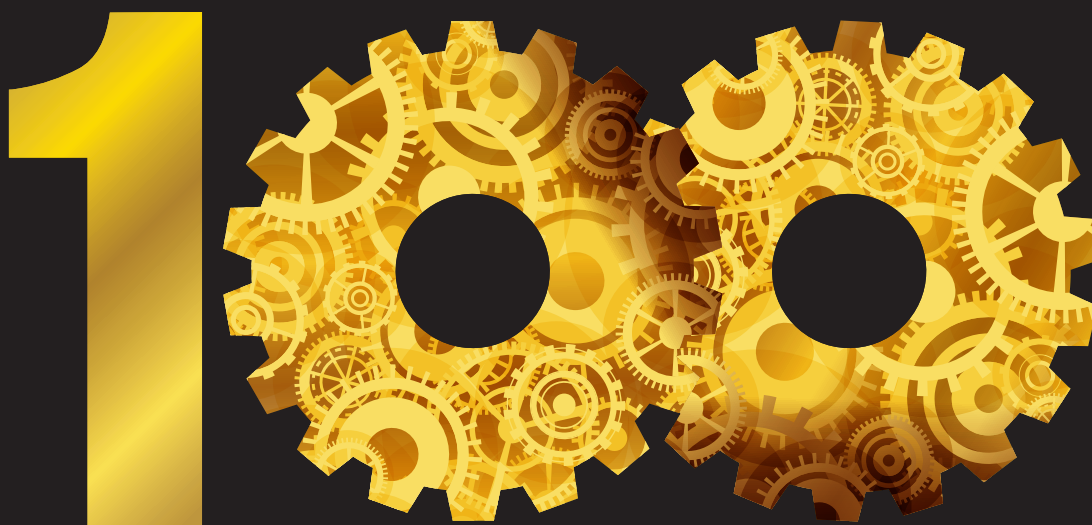


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INDIA'S TOP



ENGINEERING COMPANIES

In this edition, SME recognises engineering companies who have emerged winners with their top-class performance amid challenging market conditions.

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Engineering growth amid the gloom

India's engineering goods exports touched \$ 9.04 billion in July 2024, a rise of 3.6 per cent compared to \$ 8.72 billion in July 2023, according to EEPC India. Though exports to countries like Bangladesh and Russia recorded a decline in July 2024, the sector's cumulative exports for the April-July 2024 witnessed a healthy 4.18 per cent increase to \$ 36.97 billion. The engineering (manufacturing) sector has been facing the headwinds such as high freight rates, protectionism, and weak demand in certain markets in the last few quarters. Hence, this continued upward trajectory of India's engineering goods exports reflects the sector's resilience amid a challenging global environment.

“With a manufacturing value added of \$ 456 billion, India ranked fifth in the list - ahead of countries like South Korea, Mexico, Italy, France and Brazil, but behind China, the US, Germany and Japan.

India is steadily moving towards becoming the manufacturing hub of the world. Recently, even Global Times, China's official newspaper that has always been critical of India, acknowledged India's rise on the global manufacturing map. While sharing a list of the world's top 10 countries in manufacturing output on the social media platform 'X', it specifically mentioned India. With a manufacturing value added of \$ 456 billion, India ranked fifth in the list - ahead of countries like South Korea, Mexico, Italy, France and Brazil, but behind China, the US, Germany and Japan.

GoI's Economic Survey noted that the manufacturing GVA (gross value added) bounced back from a disappointing FY23, growing by 9.9 per cent in FY24. However, it also expressed concerns about the sector's competitiveness, a goal the country aims to achieve through Rapid programme. Investing in innovation will be essential for India to create brands that not only excel in India, but can also be exported to key markets around the world. With Rapid programme, the government wants to encourage private sector to invest in local R&D and increase actual value addition in India's manufacturing sector. This will be the key for India to reach closer to its goal of becoming a developed economy by 2047.

The Indian construction equipment industry achieved a 26 per cent increase in total equipment sales for FY 2023-24, with sales reaching 135,650 units compared to 107,779 units in FY23. This surpasses all previous projections. The industry's strong performance is attributed to a 24 per cent rise in domestic demand and a 49 per cent surge in export demand. The mission to building India as a sourcing hub has begun bearing fruit. At the RAHSTA (Roads & Highways Sustainable Technologies & Advancements) Expo scheduled on October 9-10 at Jio World Convention Centre, Mumbai, the technologies, the equipment that go to building roads will be on display. To register visit www.RAHSTAexpo.com

In this edition, SME features India's Top 100 Engineering Companies who have emerged winners with their top-class performance in FY24 amid challenging market conditions.



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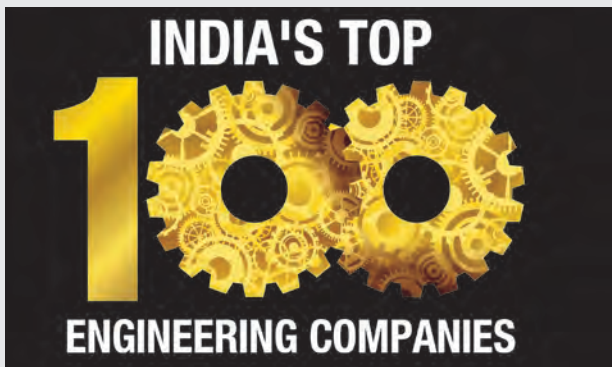
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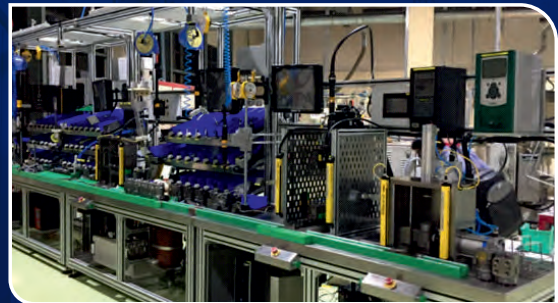
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FOUNDER: R V PANDIT

