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THE FUTURE OF PLI SCHEME

With only less than 5 per cent of Production-Linked Incentive (PLI) scheme funds (Rs 1.97 lakh crore) utilised in three years, the success of the scheme has been limited to only a handful of sectors. So, what's the way forward?

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- Excon 2023 preview
- How 5-axis measurement is redefining industrial inspection
- Automation: The key to unlock India's manufacturing potential
- Advantages of conveyors with addressing system
- Impact of PLI schemes on job creation

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PLI scheme: Need for a course correction

The Government of India is reportedly planning to ease some norms for five sectors (textiles, pharmaceuticals, drones, solar and food processing) to help them better utilise the fund under its Production-linked Incentive (PLI) scheme. These five sectors account together for nearly a third of the PLI scheme, which aims at boosting local manufacturing. Review has been triggered due to lower-than-expectation response to the scheme.

The Rs 1.97-trillion PLI scheme was launched in 2020 covering 14 sectors ranging from electronic products to drones. However, less than 5 per cent of PLI funds have been utilised in three years, with most of the budget remaining unused. For example, in 2022-23, the government spent Rs 28.74 billion in incentive payouts under PLI scheme against the Rs 85.04 billion initially allocated in the Union Budget for FY23. There are multiple reasons for this sluggish disbursement of PLI incentives.

The PLI scheme provides incentives to applicants on fulfilling the domestic value addition (DVA) criteria wherein a certain percentage of inputs used in the manufacturing process are to be procured domestically. In some of the sectors, this DVA criteria is set at a high percentage. For instance, in auto and auto components sector, the requirement of at least 50 per cent DVA is a challenge for many as India remains dependent on import of key components like lithium-ion batteries and semiconductor chips.

Expansion criteria required in the policy are stringent, and industries have not been able to accomplish them. For instance, the 25 per cent YoY sales growth criteria specified for the textile sector is too harsh for textiles, which see a steady annual growth of 8 to 9 per cent. Many companies that have applied for the scheme are concerned about their ability to meet the government's requirements due to the lengthy, burdensome, and complex procedure to claim incentives. Such delays effectively reduce the scope of benefits available to the applicants.

Covid 19 had disruptive effect on the global economy, which also impacted the PLI scheme in the initial phase delaying investments, setting up of plants by manufacturers, derailing projected sales/revenue growth targets, etc. Now, with economic activities back to near normal, 2023-24 is likely to witness much higher outgo of funds under PLI scheme. Besides, if five large industries (automotive, advanced chemical cell batteries, specialty steel, solar PV and textiles) perform well, they are expected to invest Rs 2.21 trillion or 80 per cent of the overall estimated PLI capex. Of this, an estimated Rs 1.23 trillion has been committed so far.

One of the sectors that has been witnessing strong growth and investment is cement. Against this backdrop, ASAPP Info Global Group (the publisher of IPF) will be hosting the 14th **Cement EXPO 2023** on December 14-15, 2023, at Manekshaw Centre in Delhi. The who's who of the Indian cement industry, which will witness addition of 145 MT capacity in the next five years, will be attending the Expo and discuss their investment plans for cement machinery, automation, logistics, material handling, energy efficiency, etc.



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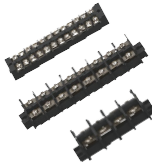


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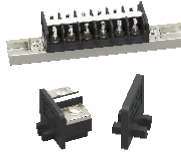
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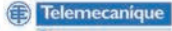
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Email: marketing@dembla.com



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HIWIN INTERNAL RECIRCULATION TYPE BALLSCREW

IBK Engineers Pvt Ltd offers a wide range of Hiwin internal recirculation type ballscrew.

Features:

- Internal recirculation type ballscrew, consists of the screw spindle, the ball nut, the steel balls and the ball return caps.
- The steel balls make only one revolution around the screw spindle. The circuit is closed by a ball return cap in the nut allowing the balls to cross over adjacent ball tracks. Its features include: Adapted to normal leads and Outer diameter of nut is small.

About the company: Established in 2014, IBK Engineers Pvt Ltd, is engaged in the wholesaling, supplying, distributing and trading of deep groove ball bearing, mechanical bearing, roller chain, etc.

Contact:

IBK Engineers Pvt Ltd, Bengaluru
Mobile: 09880566644
Email: raj.kn@ibizkart.com



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B R Precisions offers a wide range of precision turbo hydro machine vice.

Features:

- This type of Hydraulic vice achieves a clamping force up to 5000kgs using the simple turn of the handle without any effort.
- This advantage makes them ideal for heavy duty clamping in Machines. Jaw plates are made out of tool steel machined and heat treated Hardened at 52° to 56° HRC and ground with stopper hole in side of the clamping jaws Inbuilt hydraulic cylinder for high clamping force which does not required any external force.

About the company: B R

Precisions is dedicated to the manufacturing of clamping solutions.

Contact:

B R Precisions, Bangalore

Mobile: 09845208854, 09449648171

Email: brvices@rediffmail.com



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LASER CONTROL MICRO COMPACT NT

Blum-Novotest Measuring & Testing Technology Pvt Ltd offers a wide range of laser control micro compact NT.

Features:

- Laser measuring system for CNC machining centres for non-contact tool measurement and tool monitoring under the harshest conditions.
- Its applications include: support systems provide highest precision; extremely robust and long-lasting fast, precise and automatic measurement of all tool types, shapes and cutting materials; reliable measurement of sensitive and very small tools; measurement of multi-staged tools and special tools.

About the company: Blum Novotest Measuring &

Testing Technology Pvt Ltd has made a name for itself in the list of top suppliers of bore gauge, radio receiver in India.

Contact:

Blum-Novotest Measuring & Testing

Technology Pvt Ltd, Bangalore

Tel: 080-23185468 Mobile: 09075004435

Email: info@blumnovotestindia.in



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PORTABLE ENGINE OPERATED ACTUATORS

Indaai Technologies Pvt Ltd offers a wide range of portable engine operated actuators.

Features:

- It is compact, light, quick, reliable, the model APS1000N is portable engine-operated actuation system that, coupled to manual operation units, makes it possible to handle medium-size sluice gates quickly and safely.
- With a weight of about 12kg and a modern engine Honda GX25 4T, this model that can be used in either the horizontal or vertical position, guarantees really surprising performances.

About the company: Indaai Technologies Pvt Ltd is in the business of flow management. They offer virtually every solution related to flow, whether it is pumping or flow control or flow measurement. **Contact:**

Indaai Technologies Pvt Ltd, Pune

Mobile: 09766336366

Email: response@indaai.com



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PP FLANGE END BALL VALVE

Stream Engineers India Pvt Ltd offers a wide range of PP flange end ball valve.

Features:

- PP flange end ball valve is manufactured in compliance with industrial standards and is available in different specifications. The valve is chemically resistant and is economical. The assortment of valve is much light weight and is considered to be better options evaluated to G.I. or C. I. valves.

About the company: The Stream Engineers India Company designs, Manufacture And export industrial valves and fittings based in India And Abroad.

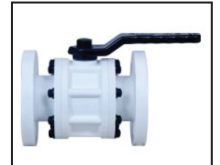
Contact:

Stream Engineers India Pvt Ltd,

Navi Mumbai

Mobile: 09833801026, 08108050090

Email: sales@streamengineersind.com



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- Caliber - carbon steel/stainless steel body and housing stand alone and all internals are AISI 304/316, Co-axial type Breather valve with bias spring settings for pressure relief device with integral Flame arrester construction and with manual testing provision and relieving provision and external sand and dust protection suitable for outdoor installations. End connection - Flanged and drilled to ANSI 16.5, Class 150.



About the company: Caliber Valves Private Limited is a Company to reckon with and has a vision to its products with a cost effective one and at an affordable price with fullest satisfaction in terms of products and quality to its esteemed Customers. These can be presented with our new ultra modern reverie factory constructed with International Std. and inbuilt with all the facilities.

Contact:

Caliber Valves Pvt Ltd, Chennai
Tel: 044-43500192, 43500193
Mobile: 08939734853
Email: info@calibervalves.com, mktg@calibervalves.com

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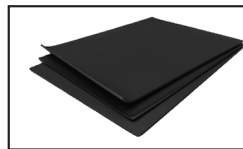


RUBBER SHEETS MATERIAL

Talbro's Sealing Material Pvt Ltd offers a wide range of rubber sheets material.

Features:

- Talbro's carries a large, diversified and extensive inventory of rubber sheet material for the in-house production and fabrication of custom gaskets, custom seals and parts.
- The wide range of rubber sheet that we stock is available in most thicknesses, widths and lengths, to meet and exceed your specific requirements and needs.
- If you require assistance, we shall recommend the best rubber sheet material for your custom gasket or custom seal application.



About the company: Talbro's Sealing Materials is an integrated sealing solution and gasket company in India, manufacturing the following products out of its various facilities- Gasketing and Sealing Materials like cork rubber material, rubber molded gaskets, edge bonded gasket, edge molded gaskets, non asbestos gaskets, anti vibration pads and rubber matting.

Contact:

Talbro's Sealing Material Pvt Ltd,
Faridabad
Tel: 0129-4067000
Email: materials@bnt-talbro's.com

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PRESSURE TRANSMITTER - 200 SERIES

Pro-Med Instruments (P) Ltd offers a wide range of pressure transmitter - 200 Series.

Features:

- The 2200 series pressure transducer features stability and accuracy in a variety of enclosure options.
- The 2200 series pressure transducer feature proven CVD sensing technology, an ASIC (amplified units), and modular packaging to provide a sensor line that can easily accommodate specials while not sacrificing high performance.
- Its applications is: off highway vehicles; natural gas equipment; semiconductor processing; power plants; refrigeration; robotics; HVAC.



About the company: Pro-Med Instruments (P) Ltd, was incorporated in 1994 by a team of highly skilled professionals having experience for the past 15 years in process control instrumentation field with an objective to cater to the growing need for superior products having latest technology. They deal the products of Shinko, Hitachi, Brain Child, Autonics, Germs Sensors, Kyowa.

Contact:

Pro-Med Instruments (P) Ltd, Chennai
Tel: 044-42132295 Mobile: 09840832296
Email: sales@promedindia.com

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AUTOMOBILES GASKETS

Dynamic Gaskets Private Limited offers a wide range of automobiles gaskets.

Features:

- These gaskets are especially manufactured keeping in view the requirements of automobile industry.
- They are available in different kits, in which we offer materials such as cylinder head, exhaust manifold, water pumps, fuel pumps and carburetors.
- The raw materials used in manufacturing of these products are non-asbestos sheeting, graphited laminates, laminated stainless steel, millboard, flexoid, oil resistant papers, CAF, thermo plastics and elastomers.



About the company: Established in the year 1992, we "Dynamic Gaskets Pvt. Ltd" are one of the eminent manufacturers and exporters of Gaskets & Sealing materials, precision turned and pressed auto components, nitrile rubber gaskets, automotive plastic components precision press components, precision plastic component.

Contact:

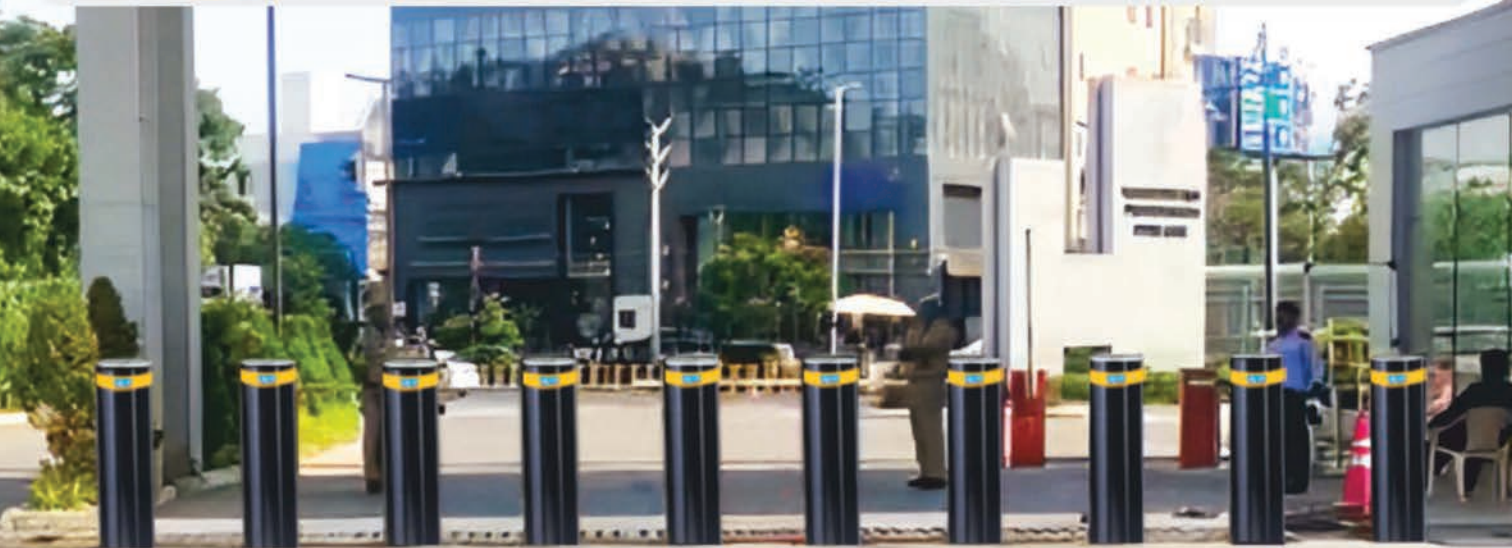
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are not included in the warranty. One can dispatch their fault hardness tester properly packed/crated and they will provide a free written estimate upon thorough examination of their portable hardness tester. The company also maintains a complete stock of spares and accessories like impact devices, impact bodies, standard test blocks, support rings, batteries, etc. According to them, when a complete service with spares is conveniently available why do users think of buying a new LEEB hardness tester? It is much more economical to get the existing hardness tester repaired, reconditioned, and refurbished or rebuilt at a fraction of the cost.

Contact:

Heat Treatment Sales & Services
Contact Person: Mr. Bharat Shah
L/119 GIDC Industrial Estate, Odhav
Ahmedabad 382 415
Tel: 079-22870144/Mobile: 08980718181
Email: info@enmatest.com
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Contact:

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Email: vibration@elektromag.com

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Contact:

Elektromag Methods, Mumbai
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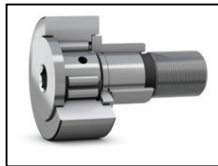
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Corporation, Bangalore
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Contact:

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Contact:

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Contact:

Enerpac India Private Limited, Bangalore
Tel: 080-39289000
Email: nibedita.jyotishi@enerpac.com

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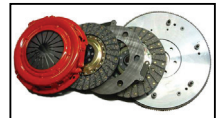


Contact:

Powerone Micro Systems Pvt Ltd, Bangalore
Tel: 080-28397832 Mobile: 09035010265
Email: poweroneups@poweroneups.com,
rajeshmr@poweroneups.com

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Friction Elements offers a wide range of industrial clutches. The following clutches types are: Clutch assembly types: Belt clutch: A belt clutch consists of a set of belts and pulleys that tighten the belts to help increase friction.



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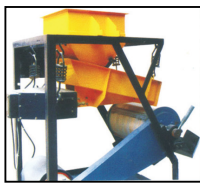
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Contact:

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Magnetics Corporation of India offers a range of magnetic drum machines. These are used for removal of tramp/iron impurities from chemicals, food items, ceramics, silica, quartz, glass



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Magnetics Corporation of India, Bengaluru
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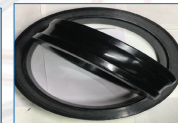
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Rotodyne Fluid Technic, Bangalore
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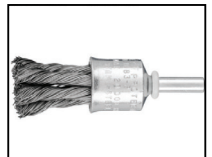


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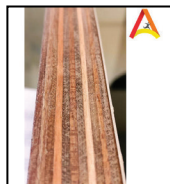


Contact:

Tata Steel Limited, Kolkata
Mobile: 08048007713
Email: ibmd.marketingcomm@tatasteel.com

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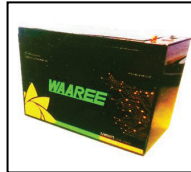
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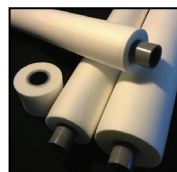
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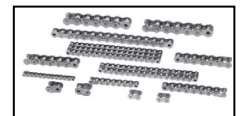


Contact:

Dynamic Industrials, Noida
Mobile: 09311123839, 09899095305
Fax: 011-26345348
Email: mohitg@dynamicindustrials.com

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Why automation is key for India's \$1 trn manufacturing economy?

Manufacturing sector, which contributes approximately 16 per cent to India's GDP, aims to reach \$1 trillion by elevating its contribution substantially to around 25 per cent. In this article, **Rakesh Rao** explains why digital manufacturing will be the key to achieve this goal.

The COVID-19 pandemic exposed vulnerabilities in global supply chains, leading to a shift towards more resilient and diversified sourcing options. This opened up a big opportunity for India to become an attractive destination for global manufacturing companies. While India's merchandise exports witnessed 40 per cent surge in 2021-22 touching a figure of \$422 billion, the country registered highest ever annual exports of \$447.46 billion with 6.03 per cent growth during FY 2022-23. Government has also taken many initiatives to bolster manufacturing, capital expenditure, increase merger and acquisition activity, and investment from private equity and venture capital firms for stimulating growth. These factors have created a conducive environment for digital manufacturing to thrive.

Changing manufacturing landscape

Against this backdrop, shopfloors in India are undergoing a significant transformation to cope with the requirements of globalisation, shorter product life cycles, changes in market & demand, and rapid technology advancements. **Manish K Jha**, Director - Engine Business, Operations and Supply Chain, Cummins India, elaborates, "We are witnessing manufacturing companies transitioning from dedicated manufacturing systems to flexible and reconfigurable systems to reduce the lead time between different products.



“ We are witnessing manufacturing companies transitioning from dedicated manufacturing systems to flexible and reconfigurable systems to reduce the lead time between different products. The goal is to connect humans and machines (smart systems) to achieve flawless flexibility and agility at the lowest possible cost. ”

Manish K Jha, Director - Engine Business, Operations and Supply Chain, Cummins India

The goal is to connect humans and machines (smart systems) to achieve flawless flexibility and agility at the lowest possible cost. This involves the adoption of both hardware and software technologies including integration of IoT (Internet of Things) devices, RFID systems, and smart sensors on machinery that allow real-time data collection; along with sophisticated Manufacturing Execution Systems (MES) and

process. With these integrations, shopfloors are becoming more agile, responsive, efficient, and competitive in domestic as well as global markets."

The manufacturing industry is also undergoing a profound transformation due to the advent of automation, Artificial Intelligence (AI), Machine Learning (ML), IoT, data analytics, and cloud computing. These technological innovations are



“ The manufacturing segment has been consistently gaining the spotlight owing to its support towards revitalising the economy. The segment is constantly evolving with integration of fully automated, connected and digitally optimised factories, keeping up with the demand for new and innovative product methods. ”

Subrata Karmakar, President - Robotics and Discrete Automation, ABB India

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Karmakar, President - Robotics and Discrete Automation, ABB India, observes, "The manufacturing segment has been consistently gaining the spotlight owing to its support towards revitalising the economy. The segment is constantly evolving with integration of fully automated, connected and digitally optimised factories, keeping up with the demand for new and innovative product methods. The industrial revolution 4.0 has witnessed the rise of core computing technologies like AI, ML, big data, cloud computing, cyber security along with other physical technologies like automation and robotics, IoT, CPS, AM. Since smart manufacturing systems are an enabler of fully integrated and collaborative manufacturing systems, these technologies ensure agility, flexibility in manufacturing. This results in fulfilling the ever-evolving needs in smart factories to meet the customer requirements and keep up with the supply on a real time basis."

With sustainability and eco-consciousness on the rise, more companies are embedding sustainability goals into everything they do; thus, resulting in innovative business models. Karmakar states, "Unprecedented supply chain disruptions encourage the industry to move faster and become more resilient than ever before – to stay ahead of the curve. The growing infrastructure and road developments, also lead factories into a new era of connectivity. Problems can be solved as soon as they arise, ensuring safety, optimising production levels, and reducing costs. Software-defined solutions enable fast changeovers to meet the consumer requirements as well as workforce and supply chain dynamics."

Cummins India serves as a good example of how automation has redefined its manufacturing prowess. "Automation has brought a profound shift, substantially elevating efficiency and productivity by substituting human labor for repetitive tasks. This transition has resulted in consistent quality, higher output, and reduced labour costs. Ubiquitous



“Energy efficiency is at the heart of sustainability. By embracing digitalization and automation, organisations can adopt a comprehensive approach to energy management. Real-time monitoring and control of energy consumption become feasible through intelligent sensors, IoT devices, and data analytics, facilitating resource optimisation.”

Shubhankar Chatterji, Chief Supply Chain Officer, Cummins India

automation at Cummins India has not only increased operational efficiency but has also improved product quality and enhanced delivery performance,” explains **Shubhankar Chatterji**, Chief Supply Chain Officer, Cummins India.

Automation helps in streamlining

advancements collectively signify a paradigm shift in the Indian manufacturing sector, positioning it at the forefront of innovation and efficiency on the global stage,” elaborates **Ranjit Patil**, Head CoE – Manufacturing Operations Management, Tata Technologies.



“The adoption of Internet of Things (IoT) devices has facilitated real-time monitoring and data collection, enabling better decision-making and heightened visibility across the production chain. Data analytics has emerged as a key driver, offering actionable insights for informed decision-making and continuous process improvement.”

Ranjit Patil, Head CoE – Manufacturing Operations Management, Tata Technologies

production processes, enhancing efficiency and reducing manual intervention. AI and ML play instrumental roles in predictive maintenance, quality control, and process optimisation, contributing to improved overall operational performance. "The adoption of IoT devices has facilitated real-time monitoring and data collection, enabling better decision-making and heightened visibility across the production chain. Data analytics has emerged as a key driver, offering actionable insights for informed decision-making and continuous process improvement. Additionally, the integration of cloud technologies has revolutionised data storage, accessibility, and collaboration, fostering a more agile and interconnected manufacturing ecosystem. These technological

Demand for robots on the rise

In the realm of automation and digital manufacturing, several prominent emerging trends are poised to reshape the industry. Robotics and automation, which have been transforming manufacturing for years, are expected to continue their ascent. "Robotic process automation is a pivotal driver of smart manufacturing, as robots are increasingly assuming tasks that are repetitive or hazardous, such as assembly, welding, and material handling. The advantages are manifold: robots can execute repetitive tasks with greater speed, accuracy, and precision than human workers, leading to improved product quality and reduced defects. By integrating robotics with Industrial IoT (IIoT) sensors and leveraging big data analytics, manufacturers can

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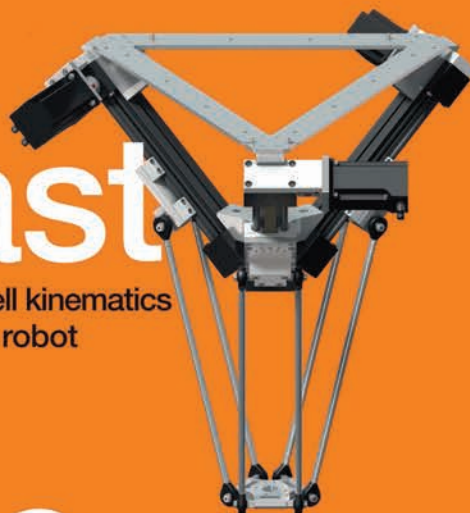
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cultivate a more agile and responsive production environment. This fusion of technologies promises enhanced system efficiency, reduced errors, decreased equipment downtime, and heightened worker safety across manufacturing operations. Moreover, the ability of robots to operate continuously translates into 24/7 production capabilities, significantly amplifying overall productivity," comments **Manish Walia**, Head of Automation, Delta Electronics India.

