vietnam Joint Committee Meeting (JCM) and reviewed preparations for advancing bilateral engagement in science, technology and innovation through structured institutional cooperation.

Prof. Dr. Vu Hai Quan welcomed the growing engagement between the two countries in science and technology and expressed Vietnam's interest in developing structured collaboration in deep technologies with practical applications and societal benefits. He proposed nomination of dedicated nodal points from both Ministries for regular coordination and preparation of a concrete action plan to translate bilateral initiatives into implementable outcomes. During the discussions, both sides also exchanged views on cooperation in Artificial Intelligence missions, cybersecurity frameworks, innovation ecosystems and technology transfer initiatives. India expressed readiness to share its experiences and best practices in these areas.

The meeting also reviewed ongoing academic and institutional engagements between the two countries, including collaborations involving research institutions, innovation hubs and technology incubation platforms. Discussions covered possibilities for startup exchange programmes, co-innovation centres and industry-linked research partnerships.

India and Vietnam share a strong and expanding partnership under their Comprehensive Strategic Partnership framework, with science and technology emerging as a key pillar of bilateral cooperation. Both sides agreed to maintain regular engagement and work towards translating the outcomes of the bilateral dialogue into concrete collaborative initiatives delivering technological, economic and societal benefits for the people of both countries. ■

Food Processing Sector

India's Food Processing Sector: Critical Pillar of the Agricultural and Manufacturing Ecosystem

India's food processing sector has emerged as a critical pillar of the agricultural and manufacturing ecosystem, driving value addition, strengthening market linkages, and enhancing the availability of processed foods.

The sector has witnessed steady growth in recent years, with Gross Value Added (GVA) increasing from ₹1.34 lakh crore in 2014-15 to ₹2.24 lakh crore in 2023-24 as per the first revised estimates. Its rising global footprint is reflected in the share of processed food exports in agricultural exports, which grew from 13.7 per cent in 2014-15 to 20.4 per cent in 2024-25.

With its strong resource base as the world's second-largest producer of fruits and vegetables, India holds significant potential to emerge as a global hub for food processing. However, realizing this potential requires enhanced competitiveness in terms of scale of production, productivity, value addition, and integration with global value chains. Recognizing these imperatives, the Government introduced the Production-Linked Incentive Scheme for the Food Processing Industry (PLISFPI) to catalyse growth and position India more strongly in global markets.

The Production-Linked Incentive Scheme for the Food Processing Industry, approved by the Union Cabinet on 31 March 2021, falls within the broader Production-Linked Incentive Scheme.

The Production Linked Incentive (PLI) Scheme was launched in April 2020 to boost domestic manufacturing capabilities by offering financial incentives to eligible companies based on their incremental sales. It was introduced to enable the country to achieve more balanced and resilient progress by strengthening the manufacturing sector.

Aligned with the vision of Atmanirbhar Bharat and the broader Make in India initiative, the PLI Scheme was initially introduced for sectors such as Mobile Manufacturing and Specified Electronic

Components, Critical Key Starting materials/Drug Intermediaries and Active Pharmaceutical Ingredients, and Manufacturing of Medical Devices. Over time, the PLI framework has been expanded to cover 14 strategic sectors, with an incentive outlay of ₹1.97 lakh crore, with food processing among the key sectors.

With an outlay of ₹10,900 crore, PLISFPI is being implemented from 2021-22 to 2026-27. The scheme seeks to generate processed food output of ₹33,494 crore and create employment for nearly 2.5 lakh persons by the year 2026-27.

The Integrated Framework of PLISFPI

The Production Linked Incentive Scheme for Food Processing Industry (PLISFPI) is structured around three core components designed to promote manufacturing, encourage innovation among SMEs, and support the global branding of Indian food products.

First component (Category I): Incentivising the manufacturing of four major food product segments, viz. Ready-to-Cook/Ready-to-Eat (RTC/RTE) foods, including millet-based products, Processed Fruits & Vegetables, Marine Products, and Mozzarella Cheese.

Second component (Category II): Incentivising Innovative/ Organic products of SMEs across all four food product segments, including Free Range- Eggs, Poultry Meat & Egg Products.