Printed and published by Tarun Pal for **IPFonline Ltd. Industrial Products Finder**, (ISSN 0970-6895) is a product news magazine. It is a monthly publication with the publishing office located at First Floor, Canara Bank Building, 103, Grems Road, Thousand Lights, Chennai - 600 006. **Industrial Products Finder** is registered with the Registrar of Newspapers for India under No RN 22739/72. Format and style of presentation Copyright, © 2017 IPFonline Limited, First Floor, Canara Bank Building, 103, Grems Road, Thousand Lights, Chennai - 600 006.

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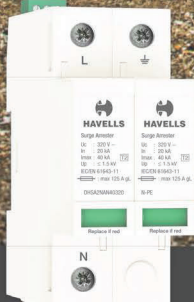


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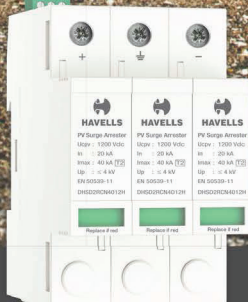
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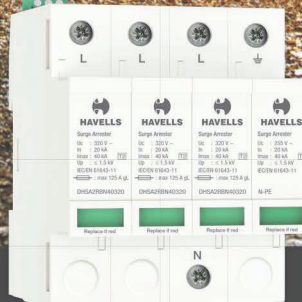
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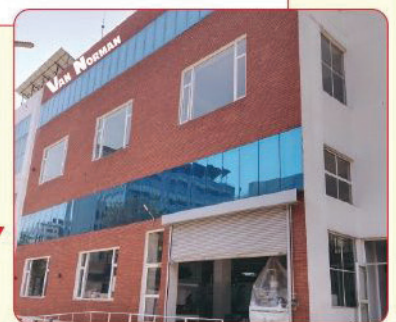
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Hydraulics & Pneumatics

Wipro Hydraulics acquires US-based Columbus Hydraulics

Wipro Hydraulics, the hydraulic cylinder manufacturing business of Wipro Infrastructure Engineering has acquired Columbus Hydraulics, a leading US-based hydraulic cylinder manufacturer.

Established in 1952, Columbus Hydraulics has built a strong reputation in the hydraulics industry, delivering custom hydraulic solutions for a variety of applications including agriculture, construction, turf maintenance and marine applications.

Pratik Kumar, CEO, Wipro Infrastructure Engineering & Managing Director, Wipro Enterprises, said, "As a leading independent hydraulic cylinder manufacturer, Wipro Hydraulics has established a significant presence in all growth markets. This acquisition strengthens our position and enhances our manufacturing capabilities in North America. By



integrating Columbus Hydraulics' expertise in customised hydraulic solutions, we aim to provide even more comprehensive offerings to our customers."

Sitaram Ganeshan, President, Wipro Hydraulics, added, "The acquisition of Columbus Hydraulics, following our recently acquired Mailhot Industries, is a strategic move to accelerate growth in North America. This acquisition complements our product and customer portfolio, allowing us to offer a broader range of hydraulic solutions for varied applications. Our combined skilled workforce will enable us to innovate for the current and future needs of our customers."

Brian Schneider, Northstar Capital, said, "Wipro is the perfect partner to propel Columbus into its next stage of expansion in North America."

Industrial Automation

Hikrobot launches Forklift Latent Mobile Robot QF-1000 in India

Hikrobot participated with latest Machine Vision Products and Mobile robots in the 17th edition of Automation Expo-Mumbai to display its latest cutting-edge technology and intelligent solutions. On this occasion, Hikrobot has launched the new product Forklift Latent Mobile Robot QF-1000 for the first time in India.

It has also displayed Tugging AMR demonstration on the show floor. The Chief Guest Subramanian Sarma, President (energy) and Member of the Board, Larsen & Turbo inaugurated the event. Hikrobot provides service to industry and logistics customers, and commit to continually promoting the intelligentisation and leading the intelligent manufacturing process.

The newly launched Forklift Latent Mobile Robot equipped with both the chassis and forks to combine flexibility with the ability of directly carrying pallet load. Compared with traditional forklift, the less weight of



whole robot can be applicable to the low-floor load-bearing scene. It applicable to various types of carriers. Compared with traditional forklift, it supports extremely narrow roadway picking and putaway with the moving speed increased by 25 per cent to increase reservoir

capacity.

It supports various safety protection plans to realise 360° protection. It supports indicating device status via screen, status indicator, and speaker. It supports Wi-Fi communication and seamless roaming in a network-covered area.

HIKROBOT F-7 2000 TUGGING AMR is the latest addition in the HIKROBOT'S product portfolio in India. These robots are available in the natural navigation and support automatic hooking and unhooking. The TUGGING AMR load capacity is 2000 KG. It can move with high precision movement with 5 mm accuracy.



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Food Processing

WIKA India displayed measuring instruments for F&B industry at Anuga FoodTec 24

WIKA India, a global leader in measurement instrumentation technology, participated in the Anuga FoodTec 2024, as an exhibitor. Anuga FoodTec is one of the biggest international fairs in the food and beverages industry and represents a valuable innovation platform.