Furthermore, modern

vast computing resources and data storage, further empowering decision-making and operational optimisation. As these technologies continue to evolve, the manufacturing industry is poised for further transformation, promising even more innovations and improvements in the years ahead."

Advancements in automation are shaping the industry and enabling a shift towards smart manufacturing and Industry 4.0 practices. As the usage of robots in India is way below

We need to look beyond simple RoI calculations based on labour saving to also include quality and long-term efficiency improvements."

Aiding sustainability

Today, India has become the world's fifth largest economy as measured by manufacturing output. Manufacturers are investing in advanced automated operations to make their processes more efficient, increase productivity and adhere to sustainable practices. The country ranks tenth worldwide for the number of annual robot installations, which is a very positive indicator. The Indian manufacturing sector is also expected to benefit from the government's initiatives - like PLI (Production Linked Incentive) scheme - to boost competitiveness and attractiveness for investors.

Sundararaman G, Co-CEO, Wipro PARI, part of Wipro Infrastructure Engineering, opines, "India in the last three decades of growth skipped the manufacturing sector and focused more on the services sector to propel its GDP. But now with all the advantages of demographic dividend, government impetus through various PLI schemes and its software prowess, we are looking at this and next decade as digital manufacturing era generating significant employment opportunities."

With climate change and carbon emission gaining center stage, many manufacturers are banking on digitalization and automation to excel in their sustainability endeavors. "Most manufacturers are putting an additional focus on eco-friendly practices, energy efficiency, waste reduction and circular economy principles to reduce their environmental impact and contribute to a greener future. Automated and smart solutions are playing a pivotal role in enhancing these criteria," observes **Ankit Jain**, IT Head, WIKA India.

By leveraging state-of-the-art technologies such as energy management systems, building management systems, IoT devices, and data analytics, organisations can



“ By integrating robotics with IIoT sensors and leveraging big data analytics, manufacturers can cultivate a more agile and responsive production environment. This fusion of technologies promises enhanced system efficiency, reduced errors, decreased equipment downtime, and heightened worker safety across manufacturing operations. ”

Manish Walia, Head of Automation, Delta Electronics India

manufacturing technologies facilitate product customisation to meet specific customer requirements, enhancing competitiveness. Walia opines, "Manufacturers are increasingly utilising robotics for welding, painting, and assembly, resulting in improved efficiency and precision. Sensors are instrumental in

the global average, there is a huge scope to increase their incorporation by manifold on the shopfloor in the country. **Sameer Gandhi**, Managing Director, OMRON Automation, India, states, "Automation has gained traction in Indian manufacturing, leading to improved productivity, efficiency, and quality. Robots are

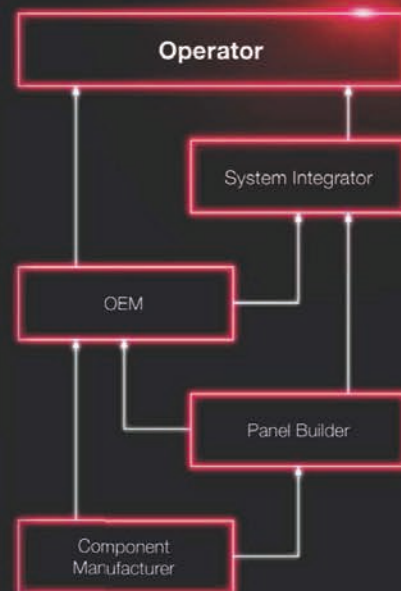


“ While the concept of robotics has become popular in India, the adoption pace needs to be much faster for it to make a bigger impact on Indian manufacturing productivity. We need to look beyond simple RoI calculations based on labour saving to also include quality and long-term efficiency improvements. ”

Sameer Gandhi, MD, OMRON Automation, India

monitoring equipment health, defect detection, and process optimisation. The IoT connects machines and devices, enabling real-time data collection and analysis for informed decision-making. Data analytics identifies trends and patterns, enhancing quality and efficiency. Cloud computing provides access to

being used for repetitive tasks, while robotic arms and automated assembly lines are streamlining production processes. While the concept of robotics has become popular in the Indian manufacturing, the adoption pace needs to be much faster for it to make a bigger impact on Indian manufacturing productivity.



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not only enhance their operational efficiency and competitive edge but also make substantial strides in minimising their environmental footprint. Shubhankar Chatterji explains, "Energy efficiency is at the heart of sustainability. By embracing digitalisation and automation, organisations can adopt a comprehensive approach to energy management. Real-time monitoring and control of energy consumption become feasible through intelligent sensors, IoT devices, and data analytics, facilitating resource optimisation, which is another crucial aspect of sustainable practices. Automation in supply chain management can significantly enhance resource management by increasing fuel efficiency, reducing waste, and improving logistics. Companies that leverage automation in their operations can make more

Implementation tips

A few recommendations for hassle-free implementation of automation are:

- ❑ 'Start Small', begin by automating specific processes that yield high-efficiency gains or have a direct impact on product quality.
- ❑ Deploy cobots, which are designed to work alongside humans. These are easy to program, and generally have a lower upfront cost compared to traditional industrial robots.
- ❑ Explore local and national programs that provide financial assistance for technology adoption. Collaborate with universities, research institutions, and institutes like CII to access expertise and resources, often at reduced costs or through government-funded initiatives.

(Source: Manish Jha, Director - Engine Business, Operations and Supply Chain, Cummins India)



“ With all the advantages of demographic dividend, government impetus through various PLI schemes, its software prowess, we are looking at this and next decade as digital manufacturing era generating significant employment opportunities. ”

Sundararaman G, Co-CEO, Wipro PARI

informed decisions to optimise their use of resources, thus contributing to their sustainability goals. A pivotal facet of the sustainability journey is waste reduction. By streamlining manufacturing processes and day-to-day operations through technologies like automation, sensors, and predictive maintenance, companies can optimise resource use and minimise industrial waste."

Aiming for \$ 1 trillion goal

In the foreseeable future, India's economic surge will be considerably driven by manufacturing industries. Manufacturing sector, which contributes approximately 16 per cent to the overall economic output, aims to attain the \$1 trillion milestone elevating this contribution substantially to around 25 per cent. Digital manufacturing will have to play an important enabler role for India's manufacturing sector to achieve its trillion-dollar goal.

Ranjit Patil observes, "Digital manufacturing emerges as a critical enabler in this trajectory. It enhances operational efficiency, facilitates innovation, and bolsters adaptability to evolving market demands. This technological shift is not just advantageous; it's imperative for propelling India's manufacturing sector into a higher echelon of productivity, job creation, and global competitiveness. Embracing digital manufacturing is, therefore, not merely an option; it is a transformative strategy essential for realising India's ambitions in the manufacturing domain."

Adopting digital technologies will help India to significantly enhance its manufacturing efficiency and productivity. "By fully integrating digitalization, the sector can not only

improve its efficiency and productivity, but also attract more investments, generate employment and drive technological advancements. Achieving the \$1 trillion manufacturing economy goal requires a holistic approach that leverages digital technologies to optimise operations, reduce costs and meet the increasing demand for high-quality products domestically and internationally," comments Ankit Jain.

Digital manufacturing technologies not only empower environmentally sustainable production processes but also introduce unprecedented flexibility for customisation based on customer demands. However, it is important to build a strong digital manufacturing ecosystem for India to attract foreign direct investment (FDI) in the manufacturing sector.

Shubhankar Chatterji opines, "The digitalisation of Indian shopfloors and related operations will be a linchpin in India's pursuit of a \$1 trillion manufacturing economy. By enabling efficient, high-quality production processes, digital manufacturing elevates the competitiveness of Indian products in the global arena. However, the success of this digital transformation hinges on a skilled workforce. Industry 4.0-focused training programs and educational initiatives empower the workforce, making them more productive contributors to the economy."

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“We are developing applications for zero-emission platforms”

Goldstone Technologies Ltd (GTL) specialises in full-stack business intelligence (BI), data analytics, and IT services consulting. GTL is helping Indian companies to comprehend and harnessing their data effectively in order to stride towards becoming a digital economy, says **Pavan Chavali**, Whole Time Director of the company in this interview with Ayushi Khandelwal. He also shares company's plans on future technological adoption and business expansion.

Can you provide a brief overview of Goldstone Technologies? Which industries are you currently serving?

Goldstone Technologies, a 27-year-old company, is an integral part of the Goldstone Group, which spans into diverse sectors of manufacturing, and technology is a unique niche envisioned by the conglomerate.

Traditionally, Goldstone Technologies has exhibited considerable strength in data and data analytics, particularly in the realms of cloud technology. For example, we proudly hold the top position as a partner for various products in India, including Salesforce Tableau, a business intelligence (BI) data visualisation product, as well as other data analytics tools such as Alteryx and cloud technologies like Snowflakes. We assist these companies in comprehensively analysing, organising, and deriving solutions from their data, leveraging latest AI technologies.

Going back to my initial days with the company, around 12 years ago, it became apparent that business intelligence (BI) and data analytics would be pivotal areas for the company's growth. For all these years, we introduced a lot of BI and data analytics technologies into the company. However, in the past 3-4 years, our attention has shifted towards zero-emission technologies. The overarching goal of the Goldstone Group has consistently been to contribute to contemporary areas in manufacturing, information,



technology, and the data analytics landscape. India is making strides towards becoming a digital economy, and as a result, the country is becoming increasingly adept at handling data. Many organisations in India now require assistance in comprehending and harnessing their data effectively. We specialise in crafting tailored data and analytic solutions based on their specific needs, ensuring they receive the support they need to navigate the complexities of their data.

We have a base of almost about 2,000 plus customers, out of which 60 per cent are enterprise customers. Data is relatively industry agnostic. Regardless of the sector, every company possesses data. We have our customers in all kind of industries. But to name a few, it primarily includes companies in the pharmaceutical, information technology, telecommunications, and

banking, financial services, and insurance (BFSI) industries.

What are the some latest technologies you are venturing into?

Currently, the global trend is shifting towards electric mobility. We take pride in being pioneers in this movement, having introduced India's first electric bus, Olectra Greentech, as part of our group of companies. Our subsidiary, ETO Motors, specialises in electric three-wheelers. Leveraging ETO Motors as a foundation, Goldstone Technologies has recently shifted its focus to developing applications for zero-emission platforms. This includes creating software solutions essential for electric vehicles, such as fleet management, carbon credits, and insurance-as-a-service.

We have also entered the realm of application development, specifically focusing on creating applications for electric vehicles. To further expand our reach, we recently entered into a joint venture with a German company called Quantron AG. Quantron produces electric and hydrogen trucks in Germany, while Goldstone Technologies is a company based in India that focuses on data analytics

We have announced a JV named Roqit with Gremany's Quantron to build a platform that aims to be a zero-emission solution for electric and non-fossil fuel sector.

and application services. Together, we have announced a joint venture named Roqit, where our collaborative efforts are geared towards building a platform similar to Salesforce. This platform aims to be a zero-emission solution for the entire electric and non-fossil fuel sector. It's an ambitious project that aligns with the growing demand for sustainable and environmentally friendly technologies.

What is Indian markets' response towards the changing landscape towards digitalisation?

The manufacturing landscape is undergoing significant changes, especially with the Make in India initiative. This transformation isn't limited to major players; even smaller companies are actively participating. These companies are making a lot of effort in terms of bringing in the data maturity within their organisation and have realised the strength of data analytics to be implemented in every region.

This trend is incredibly encouraging, and it's where we're directing most of our efforts to provide enhanced solutions for our customers. Our consultants play a crucial role in understanding the data flow within these companies, analysing data at various intervals—from daily to half-hourly—and offering tailored solutions. Some of these companies are already using business intelligence tools like Zoho or HRMS, but there's no awareness of it. In some cases, this education is also being imparted to them.

In my suggestion, SMEs and MSMEs should refrain from channelling funds into extensive hardware and infrastructure investments and instead maintain them at a basic level. To enhance efficiency, scalability, and cost-effectiveness, a significant emphasis should be placed on investing in cloud technology. While there might be a slight initial premium, many cloud solutions operate on a pay-as-you-go model. Additionally, cloud technology offers enhanced security without the need for dedicated personnel to manage it.

Hence, companies should consider adopting this technology as a crucial step in initiating their digital transformation journey.

What are some challenges companies face while adapting to these digital solutions?

I don't see many challenges. However, there are still a few very small, old-fashioned companies that prefer traditional methods. Nevertheless, even they are recognising the potential of data analytics. They understand that leveraging the strength of data analytics can enable them to introduce more products to the market and gather feedback in a more organised and efficient manner.

Also, India is an extremely price-sensitive market. Ultimately, everyone scrutinises the cost of a solution. In the past, around five years ago, companies didn't allocate a budget specifically for business intelligence or data analytics when planning for the next financial year. However, as companies adopt solutions like data analytics, the landscape is changing.

When a finalised product is obtained, it involves various related industries in its production. If a major conglomerate is producing these products then smaller companies become their vendors in the process. Big conglomerates have embraced these technologies and when they see these companies using data analytics or BI tools they get inspiration. In some cases, these larger players are also mandating that most of their vendors have to be compliant with some of these solutions. I see all of this as a very encouraging environment.

What about your overseas operations?

Although our current primary focus is on India, we have recently secured approval for a three-year business plan that involves substantial investments to replicate our solutions in overseas markets. Our expansion will encompass Europe, the United States, and the

SMEs and MSMEs should refrain from channelling funds into extensive hardware and start investing in cloud technology to enhance efficiency, and scalability.

Middle East, with efforts underway to establish offices in these regions. In India, our offices are situated in Hyderabad, Delhi, Bangalore, and Mumbai, and we are actively exploring the establishment of subsidiary office spaces beyond India.

Presently, India exhibits a relatively low adoption rate of electric mobility, whereas Europe boasts the highest penetration in this regard. As our company operates globally with its headquarters in Europe, our initial emphasis is on targeting and expanding in these markets. While we currently lack insights into how these markets will respond and which solutions customers in these regions will embrace, we anticipate that entering more mature markets will facilitate the implementation of our offerings. Consequently, the upcoming year will witness rapid expansion in these areas as we have laid a robust foundation for growth there.

What are your future plans?

We're actively embracing and investing in Business Intelligence (BI) solutions. While this may be considered news for the future, we're gearing up for significant expansion to facilitate inorganic growth. Currently, our focus lies in evaluating numerous smaller companies and startups specialising in AI and technology. This strategic move may result in several acquisitions, making it an area to watch for potential news updates.

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“SMEs should opt for step-by-step implementation of automation”

Precise Industrial Solutions is a technology-driven specialist in the design, manufacture and commissioning of integrated solutions. It is a channel partner for Siemens and providing automations and digital solution. **Smita Gadade**, Director, Precise Industrial Solutions in this interview with Ayushi Khandelwal shares insights on company's digital solution and significance on its implementations.

Kindly brief us about your company. How is your company serving the industry towards digital manufacturing way?

Precise Industrial Solutions, established 13 years ago, specialises in automation and digitalisation solutions. As a Siemens channel partner since 2015, we offer a versatile range of products designed to address challenges in the realms of digitalisation and automation.

In the realm of digital manufacturing, the first crucial step involves grasping the necessity of implementing digitalisation within a manufacturing facility. We assist manufacturers in identifying this essential phase, crafting a tailored plan for their journey towards digital transformation. While we have standardised modules for swift implementation, we also tailor them as needed to align with the specific requirements of our customers.

What types of automation solutions does your firm offer?

Precise concentrates on three primary domains in this context: product, production, and performance. In the product domain, we engage at the conceptual level, commencing from the design stage. Providing a virtual representation of the physical environment allows for realistic simulations and validations of products, enabling advanced simulation of entire production lines or plants before they are physically constructed. This approach significantly reduces both time and costs.

On the production front, our scalable range of industrial



automation products minimises manual tasks, thereby enhancing overall product quality. Automation of repetitive tasks mitigates human intervention, reducing errors and improving process quality.

Addressing performance, we offer proprietary products and digital applications geared toward minimising production downtime. Our focus is on bolstering overall plant efficiency and assisting customers in planning maintenance schedules. By incorporating digital solutions, we aim to mitigate the risk of human errors and oversight in activities. Notifications via email or mobile devices provide prompt alerts, ensuring timely and effective responses.

Are there low-cost entry routes into digitalisation? How is your company supporting the needs of SMEs?

Digitalisation and automation

solutions may initially entail a higher budget, posing a challenge for small-scale industries that are not immediately prepared to integrate these automation solutions into their systems. However, we provide our customers with smaller modules which allows them to selectively adopt specific operations they wish to monitor within their production process. For companies, the primary focus is often on profit margins and benefits. When they integrate such automation solutions at small scale, they witness a faster return on investment (ROI). This compels and further motivates them to initiate investments in automation. So, in my opinion, if you go with a step by step implementation, digitalisation is going to be a very smooth process for these companies within their budget.

Are you looking to develop any new products/solutions?

We have a conceptual application which is now prepared for implementation. This application will digitalise the entire workflow, incorporating machine insights and overseeing the entire process—from material procurement to delivery—on a central platform. We are actively progressing toward its implementation and are in discussions with several plants regarding its adoption. **IPF**



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“LTTS’s i-BEMS framework provides sustainable solutions”

L&T Technology Services (LTTS), the digital engineering and R&D service company, is addressing the needs for smart products, manufacturing, and operations of the companies in India. **Abhishek Sinha**, COO and Board Member, L&T Technology Services in this interview share company’s latest achievements in the digital manufacturing lead with the inclusion of big data and analytics, robotic process automation and Industry 5.0.

Kindly brief us about your company. How is your company serving the industry in its journey towards digital manufacturing?

L&T Technology Services (LTTS) is a global digital engineering and R&D services company that provides a comprehensive suite of services to help global customers transform their manufacturing operations. As a digital engineering partner, LTTS addresses the needs for smart products, manufacturing, and operations with developed platforms for AI, 5G, and smart buildings. Our digital manufacturing services span the entire product lifecycle, from design to manufacturing to aftermarket support.

Our key services include Product Lifecycle Management (PLM), Integrated Asset Management (IAM), Manufacturing Operations Management (MOM), and Integrated Content Management (ICM). These services aim to enhance efficiency, reduce downtime, and improve collaboration throughout the manufacturing process.

We distinguish ourselves through our unwavering attention to domain expertise, technological excellence, and the delivery of integrated engineering solutions. Positioned at the forefront of innovation, we invest significantly in research and development (R&D) to ensure that customers have access to the latest technologies and solutions. We believe in a customer-centric approach, tailored solutions, global delivery model, and steadfast commitment to quality. With a diverse client base, including Fortune 500



companies, we build enduring partnerships based on trust and mutual growth.

How has the dynamics in manufacturing changed with respect to usage of technologies?

As we move towards Industry 5.0, the manufacturing landscape is in the midst of a paradigm shift driven by the rapid integration of advanced technologies, that includes AI, ML, IoT, 3D printing, cobots, digital twins, and cloud computing. This technological shift has transformed the way products are designed, manufactured, and serviced, leading to enhanced efficiency, productivity, and quality.

Physical and digital systems will interact in real-time to drive efficiency and innovation. AI and ML have brought about predictive analytics, enabling manufacturers to anticipate demands, streamline operations, and

reduce downtime. IoT has connected devices across the manufacturing floor, offering real-time data for improved decision-making.

3D printing has revolutionised the production process, allowing manufacturers to create complex parts with less waste and shorter lead times. Cobots, or collaborative robots, are working alongside humans to enhance productivity and safety. Digital twins are the virtual replicas of physical systems, providing a sandbox for testing scenarios and optimising performance. Cloud computing offers scalable and flexible solutions for data storage and analysis.

At LTTS, we are leveraging these technologies to deliver next-gen engineering solutions. For instance, we’ve developed i-BEMS, a smart campus framework utilising IoT and cloud technologies for energy efficiency and sustainability. Even though the dynamics in manufacturing have changed dramatically due to new technologies. At LTTS, we’re not just adapting to these changes - we’re helping drive them.

How do you see the current status of the Indian manufacturing sector?

Digital manufacturing is growing by leaps and bounds in India, and we are also looking to tap into several new opportunities. For example, LTTS has a long standing alliance with PTC to provide these next-generation solutions to shared enterprise customers worldwide, particularly in the aerospace, defense, and

transportation sectors. This will enable the digital transformation of data from design to production, fostering innovation and efficiency.

Another opportunity lies in the ongoing global supply chain crisis which could open new avenues for LTTS, as clients seek alternative solutions to their supply chain challenges. Our expertise in digital manufacturing to offer innovative and resilient solutions in this regard will be key.

We are also focusing on accelerating the transition to smart manufacturing with reduced time to launch new products by almost 25 per cent using virtual workbenches on AWS for software development and testing.

Moreover, LTTS is expanding its Industry 4.0 suite of services by providing a comprehensive one-stop-shop solution covering everything from product design to system implementation. Our progress in areas such as 5G, connected vehicles, and medical technologies alongside digital manufacturing, has ensured that LTTS has become a market leader in the Industry 4.0 segment as well.

With India emerging in engineering goods lead, how important will it be for Indian companies to adopt digital solutions for manufacturing?

Solutions, such as AI, IoT, and robotics, have been shown to significantly enhance productivity, reduce costs, and improve quality in manufacturing. They enable manufacturers to derive meaningful insights from data, optimise operations, and achieve agility.

Furthermore, embracing an end-to-end digital customer experience can provide a strategic advantage. It facilitates real-time tracking, personalised service, and efficient communication, enhancing customer satisfaction and loyalty. At the same time, unconventional automation solutions like collaborative robots are enabling manufacturers to grow and innovate, further underscoring the importance of these technologies.

What steps are you taking to make your products/solutions “smart”, “intelligent”, etc?

As an engineering services company committed to delivering next-generation technology solutions, LTTS is continuously innovating and enhancing its products and solutions to make them more intelligent, connected, and data-driven. This aligns with the company's focus on enabling smart manufacturing and the transition to Industry 5.0.

We have taken some key steps to make our products and solutions smarter and intelligent. We have embedded AI and ML into our products and solutions to facilitate real-time data analysis, predictive maintenance, autonomous decision-making, and adaptive behavior. We are utilising IoT and data analytics. By connecting our products and solutions to the IoT ecosystem, we're enabling real-time data collection, aggregation, and analysis. We have also adopted edge computing and cloud-native technologies for distributed processing, scalability, and flexibility in our products and solutions. LTTS is also using robotics and automation to optimise manufacturing efficiency and productivity.

High upfront cost is a big put-off for companies who intend to adopt digital solutions. Are there low-cost entry routes into digitalisation? How is your company supporting the needs of SMEs?

There are indeed low-cost entry routes into digitalisation, and several companies are working towards making it easier for businesses, especially small and medium enterprises (SMEs), to adopt digital solutions. Research shows that certain digital solution areas could provide cost-effective and evidence-driven digitalisation pathways for construction SMEs.