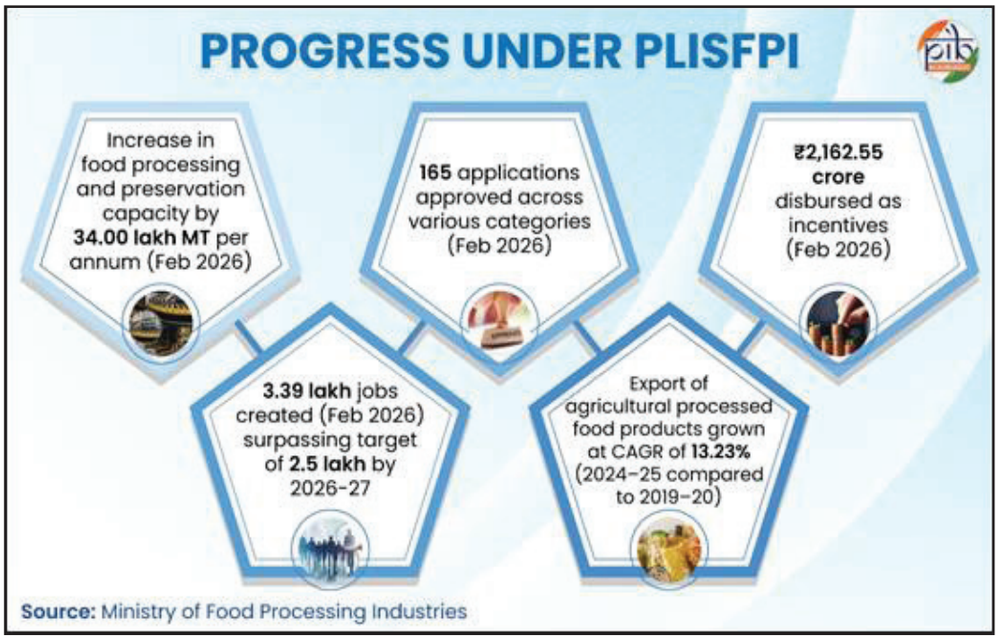
Third component (Category III): Support for branding and marketing abroad to incentivise the emergence of strong Indian brands, including in-store branding, shelf space rental, and marketing.

Additionally, from the savings under PLISFPI, a new component- the Production Linked Incentive Scheme for Millet-Based Products (PLISMBP) - was carved out in FY 2022-23 with an outlay of ₹800 crore. It aims to encourage the use of millets in RTC/RTE products and to incentivize their use under the scheme to promote their production, value addition, and sale.

The Incentive Structure of PLISFPI

Under the Production Linked Incentive Scheme for Food Processing Industry (PLISFPI), the manufacturing components of the scheme (Category I and Category II) provide incentives to eligible food processing companies based on incremental sales of specified food products. Under these components, applicants must meet minimum sales thresholds in the base year (2019-20) and undertake prescribed investments in plant and machinery, technical civil works, and associated infrastructure in segments such as ready-to-eat/ready-to-cook foods, processed fruits and vegetables, marine products, and mozzarella cheese.

Under Category III, the government provides financial incentives to support branding and marketing activities for Indian-branded consumer food products in global markets. Applicants are reimbursed 50 per cent of their branding and marketing expenses abroad, capped at 3 per cent of their annual food product sales or ₹50 crore per year, whichever is lower. Only Indian brands selling food products that are entirely manufactured in India



are covered under this component. To qualify, applicants must spend a minimum of ₹5 crore over a period of five years.

Strengthening Manufacturing, MSMEs, and Global Competitiveness

The scheme has facilitated the adoption of advanced technologies and the establishment of multiple production lines. It has resulted in the creation of 34 lakh MT per annum of processing and preservation capacity as of February 2026.

PLISFPI has also attracted strong industry participation and investment:

- A total of 165 applications has been approved by the Ministry of Food Processing Industries across various categories.
- These approvals correspond to 274 project locations.
- Beneficiaries have reported investments amounting to ₹9,207 crore under the scheme.
- Incentives worth ₹2,162.55 crore have been disbursed as of February 2026.