In the food and beverage industry, maintaining strict quality control is not just a requirement—it is a necessity. The machines that process, handle, and package the food products must be functioning fine, and provide accurate measurements so that at the end of the line, the final product is safe to use, of good quality, and consistent.

The measuring instruments from WIKA form the cornerstone in achieving these standards.

This, in turn, helps in operating machinery without



any breakdowns and gain accurate and reliable measurements for several variables being measured, like pressure, temperature, level, and force. At Anuga FoodTec 2024, WIKA showcased a wide range of its measuring instruments, all of which are purposefully adjusted to the requirements of the F&B industry.

Gaurav Bawa, Senior VP, WIKA India, said, "We consider it to be a great opportunity and honour to participate in this globally acclaimed and renowned exhibition related to F&B segment. Our team at WIKA India is constantly involved in pushing its limits and understanding the exact client requirements so that the new products launched are in line with them. We believe that Anuga would surely give us a chance to connect with the industry leaders and also help us get the latest updates about the F&B market."

Chemical Industry

Pidilite's Roff unveils new manufacturing facility and in Telangana

Roff, a leading tile adhesive brand from Pidilite Industries, has launched its new manufacturing facility in Jadcherla, near Hyderabad. This facility will be key to meeting the growing demands for high quality tile adhesive products in Andhra Pradesh, Telangana, and Northeastern Karnataka markets.

Bharat Puri, Managing Director, Pidilite Industries Ltd, commented, "We have observed a steady increase in demand for premium, specialised products in Andhra Pradesh and Telangana markets. Our Jadcherla project aligns with our vision to modernise and transform tile and stone fixing in India. Our goal is to provide consumers with superior adhesives and to bring manufacturing closer to the markets."

Aligned with Pidilite Industries' sustainability goals, the facility operates as a zero-waste plant and runs on 80 per cent solar power, setting new standards for eco-friendly manufacturing in the construction chemicals sector.

Equipped with advanced automation, the plant ensures high precision, consistency, quality, and



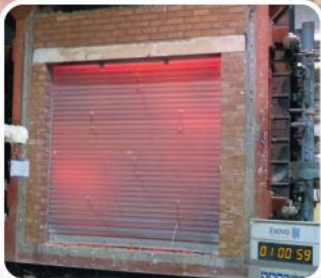
efficiency in production. Its strategic location will enhance supply chain efficiency, catering to the increasing demand for specialised, high-quality tile adhesive products.

As a greenfield project, the Jadcherla facility offers ample scope for future expansion, aligning with Pidilite's long-term growth strategy. The inauguration event, attended by over 350 dealers and users, showcased the state-of-the-art technology and sustainable practices of this facility.



Driven By Innovation

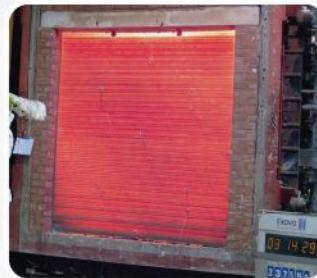
Automatic Doors and Loading Bay Solutions



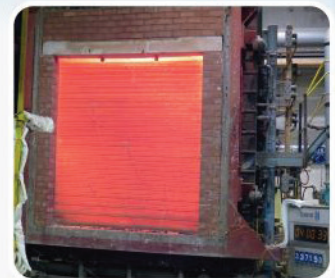
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Packaging & Printing

JPFL Films to invest ₹2.5 billion for new BOPP line

JPFL Films Private Limited, a subsidiary of flexible packaging giant Jindal Poly Films Ltd, has announced a capacity expansion with a new BOPP line in Nashik, Maharashtra.

The new line, expected to be commissioned in H2 FY 25-26 will see a capex commitment of ₹2.5 billion.

The capacity expansion is part of the company's strategic play in the BOPP segment and is in line with the company's aim to increase market share amidst challenging demand-supply imbalances leading to ongoing pricing pressures in the sector.

The expansion comes in the backdrop of impressive top-line growth accompanied by a 142 per cent rise in EBITDA in Quarter 1 of FY'25 and to maintain its market leadership despite business headwinds.

The new line is expected to be the most advanced in



the market, boasting superior width and output capabilities, along with exceptional reliability, equipment quality, and process efficiency. It can produce high-OD rolls up to 1,700 mm, optimising efficiency for downstream processes such as metallising.

The commissioning of the new line will bolster Jindal Poly Films Ltd.'s growth story. It highlights the company's commitment to technological advancement, quality enhancement, cost optimisation and innovation, leading to enhanced customer satisfaction.

As the flexible packaging market continues to evolve, Jindal Poly Films Ltd through its subsidiary JPFL Films, is better equipped to meet the challenges and opportunities that lie ahead, reinforcing its status as an industry pioneer and reliable flexible packaging partner for businesses worldwide.

Machine Tools

United Grinding Group to exhibit four machines at the BI-MU in Milan

The UNITED GRINDING Group will exhibit this year four machines from its cylindrical grinding, surface and profile, and tool machining technology groups at BI-MU, as well as a selection of its UNITED GRINDING Digital Solutions™ products.

In the field of cylindrical grinding, STUDER will present its latest automation solution: the insertLoad together with the S31 universal external cylindrical grinding machine. This automation solution combines the advantages of standardization and great flexibility and can be operated via the C.O.R.E. panel. As a versatile universal external cylindrical grinding machine, the S31 is suitable for small to large workpieces with different production requirements in individual, small, and series production thanks to its modular system and high configurability.