L&T Technology Services (LTTS) is playing a significant role in this area. The company is focusing on developing smart digital solutions and services, particularly for sectors like aerospace, defense, and

transportation. Their expertise in digital manufacturing could provide innovative and resilient solutions amid the global supply chain crisis, proving particularly beneficial for SMEs seeking alternative solutions.

What are the emerging trends in the manufacturing sector with respect to digital manufacturing?

The following points highlight the upcoming trends in the realm of digital manufacturing:

Data security and privacy: It has become increasingly important for manufacturers in India as they embrace Industry 5.0 technologies and connect more devices and systems to the internet – which increases cybersecurity risks for manufacturing companies as it expands the attack surface for cybercriminals.

Big data and analytics: Data analytics is becoming increasingly important to manufacturers as they seek to make better decisions based on data. This includes providing solutions such as data collection, data storage, and data analysis.

Industrial internet of things (IIoT) integration: Harnessing the capabilities of IIoT, we interconnect machines, devices, and sensors in manufacturing settings. Through real-time data collection and analysis, we empower proactive monitoring, predictive maintenance, and enhanced overall equipment effectiveness (OEE).

Augmented reality (AR) and virtual reality (VR): Leveraging AR and VR technologies, we enhance manufacturing processes, training, and maintenance. AR solutions offer real-time visual overlays, empowering technicians with contextual information and guidance during assembly or maintenance tasks.

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How advanced 5-axis measurement is redefining industrial inspection

Manufacturers have compelling reasons to use 5-axis measurement equipment in their industrial inspection strategies. However, before making any serious decisions, people should evaluate several aspects, says **Emily Newton**.

Quality control is essential for helping industrial companies maintain competitiveness and avoid costly or dangerous issues. That's why many businesses utilise 5-axis measurement technologies to optimise their workflows and increase consumer confidence. Here are some outcomes that can occur when people follow best practices and pursue continuous improvement.

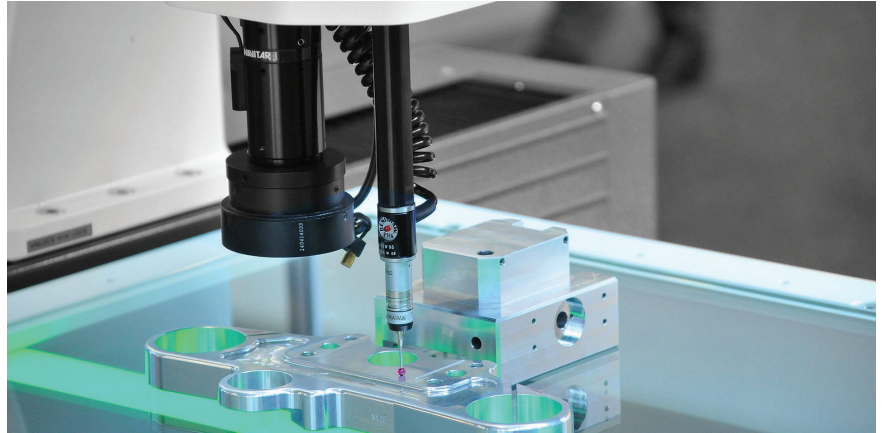
Obtain more manufacturing data

Some producers have a relatively limited approach to quality control, so their inspections only determine if a part passes or fails. However, that information can't tell manufacturers what's going wrong in their processes to make a part not pass inspection. An industrial producer may end up with too much waste as a result.

Such was the case at a company that makes car transmissions. Its previous approach to industrial inspection involved using a hard fixture with bar gages. However, that was a costly and time-consuming process that did not provide the desired granularity with manufacturing statistics.

Decision-makers researched their options and eventually settled on a coordinate measuring machine (CMM) with a 5-axis probe head. The company initially began using that equipment to check the position of holes reamed and drilled into transmission cases. The change gave them reliable data that enabled making adjustments to prevent scrapped parts. Manufacturing leaders used that information to improve their best practices for producing high-quality components.

They also viewed this equipment



upgrade as an early step in using the Industrial Internet of Things (IIoT) and connected hardware to enhance production. One common way to do that is to apply sensors to predict machine breakdowns. Then, manufacturers can become aware of problems sooner, eliminating or shortening downtime. The company's measurement probe gathers high-density measurements of feature size, form and location with excellent accuracy.

Further upgrades to five-axis measurement equipment

Leaders were so happy with how the 5-axis measurement system worked that they began discussing options for a second setup with the service provider.

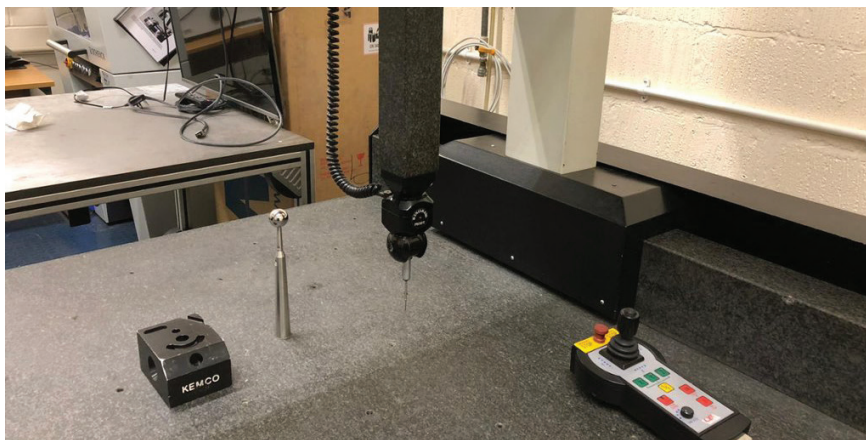
Those conversations centered on the production of larger parts and the addition of a robotic head and gripper. The company intended to measure two knock holes before adding the rest of the openings. However, the measuring equipment would need to check every hole on every part — handling a more stringent process than the previous effort.

The 5-axis probe on the new system gathers up to 4,000 measurement points per second, significantly increasing output. In addition to facilitating process improvement, the improved data collection enhances part traceability. Knowing what happens to a component within and outside the factory allows company leaders to identify additional ways to improve.

Save significant time

One of the reasons that machine shops invest in multi axis equipment is that it can work at numerous angles and access several sides of the workpiece without requiring repositioning. That advantage helps operators increase equipment utilisation by reducing interruptions. Keeping the workpiece minimises errors and boosts productivity.

Similarly, fixture plates support metrology by securing the measuring equipment and the inspected parts. Manufacturers increasingly cater to customers using 5-axis measurement equipment by offering compatible modular fixture plates. Then, users can check different components more quickly or change the orientation of a



single part to verify that various dimensions are within specifications.

In one inspection lab, a particular component took 11 minutes to inspect and three minutes to unload and reload from the production line. Using a modular system improved the swap time by two-and-a-half minutes. A look at the data across a longer span was even more impressive. When inspectors used this arrangement to check 150 parts, they saved 300 minutes.

Many modular fixture plates feature designs that work with any CMM equipment. That's beneficial if a company does not currently use 5-axis measurement equipment but plans to invest in it soon.

Achieve greater accuracy

Many customers — such as those in the aerospace and medical device industries — rightfully demand extraordinarily high accuracy. The same is true for those in the market for high-dollar products, such as sports cars. When manufacturing leaders sought to improve the production of the Lotus Emira automobile, they began with a quality control upgrade of 5-axis measurement equipment. The decision-makers chose a twin-arm CMM that could measure the whole car body through a non-contact method.

Each arm has advanced, triple-cross lasers that automatically and simultaneously measure aspects on each side of the automobile. The manufacturer uses the CMM at two stages within the car's assembly

process. That approach results in 130 measurements taken during two scans. The first happens in 12 minutes and the second is an eight-minute scan.

All measurements get fed to production line staff, allowing them to efficiently identify and mitigate problems. Additionally, the three laser lines on each scanner capture data quickly, matching the production line's pace. The company has an overarching goal of zero-defect manufacturing, and this high-tech system goes a long way toward helping it reach that milestone.

The company's former process took up to five hours and involved examining one chassis out of every batch of approximately 24. However, leaders realised this method was no longer sufficiently precise, particularly due to the high-end customers they wanted to target within the global market.

They explored other options, including robot-mounted measuring heads. However, the executives ultimately concluded that the twin-arm CMM was the most appropriate solution for their current and future needs.

Essential considerations before purchasing 5-axis measurement equipment

This overview shows that manufacturers have compelling reasons to use 5-axis measurement equipment in their industrial inspection strategies. However, before making any serious decisions, people should evaluate

One of the reasons that machine shops invest in multi axis equipment is that it can work at numerous angles and access several sides of the workpiece without requiring repositioning.

several aspects.

A good starting point is to consider how much they want to spend. They should also keep in mind that allowing for higher-than-anticipated upfront costs could enable purchasing equipment that will suffice for longer.

Potential buyers should also think about what they want to measure and how many data points they hope to collect. Doing so will help them narrow down commercial options or decide if they should engage with service providers about custom solutions.

Finally, decision-makers should think about how they'll track and define progress. Choosing key metrics — such as inspection cycle time or data points captured during a single inspection — can help them quantify how much their equipment upgrades have changed their processes and will support the bottom line.

If some executives feel hesitant about equipment investments, they should learn about how similar companies have benefited from more advanced measuring equipment. Getting statistics about process improvements can help them think positively about the future and what's possible.

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About the author:

Emily Newton is a tech and industrial journalist and the Editor-in-Chief of Revolutionized Magazine.



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Future of manufacturing: Robotics reshaping the assembly line

Indian manufacturing sector has advanced considerably with increasing adoption of automation and robotics. The increasing applications of robotic devices and systems necessitate a diverse set of knowledge and skills among robotics professionals, writes **Sumit Kumar**.

Indian manufacturing sector is poised for a transformative revolution driven by the rapid advancements in automation and robotics. This technological paradigm shift is set to reshape the assembly line, enhance productivity, improve quality control, and create a more sustainable and competitive manufacturing landscape, paving the way for an Atmanirbhar Bharat.

India has advanced considerably in the realm of robotics, emphasising the exploration and utilisation of state-of-the-art technologies to foster innovation for sustainable and inclusive economic development. This progress is highlighted by a notable 16 per cent increase in robotics installations in India since 2016, reaching 4,945 units in 2021. This achievement positions India as the 10th highest globally in terms of annual installations of industrial robots. The current inventory of operational stock has reached an unprecedented peak, surpassing 33,200 units as of 2021, doubling since 2016 levels.

While India has made it to the top 10, China ranked first in terms of annual installations of industrial robots with 268,200 units in 2022 followed by Japan and USA. China now installs more industrial robots per year than the rest of the world taken together.

Benefits of automation and robotics

Automation and robotics are the cornerstones of the Industry 4.0 revolution, bringing about a paradigm shift in manufacturing processes. Automation involves the use of technology to control and

execute tasks without human intervention, while robotics focuses on the development and application of robots to perform complex tasks with precision and efficiency.

The adoption of automation and robotics in manufacturing offers a plethora of benefits, including:

- ❑ **Enhanced productivity:** Automation and robotics can significantly increase productivity by automating repetitive and labour-intensive tasks, allowing human workers to focus on more strategic and value-added activities.
- ❑ **Improved quality control:** Robots can perform tasks with greater accuracy and consistency, reducing the risk of human error and ensuring consistent product quality.
- ❑ **Reduced production costs:** Automation and robotics can lower production costs by streamlining operations, minimizing material waste, and reducing labor expenses.
- ❑ **Increased safety:** Robots can handle dangerous or hazardous tasks, reducing the risk of workplace injuries and accidents.
- ❑ **Enhanced flexibility:** Robots can be easily reprogrammed and adapted to new tasks, providing greater flexibility in manufacturing processes.

Several Indian companies have successfully implemented automation and robotics in their manufacturing processes, reaping significant benefits. For instance, Tata Motors, one of India's leading automobile manufacturers, was one of the first auto majors to introduce advanced



Image Courtesy: Freepik.com

robotics in its manufacturing processes (named TAL BRABO) and has extensively deployed robots in its production plants in India and abroad, resulting in increased productivity, improved quality, and reduced costs.

Government initiatives to promote automation

The Indian government has recognised the transformative potential of automation and robotics and has taken several initiatives to promote their adoption in the manufacturing sector. These initiatives include:

- ❑ The recently released Draft National Strategy on Robotics aims to position India as a global leader in robotics to actualise its transformative potential. It also builds upon Make in India 2.0 which has identified robotics as one of the 27 sub-sectors to further enhance India's integration in the global value chain. It

further aims to enhance the research and development capabilities of the robotics ecosystem in India by improving the availability of funding, converging efforts with CoEs for AI and Cyber Physical Systems, establishing platforms for global partnerships, attracting and retaining skilled talent

- ❑ The Skill India Mission focuses on skill development and training to equip the workforce with the necessary skills for operating and maintaining automated and robotic systems.

Shortage of skilled workforce: Restricting robotics adoption

As robotic automation furthers the benchmarks of technological aptitude required, there is an emergent need for the development of a skilled workforce across the innovation lifecycle with a focus on providing training and education in robotics and related fields. This will help to ensure that India has the talent and expertise needed to compete in the global robotics market.

Insufficient skilled human resources:

The existing initiatives for capacity building fall short of supporting the widespread adoption of robotics in India, necessitating more targeted efforts to address ecosystem challenges. An eminent obstacle in robotics manufacturing lies in the intricate integration of multiple components and subsystems. Robots typically comprise numerous individual parts requiring precise and coordinated assembly. This demands a high level of engineering expertise and meticulous attention to detail to ensure the final product aligns with required specifications and performance standards. The growth of the Indian robotics ecosystem is hindered by a lack of technical proficiency and skilled resources.

Absence of multidisciplinary collaboration: Advancements in robotic technology increasingly demand interdisciplinary collaboration. Modern robots incorporate emerging technologies

such as 5G, AR/VR, IoT, and AI to enhance their functionalities. This interdisciplinary nature underscores the imperative for collaboration among government stakeholders, industry, academia, startups, and other relevant entities. However, the current ecosystem lacks robust mechanisms for such multidisciplinary collaboration, both domestically and with global experts.

Key government initiatives

Government has taken some important initiatives such as:

FutureSkills Prime: The Indian government, facilitated by MeitY, is spearheading a transformative skilling ecosystem aimed at enhancing the nation's digital talent. This initiative involves the establishment of a robust online platform to promote remote and self-paced learning in emerging technologies.

Atal Innovation Mission: With the vision of 'Cultivating one Million children in India as Neoteric Innovators,' the Atal Innovation Mission is setting up Atal Tinkering Laboratories (ATLs) in schools nationwide. These ATLs feature dedicated innovation workspaces equipped with Do-It-Yourself (DIY) kits covering emerging technologies such as robotics, IoT, and more. The aim is to provide students with hands-on exposure to these cutting-edge technologies.

E-Yantra: E-Yantra, a robotics outreach program funded by the Ministry of Education and hosted at IIT Bombay, seeks to tap into the potential of young engineers.

Solutions to address the workforce shortage

The increasing applications of robotic devices and systems necessitate a diverse set of knowledge and skills among robotics professionals. It is crucial to not only identify but also promote job opportunities in emerging robotics fields, which have the potential to absorb a significant portion of the workforce at risk of displacement due to automation. In addressing the skill gap within the Indian robotics

industry, particularly in foundational skills like the repair and maintenance of robots, upskilling and reskilling initiatives are imperative.

To advance this cause, as proposed in the Draft National Strategy on Robotics, the Sector Skill Council can establish National Occupation Standards and Qualification Packs, validated by the industry and aligned with the National Skills Qualification Framework, for identified job roles in robotics. A key intervention to enhance skill training is the introduction of apprenticeship programs. These programs can incentivise workers through subsidised training and certification for specific job roles, providing both technical expertise and regulatory qualifications. Collaborating with the industry to design these programs would facilitate experiential learning, with implementation through various training institutions such as ITIs, Polytechnics, and other government or privately funded training infrastructure.

Given the interdisciplinary nature of robotics, upgrading the infrastructure of these institutions becomes crucial to ensure effective practical training. This comprehensive approach aims to not only address the skills gap in the industry but also create a pathway for individuals to gain hands-on experience and qualifications through apprenticeships in the evolving field of robotics.

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About the author:



Sumit Kumar is the Chief Business Officer of TeamLease Degree Apprenticeship (India's first and largest degree apprenticeship programme). He has work experience of over 24 years.



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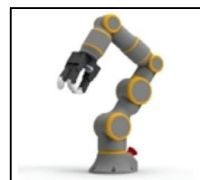
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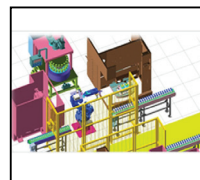
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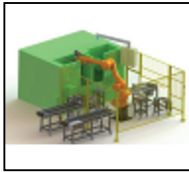
core of digital manufacturing technologies.

Contact:

Difacto Robotics and Automation Pvt Ltd, Bengaluru
Tel: 080-4212 0041, 28372040
Email: info@difacto.com

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Synetics Automation Solutions provides robotic machine tending. These products provide specialised robotic machine tending solutions; if the components are heavier and different



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Primo Automation Systems manufactures, supplies and exports robotic welding SPM. This robotic cell comprises of the dual robot dual station concept for reducing the cycle



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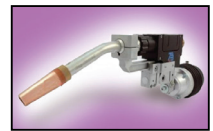


Contact:

*Miranda Automation Pvt Ltd, Navi
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Industrial electric motors can save 2.1 TWh energy: ABB

ABB analysed more than 2,000 industrial electric motors under its Energy Appraisal service and found that an average energy-saving potential of 31 per cent per motor.

From June to September 2023, ABB analysed more than 2,000 industrial electric motors under its Energy Appraisal service and has identified an average energy saving of 31 per cent. That equates to more than 2.1 terawatt-hours (TWh) of potential energy savings across the 20-year lifetime of these systems. Energy appraisals enable industrial businesses to pinpoint exactly where their biggest energy savings lie across fleets of motor-driven systems. They overcome the barrier that industrial companies face when deciding where to target investment for the best energy savings and return on investment (ROI). Appraisals work by gathering operational data from motor-driven systems in the field. A service expert compares this with the theoretical performance that could be achieved by adding a variable speed drive (VSD), resizing or modernising the equipment.

Improving energy efficiency enables businesses to reduce electricity consumption, with impressive CO₂ savings and return on investment (ROI) that depend on each country's energy mix and cost. For example, if all the motors audited were operating in the UAE, a 2.1 TWh energy saving would be equivalent to 1.5 million tonnes of CO₂ emissions and an ROI of six months. Alternatively, in Germany this would equate to a saving of 940,000 tonnes CO₂ and an ROI of only three months. These savings would be enough to offset the emissions of a coal plant for two months in Germany and three months in the UAE.

"With the world debating how to

fight climate change at COP28 next week, our results show that it is possible to do the right thing for the planet, as well as for businesses. Thus, finding an average of 31 per cent energy savings across 2,000 motors shows that electric motor-driven systems are a great untapped opportunity to accelerate the transition to a low-carbon society," said Erich Labuda, President - Motion Services Business, ABB.

With more than 300 million industrial electric motors in world, the results show great potential to save energy and CO₂ emissions, especially more than half of these are at least 20 years old and have been superseded by modern high-efficiency technology.

The motors audited serve multiple industries, including food and beverage, chemical processing, energy, and HVAC (heating, ventilation, and air conditioning). They cover a range of low and medium voltage motor applications, such as pumps, fans and other systems. The appraisals found consistent patterns in performance between different motor-driven applications, with fans typically offering the biggest energy savings. Further analysis also identified that the biggest opportunities are related to motors operating without a VSD. VSDs control the speed or torque of motors to precisely match the output with the demand, which reduces energy consumption.

These findings support 'The Case for Industrial Energy Efficiency' recently published by the Energy Efficiency Movement. This report aims to give corporate leaders key insights into ten measures that rely on mature



technologies, have a meaningful impact on costs and emissions and can be deployed quickly without complex or expensive projects.

ABB Motion innovates and pushes the boundaries of technology to enable the low-carbon future for customers, industries and societies. With its digitally enabled drives, motors and services the customers and partners achieve better performance, safety and reliability. ABB Motion offers a combination of domain expertise and technology to deliver the optimum drive and motor solution for a wide range of applications in all industrial segments.

ABB is a technology leader in electrification and automation, enabling a more sustainable future. The company's solutions connect engineering know-how and software to optimise how things are manufactured, moved, powered and operated.

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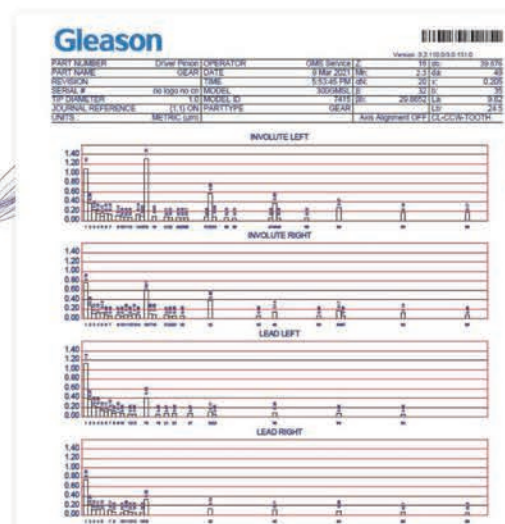


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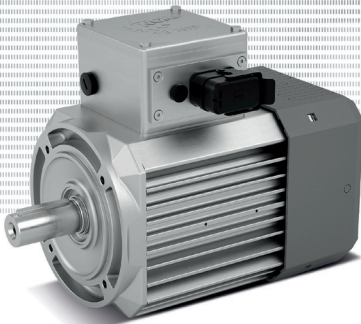
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Total Gear Solutions

Gleason

NORD's IE5+ synchronous motors save carbon dioxide and material

The new high-efficiency IE5+ synchronous motors series from NORD requires significantly less rare earth elements than its predecessor.



The European standards DIN EN 60034-30-1: 2014-12 (mains operation) and DIN VDE 0530-30-2: 2019-02 (frequency inverter operation) define the four efficiency classes for electric motors from IE1 to IE4+. Based on the underlying criteria, even more efficient drives are known as IE5 within industry.

The IE5+ permanent magnet synchronous motor from NORD Drivesystems significantly exceeds the highest efficiency class IE5. The especially compact and energy-efficient motor offers a constant high efficiency of up to 93 per cent and more over a wide torque range and thus also develops optimal energy performance in partial load and partial speed ranges.

Significantly lower CO₂ emissions than IE3

This means that the IE5+ motor not only saves energy, but also emissions. In comparison to a conventional IE3 asynchronous motor, an IE5+ synchronous motor reduces emissions by around 0.15 t CO₂ per year. This applies to one single motor. In large systems, for example in intralogistics with hundreds or even thousands of drives, this adds up to an impressive total saving. This model calculation is

based on the following assumptions:

- ❑ IE3 asynchronous motor with 0.75 kW, 83 per cent motor efficiency and helical bevel gear unit
- ❑ IE5+ synchronous motor with 0.75 kW, 93 per cent motor efficiency and helical bevel gear unit
- ❑ Period: 16 operating hours per day, which corresponds to 4,000 operating hours per year
- ❑ Energy savings of the IE5+: around 400 kWh per year
- ❑ Reduction of emissions: 0.15 t CO₂ per year (with a CO₂ emissions factor of 366 g/kWh)

Savings not only in energy, also in material

The IE5+ motor from NORD can also impress with another sustainability factor: material efficiency. "Various innovations in the motor design help us to realise significant material savings with our new IE5+ series," emphasised Jörg Niermann, Head of Marketing at NORD. NORD Drivesystems designed the IE5+ as an 8-pole synchronous motor in an IPM design. This reduces the size of the motor's active components, which not only results in material savings in the sheet metal package but also in the magnet material.