Overall, these outcomes underscore the scheme's effectiveness in catalysing capacity expansion, mobilising private investment, and strengthening the technological and operational capabilities of India's food processing sector.

The scheme has also played a significant role in promoting MSMEs. Out of the 165 approved applications, 69 applicants are MSMEs (as of February 2026). Additionally, 40 contract manufacturing units associated with the main approved applicants fall within the MSME category, indicating their integration across the value chain. Furthermore, incentives amounting to ₹13.266 crore have been disbursed to 20 eligible MSMEs as of 28 February 2025. This expansion in capacity and investment has translated into substantial employment generation. Around 3.39 lakh direct and indirect jobs have been created by February 2026, far surpassing the scheme's target of 2.5 lakh jobs by 2026-27.

In addition, PLISFPI has contributed to strengthening India's presence in global processed food markets:

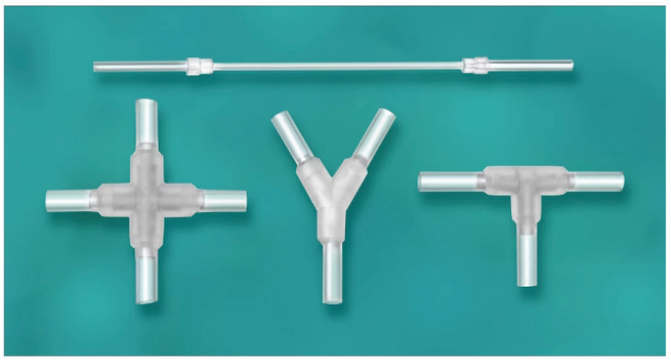
- Exports of agricultural processed food products approved under the scheme have grown at a Compound Annual Growth Rate (CAGR) of 13.23 per cent as on 2024-25, with reference to 2019-20.
- The cumulative export sales of PLISFPI beneficiaries reached ₹89,053.44 crore during the period from FY April, 2021 to FY September, 2025.

Conclusion

The Production-Linked Incentive Scheme for the Food Processing Industry (PLISFPI) has emerged as a key driver of growth in India's food processing sector. By linking incentives to increased sales, it has encouraged investment, expanded production capacity, and strengthened the global presence of Indian food products. Its emphasis on value addition, MSME participation, and millet-based products has contributed to inclusive growth.

The scheme has also strengthened the connection between agriculture and industry and generated employment across the value chain. Collectively, these outcomes position PLISFPI as a strong foundation for building a more competitive, resilient, and inclusive food processing ecosystem in the country. ■

DuPont Launches Two Products - Liveo™ Pharma TPE Overmolded Assemblies & AmberChrom™ XT SL Chromatography Resins



DuPont™ Liveo™ Pharma TPE overmolded assemblies

Liveo™ Pharma TPE Overmolded Assemblies: DuPont has launched DuPont™ Liveo™ Pharma TPE overmolded assemblies, engineered for ultrapure fluid transfer across upstream and downstream pharmaceutical and biopharmaceutical processes. Designed as critical components of single use systems, the new assemblies help reduce contamination risk, minimize the potential for leakage, and reduce in-house assembly and setup time and costs.

DuPont™ Liveo™ Pharma TPE Overmolded Assemblies (OMAs) support the transfer of ultrapure liquids, air or steam while helping manufacturers reduce cleaning, validation and labor requirements associated with traditional single-use systems. The assemblies are engineered for low extractables, strong chemical resistance, and improved heat welding performance. These are available in both standard and ultra-low-temperature options.

AmberChrom™ XT SL Chromatography Resins: DuPont has announced the launch of DuPont™ AmberChrom™ XT20 SL and XT30 SL chromatography resins, expanding its bioprocessing portfolio to help manufacturers streamline purification operations for oligonucleotide and peptide therapeutics.