In surface and profile grinding, BLOHM presents the PLANOMAT XT Essential, the competitive surface



grinding machine in the entry-level segment. This 3-axis machine is specially optimised for the requirements of surface grinding using the reciprocating and creep-feed method.

In tool machining, trade visitors can also look forward to the

HELITRONIC MINI PLUS tool grinding machine with C.O.R.E. technology, which is particularly suitable for the flexible production and resharpener of small and medium-sized tool diameters.

The innovative Laser Contour Check option for the non-contact measurement of various tool parameters on cylindrical tools can be seen live in action on this machine.

The HELICHECK PLUS CNC measuring machine can also be experienced live at the show. Thanks to the additional fourth camera with 400x magnification, it can also capture and measure the smallest geometries on cutting tools.

Packaging & Printing

Pakka Limited raises ₹2.44 billion in funds; to double production

Pakka Limited, a leading manufacturer of compostable packaging solutions, has raised funding of ₹2.44 billion, approved by its board. The company plans to utilise these funds to establish the world's first compostable flexible packaging facility in Ayodhya, India.



In October 2023, Pakka launched its compostable flexible packaging products in partnership with Brawny Bear, a nutrition company. With this fund, the company intends to solidify its position as a leading global brand for compostable flexible packaging. As part of its expansion plans, Pakka's compostable flexible packaging facility, the Jagriti project, is expected to be operational by December 2025.

Pakka aims to invest part of its funding in research and development to manufacture more products in the compostable flexible packaging category. This investment is expected to double the production capacity of Pakka's manufacturing plant in Ayodhya. Pakka's current EBITDA is 23 per cent, which it expects to increase to 27-30 per cent following the fund raise and completion of the expansion."

Jagdeep Hira, India Business Head, Pakka Limited, said, "Sustainability and responsible packaging are the core of Pakka's business strategy. The Jagriti project is an extension of this vision to contribute to a cleaner planet. This new facility will increase Pakka's production capacity and strengthen our position in the flexible packaging industry. With this increase in the production of flexible packaging, Pakka can increase its distribution in the market. Our increased capacity will allow us to meet the growing demand for flexible packaging solutions across various sectors."

Ved Krishna, Group Lead, Pakka said, "Pakka is fundamentally rooted in the single idea of keeping the planet cleaner. Through our innovations in food service and flexible packaging, we are focused on developing compostable solutions that minimize environmental impact. With our compostable flexible packaging facility, we envision setting a new benchmark for sustainable packaging."



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Electrical & Electronics

Cummins India appoints Shveta Arya as Managing Director

Cummins India Limited, one of the leading power solutions technology providers, is pleased to announce that its Board of Directors has appointed Shveta Arya as an Additional Director and the Managing Director (Designate) effective August 8, 2024. Shveta Arya will take up the full-time role as the Managing Director of Cummins India Limited - effective September 1, 2024, subject to approval from shareholders through a postal ballot.

She succeeds Ashwath Ram, who will continue serving the company until August 31, 2024 (close of business hours). Under his leadership, the company achieved profitable growth and successfully navigated multiple challenges, including COVID-19.

Shveta leads the Power System Business for Cummins India Limited – a portfolio she will continue



to hold even after her appointment as the Managing Director. As the business leader, she has been driving growth and enhancing market presence for power generation and industrial businesses serving India and the global market. She also successfully led the launch of the CPCB IV+ range of products, which was introduced in July 2023 and features amongst the most stringent emission standards for backup power generation in the world.

Previously, as the leader of Cummins' Distribution business in India, Shveta crafted a five-year growth vision that saw significant revenue expansion during her tenure.

She holds a master's from the Indian Institute of Management, Ahmedabad (IIMA) and a bachelor's in Information Technology engineering from Delhi University.

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Electrical & Electronics

Siemens shows 25 per cent PAT rise in Q3 24

For the third quarter of FY24 that ended June 30, 2024, Siemens Limited registered revenue at ₹47.14 billion, an increase of 7 per cent over the same quarter in the previous year. Profit After Tax stood at ₹5.31 billion, an increase of 25 per cent compared to the same period last year.

The new orders stood at ₹62.45 billion, an increase of 18 per cent over the same period last year.

Sunil Mathur, Managing Director and Chief Executive Officer, Siemens Limited, said, "All our businesses performed well in the quarter with robust growth in revenue and profitability. The strong performance came off a high-quality order backlog that we continue to deliver diligently. While order income continues to be strong in our smart infrastructure, mobility and energy segments, we continue to experience weak order intake in the digital industries segment."



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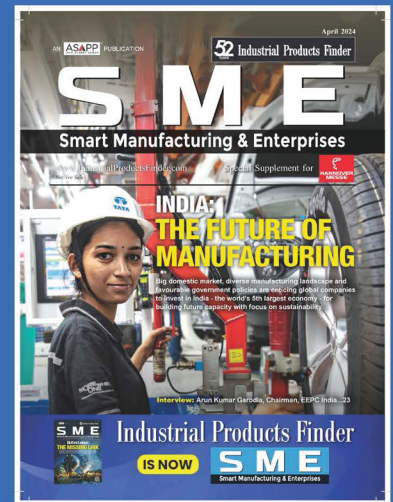
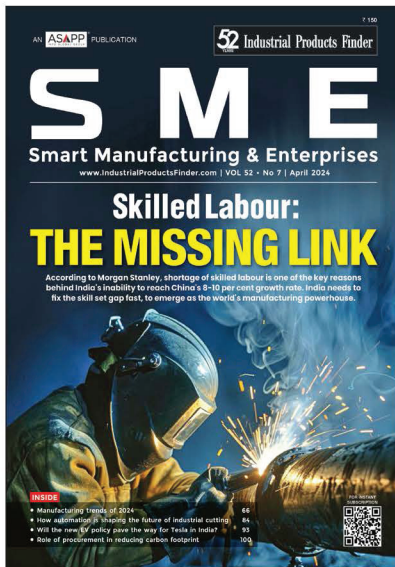
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Electrical & Electronics