Less rare earth elements

In the course of material savings, it was also possible to reduce the proportion of rare earth elements in the magnet material. Rare earth elements are mainly found in Russia, China and Brazil and can only be mined with great environmental impact. "We are glad that we were able to significantly reduce the use of this material," explained Niermann.

With eight-pole synchronous motors, the stator can also be manufactured with the so-called single-tooth windings. As a result, valuable material such as copper is only used where it is actually productive, and inefficient use in the winding head is reduced.

"Our IE5+ synchronous motor combines energy efficiency with material efficiency and thus scores twice in terms of sustainability," highlighted Niermann. Of course, this not only applies to the IE5+ motor itself but also to the DuoDrive geared motor, in which the IE5+ is integrated.

With approximately 4,700 employees, NORD Drivesystems has developed, produced and sold drive technology since 1965, and is one of the leading global full-service providers in the industry. In addition to standard drives, NORD delivers application-specific concepts and solutions for special requirements such as energy-saving drives or explosion-protected systems. NORD develops and produces a wide range of drive solutions for more than 100 industries, gear units for torques from 10 Nm up to over 282 kNm, supplies electric motors in the power range of 0.12 kW to 1,000 kW, and supplies the required power electronics with frequency inverters of up to 160 kW. In 2021, annual sales amounted to Euro 870 million. NORD has 48 subsidiaries in 36 countries and further sales partners in more than 50 countries.

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Flender wins German Sustainability Award 2024

According to the jury, Flender is the quality leader for wind and industrial drives and thus makes an outstanding contribution to the energy transition. Flender has already reduced CO₂ emissions by 79 per cent



Andreas Evertz (front 3rd from right), CEO, Flender, holding the German Sustainability Award together with other representatives of the Flender management

The drive specialist Flender has been awarded the German Sustainability Award 2024 in the mechanical engineering category. The challenges posed by climate change, resource scarcity, species loss, and social division are intensifying, while business and industry skills in Germany are growing to combat these challenges. Flender received the prestigious award for pioneering this sustainable transformation at an award ceremony, which was held on November 23, 2023 at the Maritim Hotel in Düsseldorf. Flender CEO Andreas Evertz obtained the award from sustainability researcher Professor Kai Niebert.

According to the jury, Flender is the quality leader for wind and industrial drives and thus makes an outstanding contribution to the energy transition. In addition, the company had made significant, exemplary contributions to the transformation by setting an example and sending positive signals to its industry and beyond, the jury explained. This places the innovative gearbox manufacturer from Bocholt at the forefront of sustainable

pioneers in mechanical engineering.

"It is an honor to receive this award, and we extend our gratitude to the jury and the German Sustainability Award Foundation. My sincerest thanks go to the Flender team and our partners. This award is a very special milestone for us. It is a testament to the passion and commitment of our global team in tackling these critical challenges," stated **Andreas Evertz**, CEO of the Flender Group at the award ceremony.

Products for the energy transition and avoiding CO₂ emissions

Sustainability is a pillar of Flender's comprehensive approach to corporate social responsibility (CSR). The drive manufacturer has continuously aligned its strategy with the needs of the energy transition and a sustainable economy. This includes promotion of the circular economy through a complementary service concept. CO₂ emissions prevention measures have also been implemented across the company. As a result, Scope 1 and 2 CO₂ emissions have been decreased by 79 per cent since 2015.

As a leading company in wind power drive technology, Flender has installed 350 GW of gear and generator capacity worldwide, which is enough to supply the average electricity needs of nearly 270 million European households. The newest drive advancements, like the HybridDrive, decrease the demand for important raw materials, such as copper and rare earths, by up to 90 per cent. This reduction is vital in ensuring the future growth of wind energy and the success of the energy transition.

Digital drives make industry more efficient and conserve raw materials

The new Flender One standard gearbox series and Flender's AIQ digital gearbox intelligence set new standards for sustainability and energy efficiency in industrial applications. The power loss reduction of up to 50 per cent, when compared to previous standard gearboxes, is significant. Flender One is customised for the specific application, saving resources and valuable raw materials. AIQ analyses operating data of the drives in use for added efficiency. This allows industrial companies to optimise production processes and enhance efficiency. The gearboxes can also be further tailored to meet specific requirements.

The German Sustainability Award Foundation assessed Flender and other companies according to their sustainability profiles based on the UN Agenda 2030 and EU reporting standards CSRD and ESRS for corporate social responsibility and sustainability. Winners were chosen by an independent panel of experts, who selected pioneers in each sector based on a scoring system developed for the Sustainability Award.

Headquartered in Bocholt (Germany), Flender is a global supplier for mechanical and electrical drive systems offering a broad variety of gear units, couplings, generators, and associated services.

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Valeo bags \$1 billion order for M&M's EV program

Valeo will invest close to the Mahindra plant in Pune to localise the production of the electric powertrain in India.

Valeo, a world leader in mobility technology and in electrification of mobility, has been chosen by Mahindra & Mahindra (M&M), India's leading SUV manufacturer, to provide the electric powertrain for a certain range of their "Born Electric" passenger vehicle platform and on board charger combo for their electric utility vehicles. The total order is close to \$1 billion and was already included in the total amount of orders for high voltage powertrain announced in Valeo's Q3 results.

With its new state-of-the-art "Born Electric" electric vehicle, Mahindra & Mahindra is fulfilling its vision to lead the electric mobility revolution in India. Three key strategic pillars of brand, design and technology will guide M&M to bring these authentic electric SUVs to life.

Valeo offers solutions to meet the needs of all road users and is a global leader in powertrain electrification. Valeo will invest close to the Mahindra plant in Pune to localise the production of the electric powertrain in India. It will include the electric motor, its inverter, and the gearbox, as well as the integrated 3-in-1 bi-directional combo power electronics that integrates the onboard charger (OBC), the DC-DC converter and the power distribution unit (PDU).

According to Xavier Dupont, Valeo Powertrain Systems Business Group President, "At Valeo, we believe that electrification is the future of mobility and we have developed best-in-class technologies to support the growing demand of our clients. Our solutions developed and manufactured locally, will support Mahindra & Mahindra in offering Indian customers electric vehicles with higher voltages and longer range. This partnership with



L to R: Jayakumar G, Group President & Managing Director, Valeo India, Vinod Sahay - President and CPO-AFS, M&M, Xavier Dupont, Group President, Valeo Powertrain Systems, Ashish Jangale - Vice President, Strategic sourcing Unit, M&M, Jean-Francois IEM, Business Group Sales Vice President, Valeo, Muthuraman Ramanathan, Group Regional Sales Director, Valeo India, Holgar Schwab, Product Group Vice President, Valeo

Mahindra & Mahindra is a major step forward for Valeo in the Indian EV market."

Jayakumar G, Group President and Managing Director, Valeo India, said, "We are proud to be associated with Mahindra & Mahindra to equip their latest EV platform with our electrification technologies. We will be investing to localise the production of this new order in India. I would like to express our hearty thanks to the management of Mahindra & Mahindra for their trust and confidence in Valeo. This is only the beginning of the EV transition and Valeo is accelerating to be ready to take on the EV revolution in India and contribute to greener and safer mobility."

Vinod Sahay, President and Chief Purchase officer – Auto & Farm Sectors – Mahindra & Mahindra, said, "At Mahindra, our vision is to be leaders in the electric mobility revolution by bringing in cutting-edge world-class technology into our authentic electric SUV product portfolio, not just for India but for

global markets. The localisation of their technology solutions also signifies their bold commitment towards electrification of the Indian market."

R Velusamy, President – Automotive Technology and Product Development, Mahindra & Mahindra, said, "The collaboration with Valeo is in alignment with our "Born Electric" vision. Valeo's electrification technology compliments our purpose-built INGLO platform, which serves as the backbone of Mahindra's EV architecture and its human-machine interface. This partnership is a significant step towards fulfilling our commitment to offer sustainable, cutting-edge mobility solutions, not just in India but globally."

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FPT Industrial exhibits sustainable solutions at Agritechnica 2023

The company showcased its leadership in the agricultural powertrain sector, based on a proven full-range portfolio covering all applications.

FPT Industrial - the Iveco Group brand dedicated to the design, production, and sale of low-environmental impact powertrains - exhibited sustainable and powerful solutions at Agritechnica 2023, which was held in Hanover (Germany) from November 12 to 18, 2023. At this key event, FPT Industrial showcased its leadership in the agricultural powertrain sector, based on a proven full-range portfolio covering all applications, a growing number of satisfied customers and a worldwide yearly production of over 100,000 agricultural engines, and confirmed year after year through ground-breaking innovations and improvements.

According to the Brand's vision, 21st century farmers are, more than ever, called to balance the demands of productivity with those of sustainability. That's why the brand is reaffirming its steady commitment to continuously improving internal combustion diesel engines, paired with the introduction of totally sustainable fuels such as hydrogen and biomethane, while keeping on pioneering on new, zero-emission electric powertrains, as well as hybrid solutions.

This commitment was perfectly expressed by the showcased products that visitors admired inside the brand-new stand, designed following the results of a study conducted together with the Polytechnic University of Milan.

Sylvain Blaise, President of Iveco Group Powertrain Business Unit, said, "Our goal is to provide farmers with the widest range of powerful, efficient and sustainable solutions. We are ready to satisfy their ever-evolving needs in all agricultural operations, promoting top productivity and future

fossil energy independence. We strongly believe in a more than ever sustainable agriculture, and our products display together with the 'nature' of our stand clearly demonstrates the extent of our commitment."

XC13 H2: Hydrogen enters the field



The hydrogen version of new XC13 engine

The new XC13, the first multi-fuel single-base engine of FPT Industrial, saw the premiere of its hydrogen version. Designed with a common core, but optimised to run with multiple fuels, from diesel and natural gas – including biomethane – to hydrogen and renewable fuels, XC13 offers maximum component standardisation and easier integration into the final product. The concept engine XC13 H2 is an additional technology in the FPT Industrial portfolio for zero-CO2 emission solutions, offering customers the familiarity they are used to with traditional machines.

Already successfully applied in an off-road vehicle, the XC13 H2 powers the PRINOTH LEITWOLF h2MOTION, the world's first hydrogen snow groomer. This new concept vehicle is, indeed, equipped with the new FPT Industrial XC13 Hydrogen version, a 13-liter, six-



cylinder engine, relying on superior, direct fuel injection technology.

F28 Hybrid for agricultural applications

The F28 Hybrid harnesses a diesel engine paired with an e-flywheel, combining high performance and low fuel consumption in a compact package. The in-line four-cylinder engine delivers maximum power of



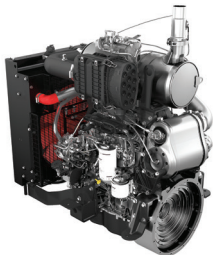
F28 Hybrid engine

75 hp, while the electric motor adds 27 hp of continuous power and 40 hp of peak power. Its integrated layout allows for plug and play replacement of larger diesel versions. The F28 Hybrid is the best solution for effective use of agricultural e-implements, guaranteeing improved efficiency thanks to engine downsizing and optimised powertrain-implement coupling.

The F28 Hybrid has been designed using a modular approach

with current 48 V P1 configuration, scalable to a high voltage P2 layout, enabling higher power output and plug-in solutions for zero-emissions operations (indoor/stable/greenhouse activities).

F36 IPU: Efficient power, everywhere



F36 PowerPack Stage V

The F36 PowerPack Stage V is part of FPT Industrial's comprehensive power units offering. It represents a powerful, flexible and reliable solution for stationary and semi-stationary applications. The compact ATS pack mounted on the engine, including the urea injection system and all required sensors and manifolds, eliminates the need for development of a dedicated exhaust system. A range of options such as alternators, starters, water and air preheating, and different urea tank sizes provide further flexibility for customer installations. Single-side access allows for easy and quick maintenance, while the 600-hour service interval maximises uptime.

Cutting-edge battery pack eBS 42 for off-road application



FPT Industrial's eBS42 battery pack

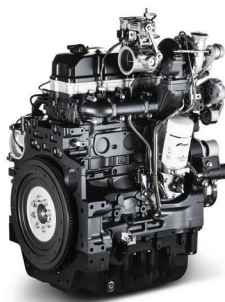
The growing interest in electrified solutions in the agricultural sector requires specific and advanced battery packs, able to cope with the wide range of field and transport operations involved in modern farm management. Made in collaboration with Microvast, designed and

developed to perfectly fit off-road applications, the FPT Industrial eBS42 battery pack is an advanced energy-storage solution for zero-emissions agricultural equipment.

Delivering best-in-class energy density for top performance and featuring a high level of flexibility thanks to the multipack solution, this battery pack can be installed on a variety of agricultural equipment, thus satisfying different customer mission profiles and requirements.

N45: Dependable performance first

A key member of the successful NEF engine family, with more than 2 million units produced since 2001, the N45 is a robust, reliable and versatile engine, featuring a wide



N45 engine

range of configurations and options to fulfill all agricultural needs and to make installation easier in all off-road machinery. Showcased for the first time in the 147kW version, dedicated to the most demanding agricultural applications, the N45 owes its continuous success among farmers to its efficiency, EGR-free and maintenance-free ATS layout and industry-leading service intervals up to 1,200 hours. All these peculiar features greatly contribute to lower the TCO of a wide variety of agricultural equipment.

N67 NG: Enabling net-zero-CO2 agriculture

With over 20 years' experience and more than 80,000 units sold globally, FPT Industrial is leading the introduction of natural gas technology in off-road segment applications, with customised engine solutions for installation on

agricultural equipment. The N67 Natural Gas is the ultimate clean-energy solution specifically designed for open-field tractors.

The engine, in fact, achieves near-net-zero carbon emissions, or even negative, when running on biomethane, thus enabling circular ecosystems in agriculture. Delivering the same performance as its diesel equivalent in terms of power, torque and durability, the N67 NG ensures diesel-like drivability and performance for an unchanged customer experience, while reducing the carbon footprint of agriculture operations.

MYFPT app for control at fingertips

Being constantly connected and completely informed on the health status of their equipment and particularly their engines is of the utmost importance for farmers when it comes to getting the job done. FPT Industrial Customer Service works to provide all farmers with tailor-made solutions to maximise their engines' efficiency, performances, up-time and durability.

Thanks to the Proactive Assistance, customers have a direct connection with the Control Room, a tool that analyses the data of complete fleets or single engines, reporting any possible anomaly and suggesting useful optimisations.

By downloading the MYFPT app, farmers can consult their engines' technical info, access user manuals and define the list of necessities spare parts, being directly in contact with FPT Industrial assistance network. Through the FPT Industrial Bluetooth Dongle connection, farmers can monitor engine performance and fault codes in real time, optimising daily usage and constantly checking the engine status.

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Belt drives market to reach \$9.1 bn by 2030

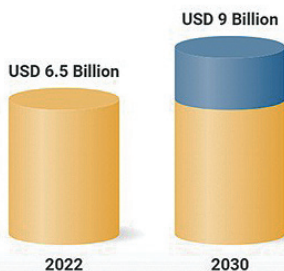
V-belt drives segment is projected to record 4.3 per cent CAGR, according to the ResearchAndMarkets report.

The global belt drives market, estimated at \$6.5 billion in 2022, is projected to reach a revised size of \$9 billion by 2030, growing at a CAGR of 4.3 per cent over the analysis period 2022-2030, according to a recent report of ResearchAndMarkets (RAM).

A belt drive is one of the most popular types of power transmission methods besides gears, chain drives, shaft couplings and lead screws. The use of these highly efficient mechanical drives is increasing with every passing year.

Global Market for Industrial Belt Drives

Market forecast to grow at CAGR of 4.3%



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With belt drive, the power transmission is generally friction-locked, i.e. power is transmitted through frictional forces between pulley and belt and vice versa. Flat belts or V-belts are very often used. An exception to friction-locking power transmission is toothed belts (timing belts), in which the power transmission is carried out positively by teeth attached to the belt, which engage in the pulley.

Material handling, one of the segments analysed in the RAM report, is projected to record 3.9 per cent CAGR and reach \$ 2.5 billion by the end of the analysis period. Growth in the industrial machinery

segment is estimated at 4.9 per cent CAGR for the next 8-year period.

V-belt drives segment is projected to record 4.3 per cent CAGR and reach \$5.3 billion by the end of the analysis period. Taking into account the ongoing post pandemic recovery, growth in the synchronous belt drives segment is readjusted to a revised 4.6 per cent CAGR for the next 8-year period.

The belt drives market in the US is estimated at \$1.4 billion in the year 2022. China, the world's second largest economy, is forecast to reach a projected market size of \$2.3 billion by the year 2030 trailing a CAGR of 5.7 per cent over the analysis period 2022 to 2030.

Among the other noteworthy geographic markets are Japan and Canada, each forecast to grow at 2.4 per cent and 3.1 per cent respectively over the 2022-2030 period. Within Europe, Germany is forecast to grow at approximately 2.8 per cent CAGR.

Some of the key companies in the global market for industrial belt drives include Continental AG, Fenner Drives Inc, Gates Corporation, SKF Group and The Timken Company.

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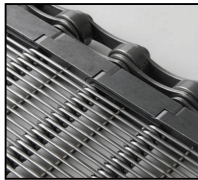


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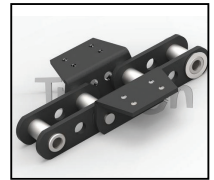


Contact:

*A G Belting Pvt Ltd, Ghaziabad
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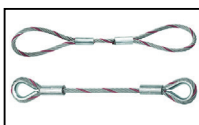


Contact:

*RMS Corporation, Mumbai
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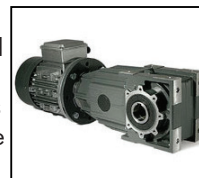


Contact:

A M Jeewajee & Sons, Kolkata
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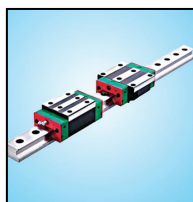


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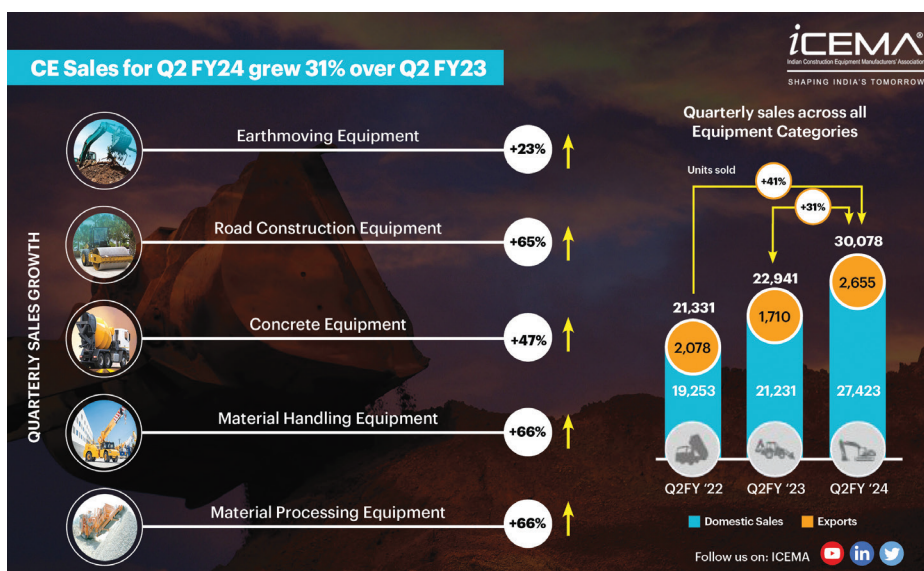


CE industry sales grew by 31% Y-o-Y, volumes doubles since FY14

Indian Construction Equipment Manufacturers Association (ICEMA) shares a quarterly sales report of Indian construction equipment industry which showed a growth momentum with increased domestic sales for 27,423 units while 2,655 units were exported.

The Indian Construction Equipment industry continues to be a key enabler of creation of world-class infrastructure in the country, ably partnering the government in its drive for infra-led growth of the nation. The union budget 2023-24 further reiterated the government's focus on infrastructure development as the engine of economic growth in the country through increased budgetary allocations, including the second highest allocation to Road infrastructure, amounting to 20 per cent of the total allocated budgetary expenditure. This has translated into greatly improved prospects for the CE industry, since road construction accounts for around 40 per cent of the total demand for construction equipment in the country. Further, the current fiscal year, the projects that were already in the pipeline and those started recently, are expected to

CE Sales for Q2 FY24 grew 31% over Q2 FY23



Results from the quarterly sales report by ICEMA

be completed well in time due to elections, providing added impetus to the growth of the CE industry. "The 17 per cent increase in

budgetary allocation to the infrastructure sector and 15 per cent increase in the budgetary allocation to NHAI are showing encouraging results in the form of pickup in the pace of infra projects. The rapid pace of projects that were in the pipeline, especially in railways as well as the roads and highways sector, has generated spectacular increase in demand for all segments of construction equipment," said V Vivekanand, President ICEMA and Managing Director, Caterpillar India.

The quarterly sales report, submitted by ICEMA for the Indian CE industry, consolidated a positive performance in the current year as CE sales grew by an excellent 31 per cent in Q2 of FY 2023-24, as compared to Q2 of the last fiscal year. The growth in sales during the

Industry Performance- CE Sales Growth – FY14 to FY23

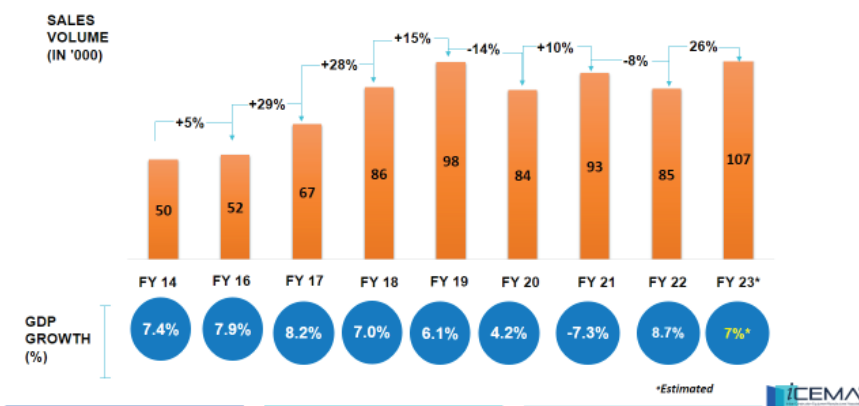


Figure 1: Sales volumes of the CE industry

The union budget 2023-24 reiterated government's focus on infrastructure development through budgetary allocations, including the second highest allocation to road infrastructure.