Oligonucleotide and peptide therapeutics are a growing class of targeted medicines used to treat a range of diseases—particularly genetics and rare disorders, metabolic conditions (such as diabetes and obesity), and some cancers — by precisely modulating specific biologic pathways. These therapeutics require specialized purification solutions to achieve the purity and consistency needed for clinical and commercial production.

The newly introduced DuPont™ AmberChrom™ XT20 SL and XT30 SL chromatography resins are slurried versions of the company's existing DuPont™ AmberChrom™ XT resins and are designed to simplify downstream workflows by eliminating the need for resin hydration prior to column packing. By enabling manufacturers to move directly from delivery to column packing, DuPont™ AmberChrom™ XT SL resins help reduce preparation time, limit the need for additional equipment, and streamline purification processes, while maintaining the high resolution required for complex separations. ■

Haver & Boecker adds Roto-Lock Dosing Unit to Roto-Packer RV series

The Haver & Boecker Roto-Packer® RV series delivers greater operational efficiency with the addition of the patented Roto-lock® dosing unit now standard on new machines. The dosing system reduces product loss during the packing process, increasing production output. When paired with the optional Roto-feed® airless rotary feeder, the Roto-Packer ® system provides a cleaner packing process that reduces downtime and enhances efficiency. The Roto-Packer ® fills more bags in less time with the capacity to run 24 hours a day, seven days a week.

The Roto-lock®, a specialized shaft-sealed dosing unit, fully closes the gate once a valve bag is packed with material. A rubber interface between the slide gates ensures no dust escapes while the machine rotates, and a new bag is placed on the filling spout. Once the new bag is in place, the process repeats. Because of the rubber interface and dust reduction, the Roto-lock® undergoes less wear and tear than traditional slide gate dosing units. As a result, it cuts back on spare part costs and extends service intervals. ■

Rusan unveils APOSAN® 3ml multi-dose pen

Rusan Healthcare Pvt. Ltd., the marketing and distribution arm of Rusan Pharma Limited, has launched a multi-dose delivery pen device - APOSAN® 3ml Pen (Apomorphine Hydrochloride solution for injection in cartridge)(10 mg/ml)(3 ml pre-filled cartridges) for treatment of motor fluctuations commonly known as 'ON-OFF' episodes in patients suffering from Parkinson's disease (PD).

The company offers the complete range of Apomorphine Hydrochloride in different fill volumes namely - 2ml injection, 3ml in pre-filled cartridge with a 'Multi-dose PEN device' and 5ml for continuous 'Infusion PUMPS' to meet distinct clinical scenarios in PD management, such as rapid rescue from OFF episodes using PEN devices and sustained symptom control using infusion PUMPS.

The APOSAN® 3ml PEN offers a multi-dose, dial-a-dose mechanism with an enhanced dose-visibility window, thereby enabling accurate and consistent dose administration. The APOSAN® 3 ml PEN reduces handling complexity, and supports safer, more reliable self-administration reducing the risk of dosing errors. The APOSAN® 3 ml PEN device's lightweight, portable design enables convenient, dependable subcutaneous administration at home, empowering patients to manage their therapy promptly. ■

Allrounder Trend from Arburg sets New Standard in Injection Moulding

The electric Allrounder Trend machine from Arburg is quick to set up, easy to operate and produce high-quality, energy-efficient moulded parts. It offers low investment and operating costs and is available with short delivery lead times.

The Allrounder 1000 e Trend with a clamping force of 1,000 kN produces PCB connectors from liquid crystal polymer (LCP).

An electric Allrounder 1000 e Trend with a clamping force of 1,000 kN and a size 170 injection unit produces a gear made of POM for the mobility industry. The single-cavity tool comes from Zeli (China). The cycle time is around 60 seconds. A Flexlift 10+2 linear robot is used to remove the moulded parts and then sets them down on a conveyor belt. The pilot functions "aXw Control ScrewPilot" and "aXw Control PressurePilot" in the Gestica lite control system ensure the necessary precision of screw and pressure regulation when processing this challenging material.

There are four sizes available in the clamping force range from 500 to 2,000 kN and with electric injection units in sizes from 100 to 800. These come with injection speeds of 200, 350 or 500 millimetres per second. ■

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