G&B boost India's growth with green MEP projects

The Electricals & Electronics business of Godrej & Boyce, part of the Godrej Enterprises Group aims to bolster India's infrastructure development through the execution of large-scale MEP projects. As a prominent player in the industry, Godrej & Boyce is a preferred partner for the rapidly evolving data centre industry, targeting close to ₹4 billion in revenue by FY25 from its MEP business.



The business completed its largest data centre project to date, for one of India's leading conglomerates. Valued at ₹780 billion, this landmark project will deliver 12MW of capacity. The business has also secured several high-value projects in the cities of Mumbai & Delhi for various data centre clients. The company's HVAC projects comprised 47 per cent of its FY24 order book, highlighting the company's expertise in high-demand cooling solutions, and critical data centre infrastructure.

Pravin Rawool, AVP & Business Head – Electricals & Electronics said, "India's data centre industry is poised for remarkable growth, and we are excited to be at the forefront of this expansion, bringing our decades of expertise to execute cutting-edge projects that not only meet the growing demand but do so sustainably. Our latest project is an example of our commitment to delivering state-of-the-art MEP solutions that prioritise energy efficiency and environmental responsibility. As we continue to innovate in this rapidly evolving sector, we remain dedicated to supporting India's digital infrastructure growth while adhering to the highest standards of sustainability and technological excellence."

Godrej MEP has demonstrated expertise in greenfield and colocation data centres with over 40 MW executed till date, designed to house 4000 racks, designed as per IGBC Gold standards. Data centres in India are expected to attract an investment of \$5.7 billion by 2026, driven by several factors, including digital transformation, adoption of AI, government initiatives, expansion of the IT industry, adoption of 5G, and rise of e-commerce and fintech.

Godrej MEP is set to capitalise on the projected doubling of data centre capacity in India to around 2,000 MW by 2026.



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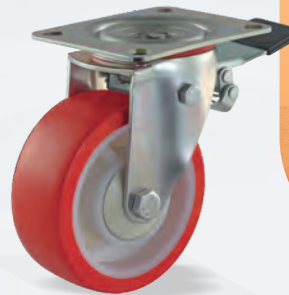
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Automobiles

Made in India Range Rover Sport start delivering across India

Range Rover today commences deliveries for the locally manufactured Range Rover Sport in India. The new Range Rover Sport is available in two powertrains - 3.0 l Petrol Dynamic SE, delivering power of 294 kW and torque of 550 Nm and 3.0 l Diesel Dynamic SE, delivering power of 258 kW and torque of 700 Nm. The new made-in-India Range Rover Sport is priced at ₹14 million, ex-showroom.

Assertive and confident, the New Range Rover Sport delivers unparalleled road presence through its short overhangs, large wheels and unmistakable, dramatic profile. Range Rover Sport is built on the state-of-the-art MLA-Flex platform, which enables next-level capability, performance and handling, as well as greater efficiency.

Dynamic Air Suspension delivers unprecedented refinement while elements like Pre-emptive Air Suspension and Adaptive Off-Road Cruise Control, collectively increase all-round capability.

The interior of the New Range Rover Sport is modernist, reductive and sophisticated, creating an impression of lightness, strength and space.

With additional space, seamlessly integrated and intuitive technology, plus intelligent connectivity, occupants enjoy exceptional levels of comfort, style and wellbeing. High-performance visibility is guaranteed with the new Digital LED Headlights featuring Adaptive Front Lighting, while new Low Speed Manoeuvring Lights provide ultimate convenience.

The award-winning Pivi Pro infotainment features a high resolution floating 33.27 cm (13.1) haptic touchscreen positioned at the centre of the modernist dashboard.

Controlling everything from navigation to media and vehicle settings, it learns the user's habits and intelligently personalises the onboard experience, becoming a truly intuitive personal assistant.

Chemical Industry

Vipul Organics develops organic intermediate to be used by auto industry

Vipul Organics Limited, the BSE listed (VIPULORG / 530627) leading specialty chemicals company in the pigments and dyes segment, announced the development of a refined grade of organic intermediate for manufacturing specialty chemical to be finally used for the automobile industry. Used in auto parts such as shock absorbers and bumper extension, this refined developed compound is the result of ceaseless work by Vipul Organics' inhouse R&D team, which worked for over a year to perfect this.

The application of this specialty chemical will lead to better durability and performance of the shock absorbers and bumper extensions by adding on a compound that is resistant to wear and impact.

Vipul Organics Limited has been a leader in the dyes and pigments industry for over 50 years. Its ongoing commitment to research and development has positioned it at the forefront of innovation and customer centricity. With significant and sustained R&D investments, the company consistently delivers high-



quality products and effectively addresses client challenges. Its latest innovation, the development of an organic intermediate, underscores the success of its R&D efforts.

“Over the last 2 years, we at Vipul Organics have been focusing on moving up the value chain in the pigment and dyes industry by introducing new value-added products. The development of the new organic intermediary by our R&D team opens up a whole new segment for us”, says Vipul Shah, CMD, Vipul Organics Limited.