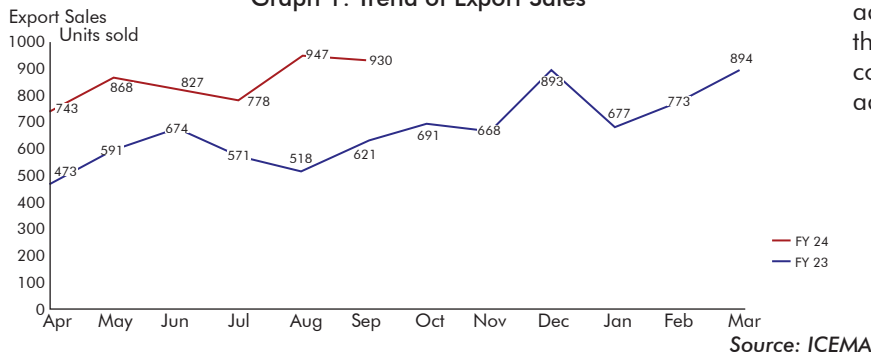
second quarter of the current fiscal comes on the back of positive growth in all five of the CE industry's major equipment segments, which are earthmoving equipment by 23 per cent, road construction equipment by 65 per cent, material handling and material processing equipment by 66 per cent each and concrete equipment by 47 per cent. Earthmoving equipment, which has a 70 per cent share in total construction equipment sales, recorded total sale of 20,669 units, which were primarily comprised of backhoe loaders (11,756 units) and crawler excavators (6,765 units). Pick and carry cranes (3,383 units) constituted the bulk of material handling equipment sales while concrete equipment sales were largely accounted for by concrete mixers (1,990 units).

"We are very pleased with the sales growth in Q2 of the current fiscal and expect the positive trend to continue," said Jaideep Shekhar, Convener, ICEMA Industry Analysis and Insights Panel and Managing Director – Asia, Australia & EMEAR, Terex India. "In view of the government's directive to spend 80 per cent of the budget allocation for the infrastructure sector by December 2023, we are confident that this on-going momentum will translate into a 15-20 per cent growth in CE industry sales over the whole of FY24," he explained.

In the past decade as well the industry sales has seen robust growth. Indian Construction Equipment industry has been on a growth path, with sales volumes more than doubling from 50,000 units in FY 2014 to 107,000 units in FY 2023. The figure 1 depicts the sales volumes of the CE industry in thousand numbers of equipment, from 2013-14 to 2022-23.

The Indian CE industry recorded exemplary annual results in the previous fiscal, with sales crossing the 100K unit mark for the first time ever and an unprecedented 26 per cent annual growth in sales volumes. Following this, the Indian CE industry's performance in the current FY has been further bolstered by the government's continued emphasis on infrastructure in the form of enhanced budgetary allocations, as well as rapid

Graph 1: Trend of Export Sales



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implementation of projects in the run-up to the general elections. As a result, the overall sales figures for the CE industry in the current FY have been consistently higher than those in FY 2022-23, in terms of both domestic sales as well as exports. Total equipment sales in Q2 24 increased to 30,078 units, against 22,941 units sold in Q2 of FY 2022-23. Of these, domestic sales accounted for 27,423 units while 2,655 units were exported. Graph 1 shows historical trend of export sales of construction equipment compared with the past year's trend.

ICEMA requests the government to ensure that the steady pace of execution of projects is maintained, to ensure the continued robust growth of the CE industry. ICEMA, as the apex body of the CE industry, continues to work towards the growth and advantageous positioning of the industry through stakeholder engagement, consensus building and policy advocacy, added the spokesperson.

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EXCON 2023 likely to attract over 1200 exhibitors across the world

EXCON, South Asia's largest exhibition for construction equipment, organised by the Confederation of Indian Industry (CII), is scheduled to be held from December 12 to 16 at the Bangalore International Exhibition Centre in Bengaluru.

The Confederation of Indian Industry (CII) organised a roadshow in Mumbai to announce EXCON 2023. This event witnessed the participation of leading names from the industry, government, and stakeholders from the infrastructure and construction equipment sector.

EXCON, South Asia's largest exhibition for construction equipment, organised by the CII, is scheduled to be held from December 12 to 16, 2023, at the Bangalore International Exhibition Centre in Bengaluru.

The event will spread over 30 lakhs sq ft of display area and is expected to attract over 1200 exhibitors from India and abroad including countries like Austria, China, Czech Republic, France, Germany, Italy, Romania, Russia, South Korea, Spain, Sri Lanka, Turkey, United Arab Emirates, United Kingdom, United States of America. Government of Karnataka is the host state for EXCON 2023.

Deepak Garg, Managing Director, Sany Heavy Industry India, said, "We are excited to present the twelfth edition of EXCON, embracing the theme 'Building India's Tomorrow.' This theme encompasses the core principles of technology, globalisation, sustainability and inclusiveness. EXCON 2023 is more than just an event; it serves as the driving force behind India's continuous progress, symbolising our robust infrastructure development and solidifying India's prominent position as a global hub for CE manufacturing".

In 2023, the construction industry is on the cusp of a technological revolution, driven by several key innovations. Generative AI, an



advanced technology, is optimising the design process, generating highly efficient and innovative designs. Technology plays a pivotal role in facilitating gradual expansion and improving efficiency in the sector. Moreover, the construction equipment industry is positioning itself for remarkable growth, targeting over 15 per cent year-on-year increase in the next five years. This ambitious goal underscores their commitment to providing the cutting-edge machinery and equipment needed to support the industry's transformation, ensuring that construction projects across the nation are not only innovative but also executed with enhanced efficiency, and precision with a focus on sustainability.

India's economic progress is closely linked with the infrastructure sector's vitality, which has garnered significant government focus. Demonstrating a strong commitment to this cause, the government has earmarked a substantial allocation of Rs 10 lakh crores, equivalent to an

impressive \$130.57 billion, to strengthen this sector. The government has recognised the immense size and potential of technology within the construction landscape. As part of a technology sub-mission under PMAY-U, they have identified 54 innovative global technologies, heralding the dawn of a new era in the Indian construction technology sector. This initiative is expected to pave the way for a more inclusive roadmap for all stakeholders.

EXCON 2023 boasts a multitude of highlights, including an exclusive focus on alternate fuels, AI pavilion, Aatmanirbhar Bharat, skills, women operating construction equipment and machinery, conferences on defence and paramilitary, green construction focusing on sustainability, AI & IOT, and automation in the construction engineering sector, among others.

EXCON 2023 goes beyond being a mere event; it serves as a dynamic catalyst driving India towards

continuous progress. Its mission is to epitomise our robust infrastructure development, solidifying India's prominent global position in the construction equipment manufacturing sector."

EXCON serves as a dual-purpose platform, offering opportunities for both marketing and education to all stakeholders. Government officials and senior bureaucrats have leveraged it as an educational forum for multiple departments, including public works departments (PWDs) and civil engineering departments, private contractors, builders, road and infrastructure developers, smart city and urban planning experts, the Army, and Border Roads Organisations (BROs). This platform enables them to observe the latest displays of technology, equipment,

and machinery, facilitating the nation's accelerated infrastructure development requirements.

The event will highlight leading construction equipment manufacturers as they showcase the adaptability of their machinery and the advancement of construction technologies. Of utmost significance, these exhibitors will present economical solutions aimed at accelerating project execution for builders and contractors, placing a strong emphasis on upholding standards of quality, safety, and environmental sustainability.

Some of the prominent organisations participating at the event include JCB, BKT, Caterpillar, Imperial Auto, Jindal Steel & Power, Gulf Oil, Kobelco, KYB, Larsen and Toubro, Puzzolana, Sany, Schwing

Stetter, Syemco, Tata Hitachi, Ammann, Case, Doosan, Epiroc, Fiori, GNU, Nail Stone, Hyundai, ITR, Liebherr, Propel, Rockcut, Walvoil, Wipro, Yuken India besides OEMs, components manufacturers and other allied industry organisation.

The Indian Construction Equipment Manufacturers' Association (ICEMA) is the sector partner for EXCON 2023. Infrastructure Equipment Skill Council (IESC) and the Builders Association of India (BAI) are supporting partners.

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NEWS SNIPPET

CASE India to introduce 6 products at EXCON 2023

CASE Construction Equipment, a brand of CNH Industrial, will exhibit an array of their state-of-the-art machines at the 12th international construction equipment and construction technology trade fair, EXCON 2023. With the introduction of six new products, CASE will enter two new categories in the domestic market at the largest construction equipment exhibition in South Asia taking place in Bengaluru between December 12 to 16.

Focused on innovation and technology, CASE will be showcasing 10 made-in-India products that are manufactured for domestic as well as global markets. Furthermore, the company plans to unveil machines compliant with the new BS V (CEV/TREM) emission standards ahead of its official industry transition time.

Speaking about the upcoming EXCON, Shalabh Chaturvedi, Managing Director, CASE Construction Equipment - India and SAARC Region, said, "We are excited to yet again showcase our innovative and highly efficient made-in-BHARAT products to the customers visiting the show from across South Asia region. It is an exciting time for India as infrastructure development in the country is on its peak currently creating various opportunities for the sector. With our existing and new products in the portfolio, including the introduction of new machines, we look forward to cement our position as a



global legacy brand offering technologically advanced products with worldclass quality."

Alongside these product launches, CASE will also introduce a value line comprehensive platform under CNH Industrial, offering accessories and genuine parts. With this new addition, CASE aims to offer a holistic range of solutions, underscoring its commitment to serving customers' needs at every stage of machine's lifecycle. The company will also be showcasing new merchandise, apparel, and safety gear to their lineup.

EXCON, is a prominent industry show for construction equipment and technology, organised by Confederation of Indian Industry (CII) in association with Indian Construction Equipment Manufacturers Association (ICEMA). The exhibition offers an ideal platform to connect with key stakeholders and get industrial insights.

A global leader in Construction Equipment since 1842, CASE has been present in India since 1989. It has consistently remained a market leader in the Vibratory Compactor segment and a leading player in the backhoe loader segment, since inception. CASE offers a full range of construction equipment in the country and produces made-in-India machines at its state-of-the-art manufacturing facility in Pithampur, Madhya Pradesh for domestic as well as over 105 export markets. Show-goers will be able to visit CASE pavilion at stall number OD2 at the upcoming EXCON 2023.

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“Vision Plan 2030 aims to make India world’s 2nd largest in CE industry”

Indian Construction Equipment Manufacturers Association (ICEMA), affiliated to Confederation of Indian Industry (CII), is the nodal body representing the Construction Equipment industry (OEMs, suppliers and financial institutions) in the country.

V Vivekanand, President of ICEMA and of Managing Director at Caterpillar India, in this interview, shares the current outlook of Indian CE industry while emphasising on the need of technology adoption. The association also launched ICEMA CE Technology Vision Roadmap which aims to serve as a guide to the industry for adaptation of new technologies, he added.

What is your analysis of the present status of the construction equipment (CE) industry in India?

As India progress towards attaining its goal of becoming a \$5 trillion economy, infrastructure continues to be the primary driver of economic growth, and concomitantly, of growth in demand for construction equipment. The Indian Construction Equipment industry has seen tremendous amount of traction post-covid, duly catalysed by the government’s thrust on infrastructure development through various flagship initiatives like National Infrastructure Pipeline (NIP), National Logistics Policy (NLP) and National Monetisation Pipeline (NMP), since construction equipment comprises around 20 per cent of the average project cost. The industry results for the last fiscal bear witness to this phenomenon, with CE sales crossing the 100K volume mark for the first time, recording an unprecedented 26 per cent annual growth.

Currently the Indian Construction Equipment industry stands at the 3rd position globally, after the US and China. The record-breaking results of the previous fiscal, along with global recognition for our products and healthy growth of exports, have enabled us to consolidate our position and we are now a strong contender for the number two spot. This is also in alignment with the CE Industry Vision Plan 2030 of ICEMA which has set a goal of Indian CE



industry becoming the world’s second largest and fastest growing CE industry, with three times export growth and a market size of \$25 billion by 2030.

How is the demand for products and solutions from the CE industry increasing in the market? What factors are driving the demand?

The Indian CE industry is on a high growth trajectory on the back of the government’s continued focus on infrastructure as the primary engine of economic growth in the country. The industry has consolidated upon the highest ever sales growth of 26 per cent in FY23 with volumes crossing the 100K mark for the first time. In the present fiscal, there has been robust overall growth of 18 per cent and 31 per cent respectively in

the first two quarters of FY 24 and we confidently expect an overall growth of 15-20 per cent for the year as a whole.

Projects worth Rs 108 trillion in the National Infrastructure Pipeline are the primary drivers of demand for construction equipment in the country. Besides roads and highways sector, which is the largest consumer of CE, these include critical transport infrastructure projects in the Railways sector, including metro and high-speed rail; airports and heliports; as well as ports and waterways, for last mile connectivity. Additional demand drivers include increased activity in the rural infrastructure and urban reconstruction sectors.

What are the key challenges before the CE manufacturers? How ICEMA is helping CE makers to overcome these challenges?

In view of the ongoing and expected spurt in demand for construction equipment in the economy, the industry needs to augment production capacity in tandem with improved productivity of its equipment. This would involve adoption of innovative and cost-effective technologies that can ramp up productivity of existing as well as new machines. In this context Ministry of Heavy Industry’s Samarth Centres are extending facilities to MSMEs for easy access to technological up-gradation and converting their existing machines into smart

ICEMA is proactively partnering with various global associations to attract the supply chain partners to setup manufacturing in India. ICEMA plans for three times export growth and a market size of \$25 billion by 2030.

machines for enhanced productivity. Further, the recently launched ICEMA CE Technology Vision Roadmap aims to serve as a guide to the industry for innovation and adaptation of new technologies to stay ahead of the curve in meeting future challenges for safer, more productive equipment which is also ecologically sustainable.

Additional challenges in meeting customers' requirements could be constraints in the supply chain due to factors such as sudden increase in raw material prices, which would dent the cost effectiveness of our products, or disruption in availability of raw materials. ICEMA is making consistent efforts to strengthen the CE industry's supply chain, especially working with tier 1 and tier 2 suppliers, to strengthen their capacities. ICEMA is working with policymakers to facilitate building of local capacity and capability through production linked incentives for the CE industry.

The industry's high technology products and precision components, which will drive future trends, involve high technology aggregates and systems such as hydraulics, electronic controls, crawler motors, pumps, drives, engines, powertrain etc, which are largely being imported at present, and require considerable investment by the Indian manufacturers in the value chain to enable their domestic production. ICEMA is proactively partnering with various global associations to attract the supply chain partners to setup manufacturing in India for establishing their facilities for building the capacity and capability in India.

What are the key trends in the construction equipment industry?

As the construction industry the world over transitions to smart production solutions and ecological responsibility, there is growing demand for more energy efficient machines operating on alternate fuels such as electric batteries, CNG, bio-diesel etc, which would reduce the carbon footprint of the construction processes and make the industry more sustainable. In terms of demand trends for specific equipment, there is an increasing trend away from large, heavy machinery and towards user-friendly, smaller size equipment, for instance, mini excavators, recently exhibited a decided uptrend in demand.

Additionally, with the newer generations of end-users, there is growing awareness about safety of machines, operators and the overall jobsite, and a willingness to invest in smart machines with technologically advanced safety features, as well as in skilling of



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operators, for the sake of long term benefits in terms of increased efficiency and productivity.

What are some key industries driving the demand for CE products and equipment? Since, railways, power and infrastructure industries are making high investments in construction projects, do you have any such projects on radar currently which is going to drive this demand?

At this juncture the CE industry is experiencing all-round growth. All the infrastructure sectors – roads, mining, railways, urban reconstruction, rural development, ports and waterways etc – are making good progress, thereby driving demand for the CE industry's products. Speaking of projects, there are a number of projects in the pipeline and in various stages of execution in different sectors, such as the high speed rail corridor between Ahmedabad and Mumbai, metro rail in various cities and multiple expressway projects (Purvanchal Expressway, Delhi-Mumbai Expressway etc) which are driving the demand for construction equipment. Additionally, Coal India has been increasing coal output year over year, thus driving the demand for mining equipment.



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Wolffkran's HiSPS seeks market availability with WOLFF 6523 Clear

Wolffkran introduced High-Speed-Positioning-System (HiSPS) at Bauma trade fair which enables loads on the crane hook to be moved virtually sway-free and positioned with millimetre precision.

Wolffkran was the first manufacturer in the crane industry to introduce the electronic assistance system: High-Speed-Positioning-System (HiSPS) at the Bauma Trade Fair. Now the patent-pending technology is available for order together with Wolffkran's latest addition, WOLFF 6523 Clear. At the beginning of 2024, additional newly manufactured WOLFF models will be equipped with the option of activating the HiSPS and existing WOLFF cranes can also be retro-fitted.

The connectible HiSPS assistance system operates using two battery-powered sensors on the trolley and hook block of the crane hook. Connected to a control unit in the switch cabinet, it detects the rope's movements and automatically adjusts the motion and speed of the slewing gear and trolley to it. "Ultimately, the crane operator controls more than the crane – they control the load with assistance from the system," explains Viktor Mosolf, Head of the Digitalisation Department at Wolffkran.

Greater safety at all levels

By activating the HiSPS, the load that was already swinging as a result of the crane movement is stopped within seconds. Since the trolley always assumes its position automatically via the hook block when HiSPS is activated, it prevents the load from being pulled diagonally. The trolley automatically moves as well or is always positioned precisely over the load when the hook is manually pulled or when the load is manually pushed by hand on the ground. "HiSPS significantly reduces the risk of accidents and

damage due to swinging loads or hooks," summarises Viktor Mosolf. "Furthermore, the anti-collision system is optimised since not only the crane but also the load in the working range limitation is automatically stopped."

Working efficiently in the digital age

The WOLFF HiSPS not only enhances safety at the construction site; it also allows you to work far more efficiently. The crane can be operated far more easily and intuitively from the ground than before via remote control. Previously, the crane operator had to move the load very slowly to prevent a strong pendulum motion; with the system connected, they can move the crane significantly faster. HiSPS also allows to save hook positions and automatically move to them. As a result, the load can be positioned precisely even with a limited view. Besides construction site cranes, the ability to automatically travel to saved positions also makes HiSPS attractive for ground-controlled WOLFF cranes without crane cabins at storage areas, in mines, and in industry.

"However, HiSPS is more than just a digital assistance system and the building block for the autonomous driving crane," says Dr Mohamed Abouelezz, Head of Product Management and Business Development at Wolffkran. "The crane movement and position data that the HiSPS generates can be integrated into the modern digital construction site organisation using building information modeling (BIM). With HiSPS, our cranes are ready for the progressive digitalisation of the building industry."



HiSPS will soon be available for the entire pack

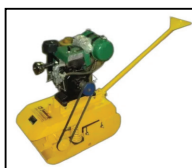
After an extensive testing phase, the HiSPS was introduced in a market-ready state for the first time in Heilbronn at the end of September. At the beginning of September, it was already presented and awarded the Innovation Prize at Matexpo in Belgium. In the coming months, all current production trolley jib cranes will be delivered with a pre-installed system as standard so that HiSPS can be used as an option at any time. And, of course, existing cranes can also be retrofitted accordingly. **IPF**



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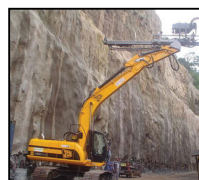


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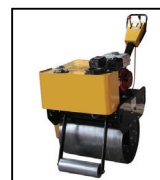


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PLI scheme: The way forward

The Rs 2.71 trillion Production-Linked Incentive (PLI) schemes, rolled out to promote the economic development of various sectors, have faced multiple implementation challenges. **Bhavesh Thakkar** summarises such challenges and also presents the way forward.

Central and state governments have been releasing various policies to promote various sectors, leveraging the employable workforce for India's development. In this regard, the central government has introduced the Make in India and Atmanirbhar Bharat initiatives, to attract Foreign Direct Investments (FDIs) and to promote manufacturing within Indian corporates. State governments also announce policies to attract investments in their state, promoting a healthy competition for growth among states. An investor can combine such state and central incentives to significantly reduce the investment's payback period, thereby, multiplying the schemes' overall benefits.

With time, the governments have recognised the need for a holistic development across sectors and in this direction the PLI scheme announced by the central government in 2020 is considered as a breakthrough measure.

The objective of PLI is to make domestic manufacturing globally competitive and to create global champions in manufacturing. The strategy behind the scheme is to offer incentives on incremental sales, over and above the base year on activities specified in the policies. The advantage of incentivising these incremental sales is that it helps the central government to effectively measure the economic outcome of the incentives, as opposed to just offering capital benefits without tracking any actual value addition.

Thus, PLI has been specifically designed to boost domestic manufacturing in sunrise and strategic sectors, curb cheaper imports and



reduce import bills, improve cost competitiveness of domestically manufactured goods, and enhance domestic capacity and exports.

Objectives underlying the sector selection

The PLI schemes formulated to drive economic transformation have certain broad objectives. Let us deep dive into the intricacies of each of the objective:

Employment generation: The introduction of the PLI scheme stimulates economic growth by fostering job creation in India. By incentivising industries, PLI not only enhances productivity but also offers significant employment opportunities, contributing to the nation's workforce expansion and economic prosperity.

Import substitution and export promotion: The PLI scheme is a dual-purpose initiative that not only diminishes import dependency but also propels export activities. Incentivising domestic production curtails reliance on imports and fosters economic self-sufficiency. Simultaneously, it provides extra advantages for exporters, making it more attractive for businesses involved in international trade. This

import substitution and export promotion strategy not only safeguards against excessive forex outflow but also actively encourages and rewards businesses that contribute to the growth of India's exports, thus promoting a more balanced and robust economic landscape.

Creation of large-scale domestic manufacturing capacity: The PLI scheme focuses on creating large-scale manufacturing capacities and it is essential for India's economic advancement. It stimulates innovation, attracts investments, and enhances our global competitiveness. With a robust manufacturing sector, India will secure a lasting positive impact, sustained economic growth and prosperity on the international stage.

Industries covered under PLI

The initial tranche of the scheme was launched in April 2020 and focused on three sectors, namely pharmaceutical (critical key starting materials (KSM)/drug intermediaries (DI) / active pharmaceutical ingredients (API)), mobile and electronic components, and medical devices. The government then

Table 1: Budget allocations for sectors covered by PLI schemes

Sector	Budget outlay (in Rs crore)	Percentage to total	Number of beneficiaries
Semiconductor and display fabs	76,000	27.99%	N/A
Large scale electronics manufacturing	38,645	14.23%	32
Automobiles and auto components	25,938	9.55%	95
High efficiency solar photovoltaic modules - I and II	24,000	8.84%	15
Advance chemistry cell (ACC) battery	18,100	6.67%	4
IT hardware	17,000	6.26%	14
Pharmaceutical drugs	15,000	5.52%	55
Telecom and networking equipment	12,195	4.49%	42
Food products	10,900	4.01%	149
Textile sector	10,683	3.93%	64
Pharma sector - KSM / DI / API	6,940	2.56%	50
Steel products	6,322	2.33%	67
White goods	6,238	2.30%	42*
Medical devices	3,420	1.26%	21
Drone and drone components	120	0.04%	23*
Total budgeted incentive outlay	2,71,501	100%	

* Provisionally selected

expanded the scope and introduced multiple other sectors. Today, the scheme consists of fifteen sectors. These sectors range from traditional ones such as the textile to sunrise sectors such as semiconductor and pharmaceutical drugs.

The overall budgeted outlay of the incentives is Rs 271,501 crores, with the highest allocation to the high in demand semiconductor sector. Table 1 gives a glimpse of the sector wise allocation percentage to the covered PLI sectors.

Current process of PLI

The central government, to efficiently execute the evaluation, approval and disbursement process, has appointed the Project Management Agency (PMA). The PMA works under the respective sector departments to smoothly execute the process.

The broad selection criteria/ scoring system considered by the PMA for evaluating a proposal covers:

Financial aspects: Previous years turnovers, export turnover, net worth

details, future investment and cash flow projections. The objective here is to evaluate the financial strength of the applicant to execute the proposed investment.

Technical aspects: Criteria such as, minimum domestic value addition and employment generation, form a part of the technical criteria. These criteria evaluate the eligibility of the proposal.

Sector specifics: Qualitative sector specific factors are identified in every PLI policy, for example, for the pharmaceutical drugs PLI, the proposal requests for details of the number of patents enlisted and the R&D spend by the company.

Below is the application filing process flow:

- ❑ Interested applicants may apply on a specified portal, detailing their investment proposal (particularly the committed investment and projected turnover).
- ❑ Then these proposals are evaluated by the authorities through the scoring system defined above. The selected

applicants from the evaluation process are issued an approval letter.

- ❑ The conditions of the approval letter must be complied through quarterly review reports and responses to any queries.
- ❑ At specified intervals (usually annually), the incentives claim application must be filed along with the appropriate documentation.

Upon receipt of the approval letter, applicants are provided specified timelines to meet their investment commitments. The Ministry/ Department, through the PMA, undertakes continuous and timely monitoring of the applicant's progress, with physical verification of the project premises and interventions in the form of queries as necessary. Proper documentation needs to be maintained to provide accurate progress reports. After meeting the commitments set by the applicant's proposal, department disburses incentives as cash subsidy.

Challenges faced while implementing PLI schemes

The PLI Schemes, expected to roll out benefits and promote the economic development of various sectors, have faced multiple implementation challenges which are hampering their motive. Here is a summary of such challenges:

Domestic value addition criteria: The PLI schemes provide incentives to applicants on fulfilling the Domestic Value Addition (DVA) criteria wherein a certain percentage of inputs used in the manufacturing process are to be procured domestically. In some of the sectors, this DVA criteria is set at a high percentage. For instance, PLI for auto and auto components requires a minimum 50 per cent DVA. For auto and for multiple other sectors, the current ecosystem does not support an indigenous raw material requirement, necessitating import of input materials and leaving DVA criteria unfulfilled. And this will make applicants large investments ineligible under the schemes.

Stringent and difficult to accomplish growth criteria: The lack of infrastructure availability and logistic connectivity is derailing the defined timeline of implementation of the schemes. And, given the global sluggish economic outlook, the availability of funds for investment is low, negatively impacting the investment commitments from the industries. Furthermore, expansion criteria required in the policy are stringent, and industries have not been able to accomplish them. For instance, the 25 per cent YoY sales growth criteria specified for the textile sector is too harsh for textiles, which see a steady annual growth of 8 to 9 per cent.

Delays in application and disbursement process: Many companies that have applied for the scheme are concerned about their ability to meet the government's requirements due to the lengthy, burdensome, and complex procedure to claim incentives. For example: the automotive PLI was announced for a period of 5 years, but the policy and guideline drafting took a substantial time and the effective period

available for the industry was narrowed down to 3.5 years and is now expected to be extended for a year. Such delays effectively reduce the scope of benefits available to the applicants.

Additionally, the application process is not user friendly and requires multiple levels of documentation; thus, delaying the disbursement of incentives. In this regard, consider the disbursement flow for FY 2022-23. Out the budgeted outflow, the departments only disbursed Rs 2,900 crore in FY 22-23, and this accounts for merely 1.07 per cent of the total budgeted allocation detailed in Table 1. Low disbursement reflects as a negative aspect for potential investors.

Ambiguous guidelines: The PLI scheme is in the nascent stages and there have been issues related to ambiguity of relevant business terms. An example would be the electronics PLI wherein, definitions for key business transactions were not included in the guidelines. A leading electronics manufacturer, for instance, exported some products to related parties and the pricing for related party was not defined, thereby, affecting the eligibility of incentives. Given that the scheme is new, such unforeseen issues cannot be identified beforehand, but once identified, faster resolution for the same can be targeted.

Way forward

Looking ahead, it would be beneficial for the government to enhance transparency and facilitate open communication with investors by releasing a comprehensive white paper. This document should outline the status of policies, including details on received applications, granted approvals, and investments made in line with the accepted proposals. Such transparency can help assess any deviations from targeted goals and allow for constructive discussions on streamlining processes for mutual benefit.

On the investment front, the next steps should entail the inclusion of diverse investments, irrespective of greenfield or brownfield

categorisations, and inclusion of diverse investor categories. This will allow a higher foreign direct investment in the country easing the forex rates in short term and promoting sustainable development in the long term. A positive step in this direction is the inclusion of the MSME (micro, medium and small enterprises) segment as a beneficiary of the PLI policies.

Challenges faced by the industries should be heard and understood, and appropriate remediations should be discussed and implemented for issues such as high administrative burden or lack of flexibility in the PLI guidelines.

Once the government evaluates the current schemes' effectiveness and takes corrective actions, they are considering the expansion of the PLI basket. There have been discussions on extending the scheme to the areas such as petrochemicals, wearables and hearables, basic chemicals, toys, data centres, compressed biofuel, furniture and research-based.

These sectors are shortlisted basing the employment opportunities and self-reliance goals underlying India's development. Along with the recommended changes, the government should implement a robust implementation mechanism and framework to enable investments in the sectors.

IPF

About the author:



Bhavesh Thakkar is the Partner (Tax and Regulatory), Indirect Tax, at Ernst and Young LLP India. A chartered accountant, he has 23 years of professional experience specialising in

providing end-to-end services in relation to the fiscal incentives by state and central government.

This article was co-authored by **Vaishnavi Luniya** and **Anup Rath** (who are Consultants at EY).



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Impact of the PLI scheme on job creation

While large corporations play a pivotal role in India's economic landscape, it's the Small and Medium Enterprises (SMEs) that often act as the backbone of the nation's job market. The PLI scheme is a game-changer for these smaller organisations, as it provides them with a substantial boost, says **Krishnendu Chatterjee**.

The job landscape in India is ever-evolving, majorly influenced by transforming business ecosystems and economic policies. One such transformative endeavor that has been making waves since its inception is the Production-Linked Incentive (PLI) scheme. Its benefits extend beyond just supporting domestic industry; it creates job opportunities for Indians. The government of India's initiative to further enhance manufacturing capabilities and exports for ten more labor-intensive sectors, ranging from food processing to textiles, in addition to its already established sectors, such as allied equipment for mobile phones, pharmaceuticals, and medical devices. This dynamic scheme, geared toward boosting manufacturing in India, is making a substantial impact on the country's job creation landscape.

As the PLI scheme continues to gain momentum, it has garnered attention for its potential to revolutionise employment in India. The numbers speak volumes – a significant portion of employers anticipate a surge in hiring, citing an



Image courtesy: FreePik.com

uptick in employee productivity and greater investment in Micro, Small, and Medium Enterprises (MSMEs).

Foreseeing a brighter future: Employers' perspective

The impact of the PLI scheme on job creation is apparent, with a significant portion of employers expressing optimism about the scheme's potential. According to a recent survey, a staggering 60 per cent of employers anticipate an increase in hiring over the next two years as a direct result of the PLI scheme. This surge in job creation can be attributed to the scheme's incentive structure, which encourages businesses to expand and diversify their operations within the specified sectors.

Moreover, the survey reveals that 69 per cent of employers believe that the PLI scheme will have a profound

impact on employee productivity. By providing incentives for manufacturing, the scheme fosters a competitive environment, pushing companies to adopt cutting-edge technology and best practices, ultimately resulting in improved productivity.

SMEs: Nurturing job opportunities

While large corporations play a pivotal role in India's economic landscape, it's the Small and Medium Enterprises (SMEs) that often act as the backbone of the nation's job market. The PLI scheme is a game-changer for these smaller organisations, as it provides them with a substantial boost.

A striking 72 per cent of small organisations foresee an increase in hiring by up to 20 per cent over the next two years, thanks to the PLI



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One of the cornerstones of the PLI scheme's success lies in its potential to attract investment in MSMEs. A robust MSME sector is vital for job creation and fostering economic growth.

scheme. For these businesses, the incentives provided by the government can make a world of difference, allowing them to expand their operations and create jobs at an accelerated pace. In addition to job creation, these organisations also reap the benefits of enhanced employee productivity, with 77 per cent of medium organisations expressing their belief in the scheme's positive impact.

Investments in MSMEs ushers job creation

One of the cornerstones of the PLI scheme's success lies in its potential to attract investment in Micro, Small, and Medium Enterprises (MSMEs). A robust MSME sector is vital for job creation and fostering economic growth. With the PLI scheme in play, 54 per cent of employers believe it is extremely likely to attract investments in MSMEs. The scheme's attractive

incentives, such as capital subsidies and financial support, make it more feasible for smaller businesses to thrive in the competitive market. As these MSMEs flourish, they generate more employment opportunities, further solidifying the scheme's impact on the job landscape.

Equal opportunity cities

The impact of the PLI scheme on job creation isn't limited to specific regions or demographics. Recent revelations from the survey done by Teamlease Services have showcased preferred locations by male and female employees. Coimbatore and Hyderabad are the two model cities, demonstrating equal preference for both genders. This gender-neutral approach to job creation is a testament to the scheme's inclusivity and capacity to empower individuals from all walks of life.

Way forward

As we look ahead, the impact of the PLI scheme on job creation holds the potential to redefine the economic and employment dynamics of India. It has the potential to create 60 lakh new jobs in five years, starting from 2021-22. It represents a leap towards a self-reliant and prosperous future, where the

aspirations and dreams of the workforce find new avenues for fulfillment. With the PLI scheme at the helm, we can expect a future where job opportunities are not just numbers but stepping stones to a brighter and more inclusive tomorrow.

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About the author:



Krishnendu Chatterjee is the VP and Business Head at TeamLease Services Ltd. He has been with TeamLease for more than six years and currently heads the Banking and Financial Services and Industrial Verticals. He brings about 17 years of management experience, working with leading organisations including JPMorgan Chase, Kean Consulting, SilverSkills etc. In his current role at TeamLease, Chatterjee is responsible for managing about Rs 3,000 crore in annual revenue with a strong base of over 93,000 fixed term contractors, leading the business development, account management and hiring.



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NEWS SNIPPET

Govt to invite tenders for advanced chemistry cells under PLI scheme soon

The Union Government of India (GoI) is gearing up to invite tenders for advanced chemistry cells (ACC) under its Production-Linked Incentive (PLI) scheme with a 20-GWh capacity by December 2023, according to a report in Mint. The Heavy Industries Ministry is currently holding talks with the Ministry of New and Renewable Energy, and the application process for new bids will begin after consultation between the two ministries is concluded (expected to happen in December).

The move will offer an opportunity for companies who could not apply or did not qualify in the initial round to avail the incentives under PLI Scheme for creating battery storage capacity.

In the first round, Ola Electric, Reliance New Energy



and Rajesh Exports qualified for securing incentives, who committed a cumulative investment of Rs 27,000 crore for the scheme. While Ola Electric was selected for the 20GWh lithium-ion cell manufacturing, Reliance New Energy qualified for 5GWh sodium-ion cell manufacturing and Rajesh Exports for 5GWh lithium-ion cells.

However, according to the Mint report, 20 GWh capacity, initially awarded to a Hyundai company, was subsequently deemed not bona fide, triggering a new round of bidding. Besides, GoI is planning to roll out additional incentives for a new PLI scheme for niche chemistries such as solid state, zinc-based, and iron-air batteries. A capacity of 5 GWh will be approved for incentives next year.

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Importance of addressing system for long conveyors

Long Conveyors are important component in heavy industries and addressing system ensures the faster responses and effective working of setup. **Ashish Chane** presents a white paper recording its benefits to the organisations.

Long distance conveyors have several instruments for various functions like Emergency Stops at intervals, Belt Misalignment Switches usually a pair at every fifty-meter, Zero Speed Switch, Belt Speed Sensors, Encoders, etc. These switches and instrumentation parts increases as the length of the conveyor increases. With the increase in number of switches, it becomes difficult to locate the fault or operated switch over the length of conveyor. So, the addressing system has an importance in long conveyors for ensuring the faster responses and effective working of the system.

In the first part of the study, we will discuss importance of addressing systems. The available options for addressing techniques with us are mentioned in second part of study. In third part, some case studies of application we have done with these systems, brief information of these systems and its

contribution to improve efficiency to decrease downtime by using addressing system.

Introduction

Conveyors are used in heavy industries mainly for material handling having lengths from few meters to several kilometres. In India we have worked on Projects up to 22-kilometre-long conveyor. In long conveyors, the location of fault is very critical and time consuming. Traditionally customer is making groups of 5-6 switches and wires them up to controller and considers one digital input for a group. Even after this arrangement locating fault is not that easy particularly in case of emergency this matters most.

Introduction of addressing system over two wire bus system for the switches along these conveyors helps the user for locating fault and its location from control room, number and location of the operated switch

can be displayed in the SCADA system and alarm can be generated so that the user can address the issue immediately without any time lag. Besides that, installing the addressing system contribute to overall efficiency and productivity of the plant.

Additionally, we can use these systems as a part of Industry 4.0 based solutions and we can log the data from the switches such as no of operations of switches which can be further utilised for analytics, trends of operations of particular switch, asset management and can maintain the history of entire number of switches.

Addressing, addressing concepts, and addressing technologies

Addressing: An address is a collection of information, presented in a mostly fixed format, used to give the location, generally as reference to make identification easier and helps to locate the actual location of fault.

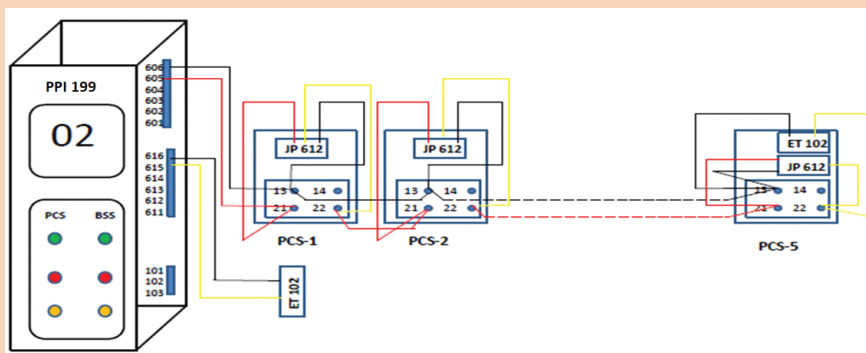
Addressing concept: Addressing is the process, coded or numbered to a location of a switch which will be monitored by a process defined. In case of longer conveyor each switch along the conveyor has an address by a sensor module which will be communicating to a controller on a two-wire bus system.

Addressing technologies: There are several addressing systems used globally for the switches around long conveyor. These systems can be further categorised as safe and standard addressing systems. Below are some technologies for addressing of switches along long conveyor.

- **Safe Addressing System** – We have developed Safety



A representation of Safe Addressing System



Standard Addressing System using the drop in current from the sensors installed in the switches.

Addressing System in association with our global vendor using the versatile bus for Industrial Applications. Bus is used for transferring analogue and digital information over distances up to 10 km. It can be stand-alone or as part of a PLC based control system. There are no special protocols to learn - all modules are simply and quickly configured with a small hand-held device.

System is used extensively in mining for ventilation, lighting, and conveyor control applications for signal transmission.

Our Safe Addressing System is a TUV approved SIL 3 system for monitoring of E-Stops and pull cord switches, especially on long mining conveyor systems. It can be used to identify which switch has been pulled as well as to shut down the conveyor.

- ❑ **Standard Addressing System** - Schmersal India developed the Standard addressing system in association with an Indian company which is based on two wire bus system. The system uses the drop in current in the sensors installed in the switches. Standard addressing system can be installed over maximum 9 km distance of conveyor.
- ❑ **AS-Interface** (Actuator Sensor Interface, ASi) is an industrial networking solution (physical layer, data access method and

protocol) used in PLC, DCS and PC-based automation systems. It is designed for connecting simple field I/O devices (e.g. binary ON/OFF devices such as actuators, sensors, rotary encoders, analog inputs and outputs, push buttons, and valve position sensors) in discrete manufacturing and process applications using a single two-conductor cable. AS-Interface is an 'open' technology supported by a multitude of automation equipment vendors. The AS-Interface has been an international standard according to IEC 62026-2 since 1999. AS-Interface having limitation of distance and can be used for maximum of 1.2 km.

Benefits of addressing system

Addressing systems are information systems technology that supports all operations carried out at regular routine for long conveying systems. Provides great ease in the realisation of the functions and faults in long conveyors.

The main benefits to the long conveyor system are as follows:

- ❑ Exact location of fault
- ❑ Increase in safety of operators
- ❑ No information errors
- ❑ Reduction of time access to information
- ❑ Increase system efficiency
- ❑ Increased employee productivity

The addressing system provides

accuracy, standardisation, ease of use, increased efficiency and profitability, and timely feedback to the business and operations.

Addressing system implementation

For the implementation of addressing system on long conveyor system, we need to calculate the number of switches to be addressed on the long conveyor. Based on the number of switches we need to engineer and design the system and calculated the number of sensors to be connected in the loop. In some of the addressing systems the end termination sensor is used to terminate the loop. In some addressing systems harmonic filters and repeater needs to be considered based on length of the conveyor.

Results and findings

Industry's most encounters problems are with safety and location of Fault on the long conveyor which can be resolved by using addressing systems. We can further extend these systems for higher level of automation, Industry 4.0 which can be used for asset and inventory management.

Conclusion

The conveyors with addressing system, has achieved the benefits including the faster notification of fault, increase safety on conveyors, improvement in productivity with implementation of addressing system. While it also provides an ease of reporting and traceability and can also be used for implementation of IIOT.

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About the Author
Ashish Channe is the Dy General Manager in the Industry Verticals with Schmersal India, Pune.



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“We need to set up solar charging framework to push green mobility”

PMI Electro Mobility is a leading electric bus manufacturer in the country. The company has garnered fresh orders under the recently announced PM e-bus Sewa scheme. This will greatly enhance PMI Electro Mobility's technological capabilities and catapult our growth trajectory manifold says **Dr Aanchal Jain**, Chief Executive Officer, PMI Electro Mobility Solutions Private Limited in this interview.

Can you briefly describe PMI Electro Mobility Solutions and its core business activities?

PMI Electro Mobility is a leading electric bus manufacturer having two state of the art manufacturing plants in Dharuhera, Haryana. Besides manufacturing the electric buses in one of plants, we have all women battery plant to augment the existing requirement of electric buses. Currently, we have over 1200 electric buses plying across 28 tier 1 and tier 2 cities of the country, and we are having the order book of another 2500 buses. We expect this number to grow considerably, as we aim at garnering fresh orders under the recently announced PM e-bus Sewa scheme, by our Hon'ble Prime Minister Shri Narendra Modi Ji which entails addition of 10,000 electric buses to facilitate electric mobility for Tier-2 and Tier-3 cities of the country.

Road transport presently accounts for 12 per cent of India's energy-related CO₂ emissions and is a key contributor to urban air pollution and per kilometre, and an electric bus reduces about 2.4 kg of CO₂ and till date with over 1200 PMI Electro e-buses account for 7 crore green kilometres and we are committed to adding a millions of green kilometres in times to come.

The PM-eBus Sewa scheme aims to deploy 10,000 electric buses across India will take electric mobility to the grassroots level and boost localisation for industry players.



What are the current trends and challenges in the electro-mobility industry? How do you think PMI Electro Mobility Solutions can address these challenges?

At the very outset, electric mobility can be classified into two categories, private mobility, such as passenger electric cars, electric two wheelers etc. and public mobility which includes electric taxis, electric buses etc. and PMI Electro operates in latter. Being the most sought after and dynamic industry, the Government continues to engage, understand to identify possible solutions to the concerns industry faces. Institutions like Convergence Energy Solutions (CESL) have been setup which release consolidated tenders; enabling e-bus manufacturers to bid for various tenders thus facilitating them to achieve best “economies of scale” in accordance to their manufacturing

capacities. The Gross Cost Contract (GCC) model again is an industry friendly model, which saves State Transport Undertakings (STUs) from large capex purchase costs; and then again, the competitive bidding process, enables every bus manufacturer to bid as per their individual business capability. Another advantage for STUs is that they share requirements as per their individual state requirements. A major concern for the industry was “payment security”; which has also been addressed by the recently announced PM e-bus Sewa scheme for payment security system by the Union Government.

What are some technological advancements into electro-mobility field?

Technological advancements are an everyday process, which are included in every new batch of buses. Going back a couple of decades, one could not even think, of public intra-city buses in India being equipped with automatic transmission, air-conditioned, GPS systems, cameras etc. However, these are now a basic feature across the country. On the charging front, we need to shift EVs and E-buses charging to renewable sources of energy like solar, which will further help in reducing our carbon footprints. Initial steps in this direction have already been taken, with solar charging stations being installed in Leh. However, what we actually need is similar charging stations installed and utilised in each district of the country in line with PM e-Bus Sewa.

How is India facing electric vehicle charging infrastructure related challenges? Have you taken any initiative in this lead?

The biggest hurdle as we speak is the easy availability of adequate charging infrastructure. However, gradually, infrastructure is being put in place, to further push electric mobility. For commercial players like us, we are provided with space to set up our depots, where we install and commission charging stations. However, to further push green mobility, we need to set up solar charging infrastructure.

How Indian government's PM eBus Sewa scheme has benefited your company and its operations?

The scheme is slated to support eBus operations for a decade. The PM-eBus Sewa scheme aims to deploy 10,000 electric buses across India will take electric mobility to the grassroots level and boost localisation for industry players. Infrastructure and ecosystem are projected be upgraded in 181 cities under the green urban mobility initiatives at the total estimated cost pegged at Rs 57,613 crore, out of which support of Rs 20,000 crore will be provided by the central government. As one of the leading players in the category, we shall

leverage our abilities to apply and win tenders as they are announced.

Your company is working in the field of green mobility solutions. With this what are some sustainable operations have you pursued in your business?

We aim to developing innovative mobility solutions, bring technological advancements to the company's production capabilities and scale our operations, in the near future.

Further, as a company I believe on the three pillars of sustainability that, are crucial for our planet's future

- ❑ Focus on Net Zero, transforming transportation with green mobility solutions in line with environmental sustainability. Our over 1200 eBuses plying across 28 cities of India have already clocked 7 crore green kilometres and are all set to create a multiple of that in times to come.
- ❑ Diversity being the focus area that emphasises empowering through inclusivity aligned to social sustainability. We are in process of adding another assembly line to our existing, all women battery plant.
- ❑ Access to all thereby bridging the divide for a sustainable

tomorrow by having our eBuses plying in tier 1 and tier 2 towns hence ensuring economic sustainability.

What are your future growth plans?

Recently, PMI Electro has raised an investment of Rs 250 crore from Piramal Group's fund management business Piramal Alternatives for India's green mobility initiative. Considering that there has been a surge in demand for the deployment of electric buses owing to the PM's vision of net-zero emissions goals. The company intends to use the funds to further develop its solutions, bring technological advancements to its production capabilities, and scale its operations to bolster our green mobility initiatives.