“The size and scale of the Auto sector is huge and we are excited that our new product when used to formulate the specialty chemical will significantly add not only to our topline but also our bottom-line in the coming years”, he adds.

The samples of the specialty chemical are already with suppliers to the top auto companies across the world and it is undergoing final testing and approval by the auto industry. The initial response of the industry is heartening.

Automobiles

Škoda Auto India cars now available on GeM

Škoda Auto India has registered itself on the Government e-Marketplace (GeM) portal as a seller for its selected cars. GeM is set to become the world's largest government e-procurement portal, surpassing South Korea's KONEPS, by the end of this fiscal year. The first Škoda has already been delivered to a government buyer through the GeM portal.



The portal is the national public procurement portal for government buyers. The made-in-India Kushaq and Slavia are currently available on the portal. Both the cars are based on the MQB-Ao-IN platform, developed by teams in India and Czech, specifically for the Indian market and are also exported to other countries from India.



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Auto Components

Minda Corp releases fin results for Q1 2024

Minda Corporation Limited, the flagship company of Spark Minda, revealed its financial results for the first quarter ended June 30, 2024.

The highlights of Q1 FY25 were:

- Consolidated Revenue of ₹11.92 billion, an increase of 11.0 per cent YoY
- EBITDA Margin of 11.1 per cent, marking an increase of 38 bps YoY
- PAT of ₹640 million, an increase of 42.0 per cent YoY with a margin of 5.3 per cent

Minda Corporation achieved a quarterly revenue of ₹11.92 billion, marking 11.0 per cent YoY growth. This performance is attributed to robust product portfolio, an expanding customer base and focus on product premiumisation. During the quarter, the company achieved EBITDA of ₹1.32 billion with a margin of 11.1 per cent, showcasing 38 bps YoY growth.

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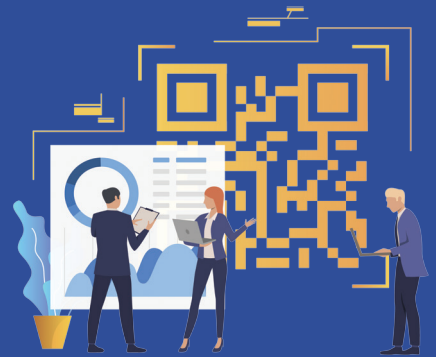
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Chemical Industry

KAI India expands production capacity

KAI India, a leading name in the beauty and personal care industry, announces a significant expansion of its manufacturing capabilities at the Neemrana plant. This move will increase the production capacity of women's razors by over 5 million razors per year, marking a new era of growth and innovation for the company.

The group is planning an additional investment of 300 million yen. The expected timeline for the completion of this expansion is 5 months, ensuring that the enhanced production capacity will be operational by the end of December 2024.

KAI India's vision is multi-faceted: 'Make in India', 'Sell in India & Overseas', and 'Skill in India' and 'Women Empowerment'. Market demand and growth trends for these products indicate a robust increase, driven by rising consumer awareness and the growing emphasis on personal grooming.

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Industrial Automation

Eplan hosts Forum 2024: Transforming automated engineering & ERP/PDM integration

The Eplan Forum is open to everyone around the world interested in sharing knowledge and exchanging experiences with automated engineering, machine cabling and ERP/PDM integration. The event will be held on September 25 & 26, 2024 at Hotel Dorint an der Messe Köln, Germany.

With the digital transformation in full swing, the same applies to engineering. It's an excellent idea for experts in the field to network: worldwide! This is exactly what will be taking place at the Eplan Forum, a hybrid-format event taking place in Cologne in September, which will be focusing on topics including automated engineering, machine cabling, and integrating ERP and PDM systems. International companies will be presenting in person about their practical experiences using Eplan software – and providing valuable insights



and assistance for other interested parties who would like to make the most of their processes, from upper management down to experienced Eplan users.

Solutions provider Eplan was pleased to welcome more than 300 guests attending the event online and in person

last year and the focus this year is once again on 'Transformation in Engineering'.

The Eplan Forum 2024 (previously the EF|A) invites stakeholders from around the world to a top-class event for knowledge exchange. Participants can expect many reports on companies' practical experiences – presented live by companies including Bender Solutions (DE), Kaeser Kompressoren (DE), Red Eléctrica de España (ES), PMS Elektro- und Automationstechnik (AT), Rockwell Automation (USA), TK Elevator (ES), Winkler+Dünnebier (DE), and others.

Pumps & Valves

Solartive wins ₹488 million bid from JREDA to equip farmers with solar pumps

Solartive bagged the prestigious tender under the PM Kusum Yojana from Jharkhand Renewable Energy Development Agency (JREDA) to deliver solar pumps to farmers across the state. This project, valued at approximately ₹488 million (including GST), is set to revolutionise the agricultural sector and allied industries in the state by providing sustainable and efficient irrigation solutions.

The letter of award issued by JREDA provides rights to Solartive to design, manufacture, supply, transport, install, test and commission solar water pumping systems (SWPS) on a turnkey basis for irrigation purposes at different districts in Jharkhand under Component-B of PM-KUSUM Scheme, Phase III.

The initiative aims to address the irrigation challenges farmers face, particularly those in remote areas with limited access to reliable electricity.

By implementing solar pump technology, Solartive will enable farmers to harness solar energy, ensuring a consistent water supply for their crops. This will enhance



agricultural productivity and reduce dependency on conventional power sources, leading to significant cost savings for the farmers.