With an order book of over 2,500 eBuses that is further expected to grow constantly going forward, the investment will greatly enhance PMI Electro Mobility's technological capabilities and catapult our growth trajectory manifold.

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NEWS SNIPPET

United Grinding opens a subsidiary in Southeast Asia

The United Grinding Group has been present in the Southeast Asian region for many years through representatives and the WALTER EWAG Asia Pacific subsidiary. Now the specialist for grinding, eroding, laser, and measuring machines bundles and intensifies its activities in this region by founding a group subsidiary in Singapore, United Grinding Asia Pacific Pte Ltd.

"Southeast Asia is a strategically very crucial region for us. Establishing a United Grinding subsidiary is the logical step to intensify our activities in this region," explains Stephan Nell, CEO of the United Grinding Group. The potential is high, and the number of customers is continuously increasing. "Proximity to our customers has always been important to us to ensure fast and

uncomplicated support," adds Nell. The ability to offer the group's bundled technology and application know-how from a single subsidiary offers customers many advantages.

Michael Schmid, CEO of the new United Grinding branch and already responsible for the Southeast Asian business of the WALTER and EWAG brands for more than 20 years, adds: "We can bundle the strength of our powerful team in the joint group subsidiary and serve our customers even better. In the future, we will offer all three group technologies, surface and profile grinding, cylindrical grinding, and tool machining, under one roof. I am convinced that bundling and intensifying our activities in this region is a win-win for all parties involved."

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“Our new facility in Noida to be operational soon, aims at exports”

Headquartered in Sonipat, Haryana, Ekkaa Electronics is an expert in designing and manufacturing LED TVs. **Sagar Gupta**, Director, Ekkaa Electronics in this interview with Ayushi Khandelwal, shares that the company, with a new facility in Noida, is planning to expand manufacturing into other consumer electronic products as well.

Can you brief us about Ekkaa Electronics?

Established in 2018, Ekkaa Electronics has emerged as a leading electronics company in India. In the same year, we ventured into the production of LED televisions. During this period, the majority of manufacturers in India were primarily engaged in assembly processes. However, we distinguished ourselves as pioneers by introducing injection molding and mainboard manufacturing/SMT in the country. Implementing a comprehensive backward integration strategy, we assumed control over raw materials, supply chain management, and the production of core components, as well as the assembly of LED TVs.

I take pride in announcing that within a brief span of four years, we have secured a remarkable 10 per cent market share in the LED TV sector. Currently, we serve as an Original Design Manufacturer (ODM) for over 100 brands in India. Going ahead we plan to build highest capacity plant for LED TVs in India. We are in the process of the same. We aim to provide solutions to the Indian as well as International brands, giving them a complete control over development and designing.

How is your company different from its competitors? What is the USP of Ekkaa Electronics?

Ekkaa's unique selling proposition lies in bridging the gap between major brands and smaller Indian brands in tier two and tier three. This is operated by managing their designing, development, supply chain, logistics etc and provide the



final product. This operational approach significantly reduces their working capital requirements and lead times for these smaller brands. So, they can get the ball rolling within a very short period of time, which helps them to capture the market with a competitive edge against larger brands.

Can you tell us about your overseas operations?

At present, our primary export focus is on Nepal, where we command a substantial market share of 30-40 per cent in LED TVs. Our strategic objective is to diminish reliance on imports from competitor nations, particularly China, in the electronics sector. Additionally, we have ambitious plans to initiate exports from our new manufacturing facility to countries such as Bangladesh, Sri Lanka, the Gulf region, and various African nations. These regions are prioritised as our initial targets due to their favourable

duty structures for India, along with shorter lead times and lower logistic costs compared to other countries.

Nowadays, e-waste in the electronics industry has become a major challenge. How do you deal with this problem and process the e-waste? What other sustainability practices does Ekkaa Group follows?

From the past couple of years, government has also been very proactive in controlling e-waste. The realisation has come that e-waste cannot be finished but needs to be completely processed and converted to something else. At Ekkaa, we focuses on controlling the e-waste process it to the fullest and reduce the amount of wastage. We have tie-up with companies who specialises in processing and dumping this e-waste in a proper manner. These companies are authorised by the government and have complete operational structure in this lead. As I mentioned earlier as well, we have a complete control over the manufacturing process right from the raw material to finished product. So, we sometimes tweak some designs in a way that the e-waste can be reduced to the

Ekkaa's is bridging the gap between major brands and smaller Indian brands in tier 2 and tier 3 by managing their designing, development, supply chain, logistics etc providing the final product which is competitive in the market.

minimum amount. In sustainability lead, we have plans to introduce solar panel in our upcoming facility in Noida. Currently, we have installed puf panels which offer high thermal efficiency resulting in low energy consumption and high energy efficiency.

What are some future developments you company is working into?

In 2020, we acquired a new land in Noida, the heart of electronics in India right now. Our strategic vision involves the construction of a cutting-edge mega facility dedicated to the production of consumer electronic products along with LED TVs. By maintaining a concentrated focus on core manufacturing, we aim to

Our plans encompass the in-house production of tools for metal pressing and the manufacturing of back covers for LED TVs, leveraging power presses technology within India at our upcoming facility in Noida.

enhance backward integration at the plant by introducing pioneering activities, a first of its kind in India. For instance, we will be the first company in India to manufacture LED backlights in electronics. Currently, they are entirely imported from China or Taiwan.

Additionally, our plans encompass the in-house production of tools for metal pressing and the

manufacturing of back covers for LED TVs, leveraging power presses technology within India. With this mega factory, we will be having a complete control over designing and manufacturing processes enabling us to offer comprehensive solutions to our OEM and ODM partners both in India and abroad. This mega factory marks a significant step toward achieving vertical integration and elevating our capabilities in the consumer electronics industry.

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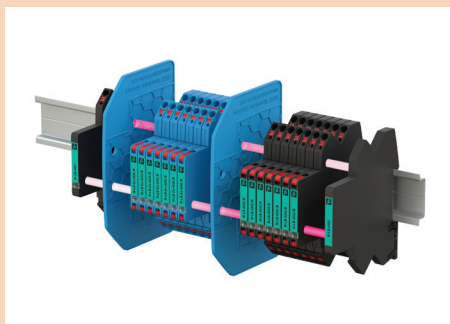
NEWS SNIPPET

Pepperl+Fuchs unveils two-part surge protection system, M-LB-4000

Modularity, loop disconnect function, and fault monitoring for signal lines up to SIL 3 in accordance with IEC/EN 61508 - these features are combined in the new M-LB-4000 surge protection system from Pepperl+Fuchs. The devices limit induced transients from various causes on signal lines, for example, due to lightning or switching operations. The 2-channel modules support higher plant availability: Since the protective function is completely housed in the plug-in protection module, there is no need to for rewiring during the replacement.

The M-LB-4000 consists of a two-part surge protection and a two-part fault status monitoring system. The protection module contains all protection components. It can be replaced without tools while the base module remains in operation. The device has a status indicator on the front panel. When pulling the protection module, the relevant signal circuit remains interconnected via the base module mounted on the DIN mounting rail. The disconnection process does not lead to any signal interruption, meaning that a protection module can be replaced without impairing plant operation.

The M-LB-4000 allows easy commissioning and



servicing using a loop-disconnect function and uninterrupted protection module replacement during ongoing operation.

If the protection module is rotated by 180 degrees and plugged in, the signal circuit will be broken via the integrated isolating function. This simplifies servicing work and loop checks and allows insulation tests to be performed during commissioning or repeated testing.

The two components of the fault status module monitor the status of multiple surge protection barriers. The kit consists of two parts; the optical emitter / receiver and the optical deflection unit. If a fault occurs in one of the barriers to be monitored, the optical signal is interrupted and the fault is identified. The fault status module provides an LED status indicator, enabling visual inspection of the surge protection to meet the normative requirements for regular testing. In addition, a status message output is available, so that the block in which the fault occurred can be identified. One fault status module can monitor up to 50 modules.

At 6 mm, the small width of the modules saves space in the switch cabinet. During retrofitting, existing common disconnect terminal blocks can be replaced regardless of space requirements.

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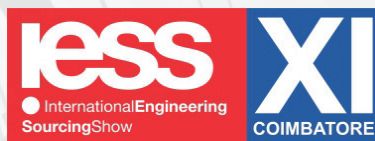
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Sweden's Alleima opens new heat exchanger tube facility in Mehsana

Built with a total investment of SEK 180 million (approximately Rs 143 crore), the new facility will enhance capabilities to produce advanced alloys for making heat exchanger tubes.

The Sweden-based Alleima AB (formerly Sandvik Materials Technology) - a leading manufacturer of high value-added products in advanced stainless steels, special alloys, and industrial heating - formally launched its new heat exchanger tube factory in Mehsana, Gujarat, on November 23, 2023. The company has invested SEK 180 million (approximately Rs 143 crore) for the expansion of its Mehsana manufacturing facility - the work for which started in 2019.

India currently stands as a global economic bright spot, emerging as a key player across various sectors. This growth is driving a significant increased domestic demand for chemical and petrochemical products, the rapid transition towards renewables and an increased shift towards localisation of manufacturing.

The new facility will enable Alleima to produce advanced alloys in heat exchanger tubing locally to meet the increasing demand for the high valued added tubes to India's chemical and petrochemical, renewable and other industrial segments. It will also serve as a production base for exports to other parts of Asia. This signifies a major milestone for Alleima in India, as with the completion of its Hydraulic and Instrumentation (H&I) facility earlier this year, the Mehsana mill has now completed its three-phase expansion in production capacity and infrastructure.

"The Mehsana mill is an important facility in our journey towards increasing our footprint in India and in Asia. As part of our growth strategy, we are increasing capacity to serve the growing market for our application tubing products. Today,

we are one of the leading players in the premium segment, and we see an increasing demand driven by the infrastructure expansion of chemical and petrochemical plants, refinery expansions and the growth in the renewable energy segment. This investment will be a key enabler to maintain our position and for continued profitable growth in the region," stated **Göran Björkman**, President and CEO of Alleima.

Carl von Schantz, President of Tube division at Alleima, said, "In 2019, we embarked on a strategic initiative to enhance our capacity and capabilities in growth markets, culminating a three-phase expansion for India, which included a cold finishing heat exchanger tube manufacturing line that opened in 2020, a H&I tubing factory in March 2023, and now this brand-new heat exchanger tube facility. This expansion will increase heat exchanger tube capacity and capabilities to produce advanced alloys positioning us to capitalise on the growth opportunities arising from India's chemical and petrochemical industries over the next decade. It will also facilitate the transition to the renewable energy segments and enable us to capture the opportunities from the increased demand for locally manufactured products in India."

Alleima's presence in India includes its regional headquarters in Pune with a sales office and an R&D center. The production of seamless tube and pipes occur in Mehsana, while the Hosur facility in Kanthal specialises in industrial heating wires and heating systems. Alleima's revenues for India during 2022 was SEK 613 million (approximately \$60 million) compared to SEK 426 million



L-R: Carl von Schantz (President of Tube division, Alleima); Sharath Satish (President of Tube Division, APAC Region, Alleima); and Göran Björkman (President and CEO, Alleima)

in 2021. Since 2022, the revenue has grown even stronger. This expansion, marked by the new facility's completion, will enable Alleima to increase its staff strength in India to close to 400.

Sharath Satish, President of Tube Division in the Asia-Pacific (APAC) Region, Alleima, explained, "Alleima is committed to supporting the Government of India's Make in India, Aatmanirbhar Bharat Abhiyan mission towards making India self-reliant as we believe that they are essential for India's economic development. This expanded Mehsana mill will allow us to enhance our capabilities in tubing application for the chemical and petrochemical sectors and enable us to move into the renewable segment."

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Igus offers polymer carriage made of recycled plastic

Drylin econ entry-level series by igus are best suited for simple adjustment and positioning tasks reduces costs by around 80 per cent.

Positioning a moving monitor for advertising in a shoe store. Adjusting a gripper that transports sweets in a snack vending machine. For such tasks, linear guides based on recirculating ball bearings operating on carriages and rails made of steel are often oversized. Design engineers pay for mechanical specifications that they don't need. In times of multiple crises, from rising energy costs to disrupted supply chains to inflation, many companies find it more important than ever to cut costs. "We have therefore added a new, very cost-effective entry-level series called drylin econ to our linear guide product range," says Michael Hornung, Product Manager for drylin Linear and Drive Technology at igus. "It's ideal for simple adjustment and positioning tasks - including cornering."

Injection-moulded from regranulated high-performance plastic and therefore very cost-effective and sustainable, the new polymer carriages from the igus drylin econ series make adjustment and positioning tasks simple. They cost less than 20 per cent of what their milled aluminium counterparts do. Thanks to movable bearings, they can even handle cornering on curved aluminium rails without any problems.

Costs for linear carriages reduced by around 80 per cent

The new drylin econ series is a low-cost alternative to the previous linear guide in the igus drylin series. The secret to cost reduction: the carriages are not milled from steel or aluminium, but are instead injection-moulded from high-performance plastic. "This less time-consuming high-volume production in one

casting reduces costs for a 0630-size linear carriage from €112 to 21, so design engineers save more than 80 per cent," says Hornung. And drylin econ operation is also economical, since no maintenance is required. This is due to the fact that microscopic solid lubricants are integrated into the high-performance plastic of the bushings over which the carriage moves on the rail. Unlike classic rolling bearings, they allow dry operation with no additional lubrication work. Therefore, users reduce maintenance time and material costs. These advantages make products that use the linear guide more economical and attractive. Last but not least, the system is exceptionally light. "drylin econ uses plastic and aluminium, so it is suitable for many lightweight constructions," says Hornung.

Carriage leans elegantly into curves on moving spherical balls

Drylin econ even allows movement around bends. igus produces both straight and curved versions of the anodised aluminium linear rails, allowing convex and concave curved guides and movement in quarter, half and full circles. The polymer bearings for the carriage for curved rail adapt to the rail geometry with moving spherical balls. "Even during cornering, movement is smooth, quiet and rattle-free," says Hornung.



"This is especially important for vending machines, such as beverage machines in a hotel lobby that are set up in public and intended to work as inconspicuously as possible."

Carriages made of injection-moulding production waste

However, the new carriages from the drylin econ series are not only economical to operate and low-cost, but also sustainable. For injection moulding, igus uses a reggranulate called iglidur ECO P, which is made entirely of injection-moulding production waste, including sprue and defective parts. "Recycling keeps the plastic from being burned," says Hornung. "Instead, we reggranulate it and feed it into the resource-saving, environmentally friendly circular economy."

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Igus invites application for the ninth Vector Awards



Igus is inviting applications from engineers from all over the world for the Vector Award, which recognises unique applications with energy chain systems. For the ninth time, igus will be honouring design engineers and project managers for creative, courageous use of energy supply systems and cables made of high-performance plastic. Winners will receive prize money of up to €5,000. Artificial intelligence, machine learning and Industry 4.0 are trending topics in the media and the public. "But it's easy to forget that engineers are making amazing progress in other relatively inconspicuous areas as well - in cable and hose guidance in machines and systems, for instance," said Michael Blass, CEO e-chain Systems at igus. This is requiring more and more skill and expertise on the part of design engineers. Customers are demanding more than ever before: hydraulic hoses weighing tons that move in a fail-safe manner over more than 1 km in gigantic bucket wheel excavators, for example. Data cables that can follow the widest of 3D movements on articulated arm robots in factories. Energy chain systems that meet the strictest cleanroom requirements in the world in electronics production. Control cables that can fit in even the smallest installation spaces, barely larger than a cigar box. "Every day, we see how design engineers around the world implement extraordinary ideas with our energy chains and cables to meet increasingly stringent requirements. And long-lasting e-chain systems contribute greatly to sustainability," said Blass. "We are honouring these solutions, which often stay under the radar but are increasingly influencing product cost-effectiveness, with the 2024 vector award."

Engineers can now enter the competition for the vector at www.igus.eu/vector-award. The deadline for entries is February 9, 2024. A panel of expert judges drawn from science, specialist media, industrial trade shows and professional associations will then examine the project and reward the most powerful, extraordinary ideas characterised by courage and creativity. The winner will receive the golden vector trophy and €5,000

in prize money. Second place receives the silver vector and €2,500 and third place the bronze vector and €1,000. The green vector comes with €1,000 and goes to projects featuring sustainability. The vector awards ceremony in 2024 will be held at the Hannover Messe.

Igus is awarding the vector for the ninth time. The competition has been taking place every two years since 2008 and is enjoying increasing popularity worldwide. In 2022, 233 applications were sent in from 36 countries. Gepber Szinpad, a Hungarian company, won first place for a multifunctional hall with automated rows of chairs that change formation at the push of a button. Dercks Gartenbau received the green vector for developing a precise watering trolley for potted plants. "The vector award is also an excellent opportunity for engineers and companies to attract attention expand their network and win new customers," said Blass. "With this in mind, we hope for many exciting projects this year as well."



Daikin unveils AC manufacturing hub in Andhra Pradesh

In a significant stride towards advancing its growth trajectory, Daikin Air-conditioning India, a wholly owned subsidiary of Japan's Daikin Industries, has officially opened its integrated air-conditioning and compressor manufacturing facility in Sri City, Andhra Pradesh. The inauguration ceremony was graced by Masanori Togawa, President & CEO of Daikin Industries Limited, Japan; Yasushi Yamada, Senior Executive Officer of DIL, Japan; Nivruti Rai, Managing Director & CEO of Invest India; and Sujan Chinoy, Director General Manohar Parrikar Institute for Defense Studies and Analyses (MP-DSA) and former Indian ambassador to Japan. Kanwaljeet Jawa, Chairman and Managing Director of Daikin India, was also present at the event.

This strategic move underscores Daikin's steadfast dedication to cutting-edge technology, sustainable practices, and the promotion of regional growth. The newly established plant, sprawling over 75.5 acres, reaffirms Daikin's commitment to excellence and innovation. Positioned strategically, the facility is geared to meet the growing demand for state-of-the-art air conditioning products manufactured in India, serving both the domestic and international markets.

Daikin holds a prominent role as the principal investor in the Production Linked Incentive (PLI) program for air-conditioning, a government initiative aimed at boosting domestic production. The state-of-the-art facility, equipped with cutting-edge technology, adheres to Daikin's high standards for quality and sustainability. This facility, inaugurated ahead of schedule, underscores Daikin's commitment to timely delivery and efficiency. Furthermore, Daikin's commitment to sustainability is evident in the facility's design, aligning with the company's goal to achieve Net Zero greenhouse gas

emissions by 2050. The plant is dedicated to developing climate-friendly air conditioning solutions for various markets, including West Africa, Sri Lanka, Bhutan, Nepal, Bangladesh, the Middle East, South America, and East Africa.



Narayana Murthy's Catamaran eyes investment in precision manufacturing

Catamaran, the venture capital firm founded by Infosys' Narayana Murthy, is set to diversify its investment portfolio by targeting precision manufacturing for startups and companies engaged in exporting their products, according to a senior official from the firm. Speaking at the Digital Acceleration and Transformation Expo (DATE), Catamaran's Chairman, MD Ranganath mentioned that despite a decrease in valuation expectations for startups in India compared to 2022, ventures with sound business models and innovative ideas will continue to attract investments.

Ranganath highlighted the current focus of Catamaran on precision manufacturing, noting India's increasing appeal for manufacturing investments. The firm aims to invest in companies involved in deep tech and automobile manufacturing, particularly those capable of exporting products and creating components. Catamaran has previously invested in various companies such as SpaceX, Log 9 (a deep tech energy startup), Udaan (B2B e-commerce), Udemy (edtech), and Acko (fintech).

While acknowledging the overall decline in valuation expectations in the market compared to 2022, Ranganath emphasised Catamaran's confidence in their investments, attributing success to a focus on strong business models and the companies' relevance in the market.



SIAM's organises Automotive Sourcing Conclave on supply chain theme



Society of Indian Automobile Manufacturers (SIAM), the apex body of the automobile industry, hosted the Automotive Sourcing Conclave under the theme "Towards

Building a Resilient Supply Chain." The conclave addressed critical areas in the supply chain, including EV components, electronics and electrical, transmission systems, and metals.

Guest of Honour, Dr Hanif Qureshi, Joint Secretary at the Ministry of Heavy Industries, Government of India, said, "SIAM and ACMA's close collaboration with the Government of India, plays a pivotal role in shaping policies. The essence of these policies, particularly in the automotive industry, revolves around localisation, which is the heart of the Government's approach. There is substantial potential for domestic value addition within the country. The growth trajectory is marked by advanced automotive components and R&D in this sector must be promoted."

Anant Swarup, Joint Secretary at the Ministry of Heavy Industries and the Department of Commerce, Government of India, said, "There is a greater possibility for further increased localisation in the Auto Industry and there is a potential to achieve this across OEMs."

During the conclave, Guest of Honour, Anant Swarup also inaugurated a digital showcase of Localisation Opportunities for the Vendors in Indian Auto Sector.

Vinod Aggarwal, President of SIAM and CEO & MD of VE Commercial Vehicles, delivered a special address. He said, "The process of localisation is poised to substantially reduce costs, generate more employment opportunities, and further enhance export. The conclave will help us to formulate a robust action plan, gaining insights on how we can localise and align our efforts with the Government of India's objectives."

Sunil Kakkar, Chairman of SIAM Aatmnr Bharat Sourcing Group and Senior Executive Director at Maruti Suzuki India set the tone for the conclave with a welcome address, by saying, "This is the best time to invest and scale localisation for Indian Auto OEMs and Auto Components manufacturers."

Special addresses were given by Vikrampati Singhania, Vice President, ACMA & MD & Director, J K Fenner India, and Sumanta Chaudhuri, Principal Advisor, International Trade Policy Division, CII on Impact of IPEF on Automotive Sourcing.



Northvolt develops sodium-ion battery breaking China's monopoly

Northvolt announced a state-of-the-art sodium-ion battery, developed for the expansion of cost-efficient and sustainable energy storage systems worldwide. The cell has been validated for a best-in-class energy density of over 160 watt-hours per kilogram at the company's R&D and industrialization campus, Northvolt Labs, in Västerås, Sweden.

Northvolt's validated cell is more safe, cost-effective, and sustainable than conventional nickel, manganese and cobalt (NMC) or iron phosphate (LFP) chemistries and is produced with minerals such as iron and sodium that



are abundant on global markets. It is based on a hard carbon anode and a Prussian White-based cathode, and is free from lithium, nickel, cobalt and graphite. Leveraging a breakthrough in battery design and manufacturing, Northvolt plans to be the first to industrialise Prussian White-based batteries and bring them to commercial markets.

The sodium-ion technology, which has been developed together with research partner Altris, is intended to provide the foundation for Northvolt's next-generation energy storage solutions. The low cost and safety at high temperatures make the technology especially attractive for energy storage solutions in upcoming markets including India, the Middle East and Africa.

Additionally, the technology can be produced with locally sourced materials, providing a unique pathway for developing new regional battery manufacturing capacity entirely independent of traditional battery value chains.

Northvolt's first generation of sodium-ion cell is designed primarily for energy storage, with subsequent generations delivering higher energy density opening opportunities to enable cost-efficient electric mobility solutions. It represents an ideal complement to Northvolt's product portfolio consisting of premium lithium-ion battery cells tailored for automotive customers, and energy-dense lithium-metal battery technology under development for aviation and high-performance vehicles at Cuberg, a Northvolt company based in San Leandro, USA.