Solar pumps are expected to create a wave of positive changes in Jharkhand's agriculture sector.

With improved irrigation facilities, farmers can cultivate a wider variety of crops, increase their yields, and extend the growing season.

This will contribute to greater food security and higher incomes for the farming community.

Additionally, the adoption of solar technology aligns with national goals of promoting green energy and reducing carbon emissions, furthering the state's commitment to environmental sustainability.

Solartive has a proven record of successfully implementing various ESCO, Solar, IoT-based IT, and infrastructure projects under central and state government initiatives such as Jal Jeevan Mission, PM-Kusum, and Panghat Yojana.

Automobiles

Tata Motors launched-SUV Coupe Curvv.ev

Tata Motors, India's leading automotive manufacturer, launched the Curvv.ev. This new addition to the Tata Motors' SUV range is a unique product blend of SUV robustness and Coupe elegance. Breaking the clutter in a space dominated by boxy-SUV body styles, Tata Motors is proud to be the first OEM to bring this innovative body style to India, with the Curvv – India's first SUV Coupe.

Post the Curvv.ev launch, the ICE avatar will soon follow. Being the second product on Tata Passenger Electric Mobility's (TPME) advanced Pure EV architecture – acti.ev, the Curvv.ev represents the next leap in India's electric vehicle journey. With a driving range of 585 km on a single charge for the 55kWh battery pack and 502 km for the 45kWh, the Curvv.ev will be available at a starting price of ₹ 1.749 million for the Curvv.ev 45 and at ₹1.925 for the Curvv.ev 55.



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Elfonze Tech to hire fresh talent for Oracle

Since its inception in early 2021, Elfonze Technologies has expanded its team to over 300 professionals, achieving an extraordinary average growth rate of 227% over the years.

Headquartered in Bengaluru, with delivery centres in Pune, Bhubaneswar, Hyderabad, and Denver, Colorado, USA, Elfonze Technologies is now gearing up for international expansion, with plans to establish a presence in Europe by the end of 2024. This global growth reflects the company's commitment to delivering superior IT and Engineering services worldwide.

At Oracle Cloud World 2024 in Las Vegas, Elfonze Technologies will further consolidate its position in the Oracle Fusion Cloud Consulting space. This participation highlights the company's dedication to innovation and leadership in Oracle Fusion Cloud solutions.

As part of its strategic growth, Elfonze Technologies is will expand its team with over 200 new Oracle Fusion Cloud and Engineering professionals by December 2024. This hiring initiative aims to strengthen Elfonze's capabilities in Oracle consulting and enhance its ability to deliver comprehensive IT solutions.

In the engineering domain, Elfonze continues to excel in product development, design, testing, validation, and certification. The company's recent M&A of iAMPS and Hz Technology solutions are paving the way for the launch of the SynthEMC AI platform, further boosting its EMC/EMI testing capabilities for electronics and semiconductor companies. Additionally, Elfonze Technologies is set to become an IEEE BLP partner, offering advanced IEEE courses in EMC/EMI, AI, IoT, Automotive, and more.

Elfonze Technologies is also enhancing its capabilities to support Build-Operate-Transfer (BOT) models for companies looking to set up Global Capability Centers (GCCs) in Karnataka. Through its strategic partnership with the Karnataka Digital Economy Mission (KDEM), Elfonze is well-positioned to facilitate these initiatives, providing end-to-end support from setup to operation.

"Our recent milestones reflect the dedication of our team and the trust our clients have in us," is how the DC heads Bichitra Palai, Madhu Samineni & Avinash Khandelwal see this acceleration. "As we continue to grow, we are excited about the opportunities ahead and our ability to make a significant impact in the IT and engineering sectors."

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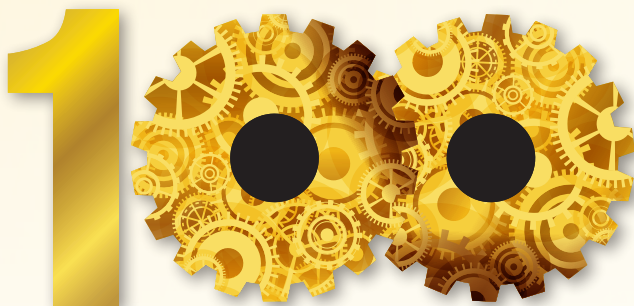
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India surprised everyone in 2023–24 by surpassing all market estimates of GDP, with 8.15 per cent year-over-year (YoY) growth. India's engineering exports also edged up to \$ 109 billion in 2023–24 (2.13 per cent more than \$ 107.04 billion in 2022–23), despite a slowdown in some of the major global markets amid geo-political tensions. In this edition, Smart Manufacturing & Enterprises (SME) presents India's Top 100 Engineering Companies who have out-performed their peers in FY24 and have emerged as the winners in 2024 list.