Schneider Electric unveils cutting-edge battery lab in Bangalore

Schneider Electric, the global leader in the digital transformation of energy management and automation, today unveiled their state-of-the-art Battery Lab. This milestone solidifies Schneider Electric's position as the frontrunner in driving the new energy transition, emphasising their commitment to sustainable energy solutions and environmental consciousness.

The newly inaugurated Battery Lab is poised to transform the landscape of research, development in



Third from right: Pankaj Sharma, Executive Vice President of the Secure Power Division at Schneider Electric

battery technologies. This state-of-the-art facility will advance diagnostic equipment and have modern safety systems and dedicated testing chambers to ensure optimal performance of the batteries and adherence to stringent safety standards. This emphasis on safety and performance underscores Schneider Electric's commitment to delivering high-quality, reliable energy solutions.

Pankaj Sharma, Executive Vice President of the Secure Power Division at Schneider Electric, expressed his enthusiasm, stating, "The inauguration of the Battery Lab is not just a step forward for our company but a leap forward for the entire industry. By focusing on collaborative research and pushing the boundaries of what's possible, we're paving the way for a brighter, more sustainable future."

Commenting on the launch, Sachin Bhalla, VP, Secure Power Division, India and SAARC region, Schneider Electric, said, "At Schneider Electric, we believe that sustainability and innovation go hand in hand. We foresee the potential that battery technology holds. This Battery Lab will spearhead the development of innovative battery technologies and explore new energy storage solutions that prioritise sustainability and minimise environmental impact. Our goal is to create a more resilient future by offering environmentally responsible digital products and solutions, and this launch is a substantial move toward achieving it."



Epigral opens first R&D centre in Ahmedabad

Epigral Ltd, one of India's leading integrated chemical manufacturers, launched its first research and development centre at Ahmedabad, Gujarat. This is a significant step for the company in enhancing its research capabilities and accelerating its journey towards building Specialty products. Located at Changodar in Ahmedabad, the R&D centre is built over 14,374 square metre and has the latest, state-of-the-art technologies installed that will enable Epigral to catalyse identification of specialty chemical molecules for later introduction in India.

The company has consciously strived towards creating



a key differentiator for it by graduating from being a chemical manufacturer to developing research-driven products, in-house. The centre has been developed with an initial investment of Rs 30 crore and the company will further invest to enhance its capability as it proceeds further.

Commenting on this Maulik Patel, Chairman and Managing Director of Epigral said, "Epigral's R&D centre is a stepping stone towards creating molecules with far-reaching applications for manufacturing pharmaceutical and agrochemical active ingredients. Our investment in research emphasises our focus on steady progress of our company thereby also boosting India's Atmanirbhar capabilities. We want to keep introducing new molecules in the Indian market and make it self-sufficient with our import-substitutes." Through research and development, the company intends to introduce new molecules indigenous to India and address domestic and global custom manufacturing requirements. This centre will help discovering new molecules within the Chlorotoluene ecosystem and further establish advanced specialty intermediates.



Swiss firm Leister launches Weldy Technologies Unit in Coimbatore

Leister Group, a Switzerland-based company, officially launched its Weldy Technologies India unit in Chinnavedampatti, Coimbatore in Tamil Nadu. This marks the inaugural assembling unit for Weldy products in India, covering an area of 7,000 square feet. Initially focusing on producing five tools for industrial applications, the company is importing components from Switzerland.

The choice of Coimbatore as the location for the plant is attributed to the district's exceptional engineering standards in both industry and academics. Christiane Leister, the president of the board of directors, expressed the company's openness to collaborating with a diverse

range of engineering students, aiming to foster innovation and create employment opportunities across various service sectors.

Weldy Technologies specialises in manufacturing hot air hand tools and automatic plastic welding machines. These products find applications in the production of tents, tarpaulins, containers, boat construction, tunnel construction, and cable confection.

Martin Zingg, CEO of Leister Group, emphasised the importance of the bilateral relationship between India and Switzerland, foreseeing it as a catalyst for increased investments. The company remains committed to expanding its presence in India's dynamic market.



IIT Ropar discovers rare metal Tantalum, significant for electronics industry

In a momentous development poised to reshape the landscape of India's electronics and semiconductor industry, a team of researchers from the Indian Institute of Technology (IIT) Ropar in Punjab has uncovered the presence of the rare metal Tantalum in the Sutlej River.

Led by Dr Reshmi Sebastian, an assistant professor in the Civil Engineering Department at IIT-Ropar, the discovery holds significance not only for the state of Punjab but also for the nation, given Tantalum's extensive applications in electronics and semiconductors.

The breakthrough, made during experiments characterising Sutlej river sand, could position India as a global hub for semiconductor and chip manufacturing, aligning with the vision outlined by Prime Minister Narendra Modi.

About Tantalum: Tantalum is a rare, heavy, and hard metal with a distinctive grey colour, renowned for its exceptional corrosion resistance. When exposed to air, it forms a tenacious oxide layer that is challenging to remove, even in the presence of strong and hot acidic environments. In its pure form, Tantalum is malleable, allowing it to be stretched, pulled, and drawn into thin wires without breaking. With an exceptionally high melting point, it was first discovered in 1802 by Swedish scientist Anders Gustaf Ekenberg in minerals obtained from Ytterby, Sweden.

Usage of Tantalum: Widely utilised in the electronics and semiconductor industry, Tantalum's unique characteristics make it particularly valuable. Capacitors made of Tantalum can store more electricity with minimal leakage compared to other types, making the metal ideal for use in portable devices such as smartphones, laptops, and cameras.

Additionally, Tantalum serves as an economical alternative to platinum in jewellery and vehicle converters. It finds prominent applications in the defence sector, being used in chemical plants, nuclear power plants, missiles, and fighter jets. The discovery of Tantalum in the Sutlej River presents a potential game-changer for India's technological and industrial landscape.

ForgeTech India fosters success with innovation within industry

The Association of Indian Forging Industry (AIFI) successfully concluded ForgeTech India 2023, the country's premier forging industry conference and exhibition, on November 5, 2023.



L to R: Yash Munot, Asheet Pasricha, Baba Kalyani, Vikas Bajaj, Vidyashankar Krishnan and Amit Kalyani at the inaugural

The Indian forging industry has always been a major growth driver of the Indian manufacturing sector and is one of the important industries for the success of automobile, power sector and general engineering in the country. The Association of Indian Forging Industry (AIFI), umbrella organisation of the forging industry in India, successfully organised ForgeTech India 2023, the country's premier forging industry conference and exhibition, on November 5, 2023.

Vikas Bajaj, Managing Director and CEO, Bajaj Motors and President, AIFI shared that this landmark event, held at The Westin Pune Koregaon Park, by AIFI has set a new benchmark with over 800 delegates, for the forging industry in

India, making it the largest national gathering of industry leaders and professionals of the forging industry globally. He added a special note of thanks to the AIFI staff members for their hard work in the successful holding of the event.

He further stated that ForgeTech India 2023, witnessed a remarkable display of enthusiasm and support from the Indian forging industry, serving as a testament to the sector's resilience and continuous growth. The event, inaugurated by Baba Kalyani, Chairman and Managing Director of Bharat Forge, provided an exceptional platform for knowledge exchange, networking, and fostering collaborative endeavors within the industry.

Bajaj stated that ForgeTech India 2023 was made possible through the

support of various sponsors, with Inductotherm leading as the title sponsor, notable companies such as JSW Steel, SLR Metaliks, Arjas Steel amongst others, contributed significantly to the success of the event.

As ForgeTech India 2023 came to a close, he reiterated AIFI's commitment to advancing the forging industry's development and fostering a culture of innovation, collaboration, and excellence.

Baba Kalyani in his address shared his insights on the trajectory of the forging industry in India, remarking, "ForgeTech India 2023 has highlighted the remarkable strides made by the Indian forging industry, underscoring the industries potential for exponential growth and global recognition. Amidst the

dynamic shifts in the manufacturing sector initiated by the government of India through strategic policy changes, to drive upwards the contribution of the manufacturing sector from the present 16 per cent to 25 per cent of GDP, these will create a thriving environment for innovation and technological advancements and exponential growth within the forging industry. India's manufacturing sector holds immense potential to become a global powerhouse further creating opportunities for us, as an industry to capitalise upon. Embracing the evolving global landscape, marked by energy transition, AI, and supply chain transformations, is vital. The ongoing reforms under 'Make in India,' especially in the defense sector, have effectively paved the way for private enterprises to excel on a level playing field."

He also highlighted the lost opportunities to rival nations and advocated the initiation of reforms at the state level besides the national level to enable the Indian manufacturing sector to derive full benefit of the opportunities available due to the changing global geopolitical environment.

Amit Kalyani, Joint Managing Director, Bharat Forge during the panel discussion held during the inaugural session, shared his perspective on the imminent industry disruptions, which not only sparked a profound transformation in the dialogue of panel discussions but also challenged conventional thinking. He highlighted India's ability to navigate disruptive changes - particularly in the age of electric vehicles, struck a chord with all the delegates present - particularly his emphasises on the necessity of nurturing new talent to keep pace with our thriving economy.

Yash Munot, CEO of Varsha Forgings, Vice President AIFI and Convenor for ForgeTech India 2023 expressed his vision for the industry, stating, "As the Convenor of ForgeTech India, my aspiration was to create a landmark event that would serve as a benchmark not only for future ForgeTech gatherings but for all forging events in India.

ForgeTech India 2023 has reinforced the paramount role of collaboration and innovation in propelling the forging industry forward. I eagerly anticipate nurturing a culture of excellence and advancement within both the AIFI and the forging sector as a whole. ForgeTech 2023 has achieved an unprecedented benchmark solidifying its stature as the foremost national conference and convention for the forging industry in India. This accomplishment positions it as the most significant congregation of professionals and leaders in the Indian forging domain. This year's event not only showcased the industry's current accomplishments but also laid a robust foundation for its future growth and enhanced global competitiveness. I hold the utmost confidence that the collaborative initiatives launched during ForgeTech India 2023 will continue to steer the forging industry toward sustained success well into the future."

Asheet Pasricha, Co-Convenor for ForgeTech India 2023 and Director of AIFI, expressed his gratitude upon receiving this year's Forgemaster's award. He said, "It is an absolute honor to be recognised by the industry through the Forgemaster's Award. I am deeply grateful for this acknowledgment and remain committed to contributing to the growth and development of the Indian forging industry". He further shared that the contributions of Late Yogiraj Makar, a founding member of AIFI, Jinendra Munot, Avinash Gupta, R S Reddy, P Ramachandra Rao contributions were also recognised along with him. ForgeTech has played a pivotal role in fostering a culture of innovation and excellence within the forging sector. The event's emphasis on technological advancements and collaborative initiatives has significantly contributed to the advancement and global recognition of India's forging industry.

"I am proud to be a part of an event that continues to push the boundaries of excellence and sets new benchmarks for the forging industry in our country."

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AIFI Biennial Conference 2023

He also acknowledged the contribution of all the members of the organising committee, particularly that of Yash Munot Convenor ForgeTech, Vikas Bajaj President AIFI who has been an anchor for AIFI during the pandemic and stated that he looked forward to Yash Munot continuing AIFI's ever-important work when he takes over the presidency of AIFI next year.

AIFI has more than 200 members across India. Its members' products include rough forgings and/or machined/finished parts like crankshafts, connecting rods, camshafts, shifted fork, steering components, crown propeller shafts, gear box components; crown wheel and pinions, front axle beams, rear axle shafts, earth moving link, suspension parts, CV joint parts, braking parts, auto electrical components, railway wheel, flanges/pipe fittings, industrial valves etc. The forging industry, which is a major supplier to the auto companies and a critical industry that generates employment, has been continuously plagued with incessantly rising industrial fuel and steel prices resulting in rising input costs and shrinking margins.

AIFI has been the spokes body of the Indian forging industry for over four decades. It has played a major role in encouraging proactive dialogue between all the relevant stakeholders like the industry and Government (both in terms of suggestions for policy making and problem-solving), as also between the industry and the market (user industries — domestic and global customers).

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Gandhi Automations' logistics solutions offer high safety

Gandhi Automations offers complete logistics solutions by providing Dock Levelers, Dock Shelters, Sectional Overhead Doors and Dock Houses.



Gandhi Automations is India's no 1 entrance automation and loading bay equipment company. This widely recognised position has been achieved over years of hard work, innovation, commitment to quality and reliable customer service. The company is also proud to be certified to ISO 9001 : 2015, ISO 14001 : 2015 & ISO 45001 : 2018. Since its inception in 1996 we have been manufacturing, importing, distributing and installing products that are problem free and easy to

operate.

The company offers complete logistics solutions by providing Dock Levelers, Dock Shelters, Sectional Overhead Doors and Dock Houses.

Electro-hydraulic Dock Levelers offered by Gandhi Automations are not only "a bridge for connecting a vehicle", but also facilitate fast, smooth and safe transition by compensating the difference in heights between the loading bay and the vehicle. This contributes to minimising energy used and savings on heating and chilling costs

resulting in maintaining the quality of the transported goods. Dock Levelers offered by Gandhi



Automations are designed as per EN 1398 standard for the most demanding loading and unloading operations.

Efficient loading and unloading the goods

The importance of efficient loading the goods has always been evident, and it has increased over the years, essentially for two reasons: the lesser availability and the higher cost of manpower. Consequently lesser qualified manpower is being utilised which leads to damage to the goods.

The cost of loading and unloading the goods can be calculated precisely and is exactly definable, which allows for a scientific approach to find out the investment that goes into the process. Gandhi Automations has always designed solutions based on such scientific approach and feedback from clients. The Dock Levelers offered by the company ensure loading and unloading with lesser effort and minimal cost.

It is possible to load and unload your products in a safe way and in the process, obtain remarkable energy savings. The Dock Leveler remains with the Loading Bay in rest position and the Sectional Overhead Door closed, until the vehicle is positioned. The driver drives back centring to the Dock Shelter and stops the vehicle the moment it gets in contact with the bumpers.

The Sectional Overhead Door is then opened only when the vehicle is positioned, brakes are applied and engine is shut off. This eliminates the exit of hot air, intake of cold air (or the opposite in hot area and inside conditioned places) and intake



of exhausting gases in the warehouse. After the Sectional Overhead Door opens, the lip of the Dock Leveler connects to the truck bed for loading / unloading to take place.

At the end of the loading/unloading the Dock Leveler is put in rest position and the Sectional Overhead Door is closed, without moving the vehicle. The vehicle then departs at the end of the process.

Types of Dock Levelers are:

- ❑ **Radius Lip Dock Levelers:** Radius Lip Dock Levelers are available in multiple size and capacities. It allows the dock to connect with the truck bed, thus making it convenient to drive directly on and off with forklift trucks etc also the Self-Cleaning Lip - Hinge System does not retain dust and dirt which allows a smooth operation.
- ❑ **Telescopic Lip Dock Levelers:** Telescopic Lip Dock Levelers are ideal for connecting vehicles unable to drive near dock i.e. sea containers, side loading railway wagons etc. These Dock Levelers can be supplied with a lip extending up to 1 m.
- ❑ **Edge-of-Dock Levelers:** Edge-of-Dock Leveler is developed in compliance with the latest European safety

standard, EN 1398. It has a capacity of 6000kg and is suitable for use with all types of material handling equipments.

- ❑ **Forklift Roll-Off Barrier Lip Dock Levelers:** The newly introduced product Forklift Roll-Off Barrier Lip Dock Leveler add a run-off protection which prevents accidental forklift roll-off when the Overhead door is open and no trailer is stationed at the dock. These dock levelers are designed and built to provide all the benefits of the hydraulic dock leveler along with the additional benefit of providing a formidable barrier.

Gandhi Automation's Dock Levelers are equipped with the most secure safety devices and accessories.



For details contact Gandhi Automations Pvt Ltd, Mumbai, Tel: +91 22 66720200, 66720300, fax: +91 22 66720201, email: sales@geapl.co.in or visit www.geapl.co.in

(Communication provided by the management of the company)



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Event	Date & Venue	Contact
FASTNEX	January 19 – 23, 2024 BIEC, Bengaluru	Messe Stuttgart India Pvt. Ltd, Noida Tel: 0120 699 1703 Email: info@messe-stuttgart.in
PAMEX - MUMBAI INTERNATIONAL EXHIBITION ON PRINTING & ALLIED MACHINERIES	February 06-09, Bombay Exhibition Centre (BEC) NESCO Mumbai	Print-Packaging.com Pvt Ltd, Mumbai Tel: 022-27812093 Email: info@print-packaging.com
DIE & MOULD INDIA MUMBAI	February 14–17, 2024 Bombay Exhibition Centre (BEC) NESCO Mumbai	Tagma India, Mumbai Mobile: 09653427396, 09769407809 Email: tagma.mumbai@tagmaindia.org
PAINTINDIA MUMBAI	February 22 -24, 2024 Bombay Exhibition Centre (BEC) NESCO, Mumbai	NürnbergMesse India Pvt Ltd, New Delhi Tel: 011-47168823 Email: sakshi.sawhney@nm-india.com
INDUSTRY AUTOMATION & CONTROL MUMBAI	March 04 -07, 2024 Jio World Convention Centre, Mumbai	Chemtech Foundation, Mumbai Tel: 022-40373737 Email: conferences@jasubhai.com
CHEMTECH WORLD EXPO, MUMBAI	March 04-07, 2024 Bombay Exhibition Centre (BEC) NESCO Mumbai	Chemtech Foundation, Mumbai Tel: 022-40373737 Email: conferences@jasubhai.com
ENGINEERING PROCUREMENT CONSTRUCTION (EPC) MUMBAI	March 04-07, 2024 Bombay Exhibition Centre (BEC) NESCO Mumbai	Chemtech Foundation, Mumbai Tel: 022-40373737 Email: conferences@jasubhai.com
INDIA RUBBER EXPO -MUMBAI	March 20-22, Bombay Exhibition Centre (BEC) NESCO, Mumbai	All India Rubber Industries Association, New Delhi Tel: 011-25825011 Email: info@allindiarubber.net
INTERNATIONAL		
STEELFAB - SHARJAH	January 08-11, 2024 Expo Centre Sharjah, Sharjah, UAE	Expo Centre Sharjah Al Taawun Street Sharjah, UAE Email: info@expo-centre.ae
PUMPS & VALVES DORTMUND	February 21-22, 2024 Messe Dortmund, North Rhine-Westphalia, Germany	Easyfairs GmbH Germany Email: bielefeld-office@easyfairs.com
INTERNATIONAL METAL TECH- NOLOGY - TAIWAN IMT TAIPEI	October 16-18, 2024 Taipei Nangang Exhibition Center, Taipei, Taiwan	Kaigo Co., Ltd. Taipei, Taiwan Tel: +886-2-2595-4212 Email: info@kaigo.com.tw

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NHAI @NHAI_Official

#NHAI Chairman, Shri Santosh Kumar Yadav and Shri @abhish18, Chairman & MD @DigitalIndiaCorp signed an MoU to develop and maintain #DataLake 3.0 - NHAI's unique AI-powered #BigData Analytics cloud-based platform. Senior officials from NHAI & #DIC were also present on the occasion.



Ministry of Heavy Industries @MHI_GoI

'Manthan' program was organised by the ministry of Heavy Industries on 22 Nov 2023 at Yashobhoomi Convention Centre, Dwarka, New Delhi. The topic of the 'Manthan' was "Local to Global India - Manufacturing to self-Reliant".



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Ministry of New and Renewable Energy (MNRE) @mnreindia

Shri Bhupinder S. Bhalla, Secretary, @mnreindia, took a review meeting on both phases of Green Energy Corridors. The meeting was attended by 10 implementing States, viz. Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh. Phase-I of GEC is under implementation. Out of 8 states, 4 have completed projects, while the rest are in the final stages. Phase II projects are also gearing up with various stages of tendering.



Ashwini Vaishnaw @AshwiniVaishnaw

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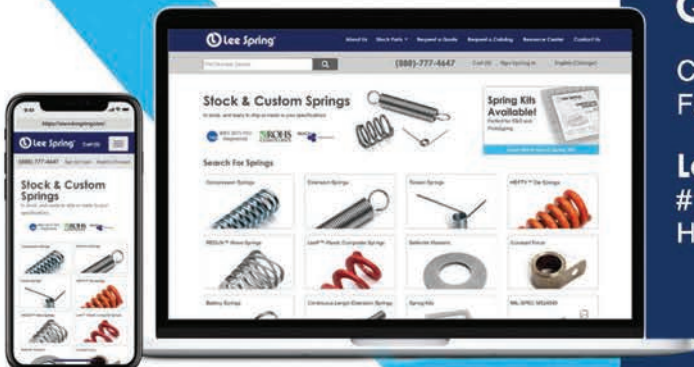
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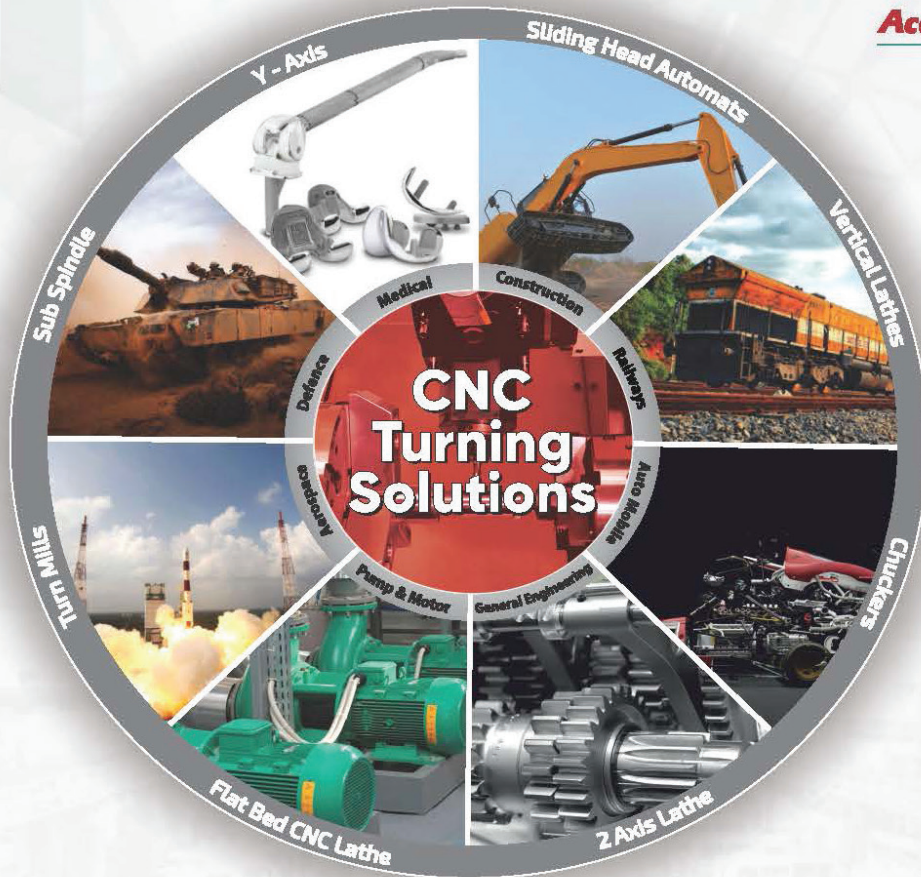
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