For three consecutive years, India's economy has surpassed growth expectations, averaging an 8.3 per cent annual increase during this period, despite global uncertainties. This strong performance is attributed to robust domestic demand and ongoing government

**Table 1: Top 25 Engineering Companies (Category: Very Large)
in India having revenues from ₹2000 crore to ₹5000 crore in FY24**

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
1	Jupiter Wagons Ltd	3,641.25	2,068.25	1,178.35	76.05	75.52	1	2	3	
2	Titagarh Rail Systems Ltd	3,853.30	2,780.53	1,474.79	38.58	88.54	6	1	7	
3	Texmaco Rail & Engineering Ltd	3,502.87	2,243.28	1,621.74	56.15	38.33	4	6	10	
4	Pricol Ltd	2,255.37	1,927.65	1,476.08	17	30.59	10	11	21	
5	Lumax Industries Ltd	2,636.60	2,319.52	1,751.31	13.67	32.44	13	9	22	
6	Shriram Pistons & Rings Ltd	2,953.72	2,605.03	2,064.66	13.39	26.17	14	17	31	
7	JTEKT India Ltd	2,245.49	2,073.24	1,610.50	8.31	28.73	20	12	32	
8	Gabriel India Ltd	3,342.65	2,971.74	2,331.99	12.48	27.43	16	14	30	
9	Subros Ltd	3,070.57	2,806.28	2,238.64	9.42	25.36	19	19	38	
10	Ramkrishna Forgings Ltd	3,489.61	3,001.00	2,285.37	16.28	31.31	11	10	21	
11	Skipper Ltd	3,282.04	1,980.30	1,707.08	65.73	16.01	2	28	30	
12	Jamna Auto Industries Ltd	2,360.95	2,231.83	1,649.04	5.79	35.34	26	8	34	

reforms and capital expenditure.

India's manufacturing sector, which contributes 17 per cent to the nation's GDP, has established the country as the fifth-largest manufacturing economy in the world. Despite this, with only 3.1 per cent of global GDP, there remains substantial potential for growth, according to a report by Nuvama, a wealth and investment company. In recent years, the Government of India (GoI) has implemented strategic initiatives such as Make in India, the Insolvency and Bankruptcy Code (IBC), and the Production Linked Incentives (PLI) scheme. These efforts, combined with the China Plus One strategy, offer significant growth opportunities for the Indian manufacturing sector.

Manufacturing sees a paradigm shift

Launched in 2014, the Government of India's Make in India initiative aimed to establish India as a global manufacturing hub. This was subsequently supported by the Aatmanirbhar Bharat campaign and the introduction of Production Linked Incentive (PLI) schemes across various sectors. These policy efforts are now yielding results. Over the past five years, India has witnessed an increase in foreign technical partnerships, especially in mobile phones, electronics, and food processing, with

major technology transfer partners including the US, Germany, and Japan. As a result, India is increasingly positioning itself as a significant player in global manufacturing.

Recently, even Global Times, China's official newspaper that has always been critical of India, acknowledged India's rise on the global manufacturing map. In August 2024, while sharing a list of the world's top 10 countries in manufacturing output on the social media platform 'X', it specifically highlighted India. With a manufacturing value added of \$ 456 billion, India ranked fifth in the list - ahead of countries like South Korea, Mexico, Italy, France and Brazil, but behind China, the US, Germany and Japan.

India's manufacturing landscape is undergoing a significant transformation, with investment opportunities emerging across a wide range of sectors. Growth in areas such as infrastructure (including roads, airports, railways, and ports), aerospace and defense, electronics, automotive, electric vehicles (EVs), energy (particularly renewables), data centers, and more are providing strong momentum, driving demand for Indian manufacturing (engineering) companies.

According to Nuvama, while 80-plus corporates (across five to six industries) led the capex cycle

**Table 1: Top 25 Engineering Companies (Category: Very Large)
in India having revenues from ₹2000 crore to ₹5000 crore in FY24**

Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank					Company
FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)	Aggregates (X + Y)	Final Ranking	
332.80	125.38	50.03	165.43	150.61	6	1	7	10	1	Jupiter Wagons Ltd
296.91	103.37	79.41	187.23	30.17	4	16	20	27	2	Titagarh Rail Systems Ltd
112.69	19.84	18.29	467.99	8.47	3	27	30	40	3	Texmaco Rail & Engineering Ltd
130.91	112.58	45.62	16.28	146.78	22	2	24	45	4	Pricol Ltd
86.08	70.64	35.43	21.86	99.38	19	5	24	46	5	Lumax Industries Ltd
446.77	295.56	163.56	51.16	80.7	11	7	18	49	6	Shriram Pistons & Rings Ltd
106.86	79.79	33.14	33.93	140.77	16	3	19	51	7	JTEKT India Ltd
185.16	132.35	89.52	39.9	47.84	13	9	22	52	8	Gabriel India Ltd
97.66	48.09	32.58	103.08	47.61	9	10	19	57	9	Subros Ltd
326.07	235.59	206.50	38.41	14.09	14	24	38	59	10	Ramkrishna Forgings Ltd
74.68	32.71	28.61	128.31	14.33	7	23	30	60	11	Skipper Ltd
249.94	157.76	130.46	58.43	20.93	10	19	29	63	12	Jamna Auto Industries Ltd

**Table 1: Top 25 Engineering Companies (Category: Very Large)
in India having revenues from ₹2000 crore to ₹5000 crore in FY24**

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
12	Sandhar Technologies Ltd	2,715.67	2,397.40	1,941.02	13.28	23.51	15	20	35	
14	HBL Power Systems Ltd	2,208.59	1,349.75	1,221.50	63.63	10.5	3	31	34	
14	Sansera Engineering Ltd	2,548.20	2,090.10	1,745.00	21.92	19.78	7	21	28	
14	Lakshmi Machine Works Ltd	4,597.14	4,533.23	3,071.59	1.41	47.59	29	5	34	
17	Sona BLW Precision Forgings Ltd	2,891.83	2,468.62	1,939.05	17.14	27.31	9	16	25	
18	Automotive Axles Ltd	2,229.17	2,323.70	1,490.62	-4.07	55.89	33	3	36	
18	Praj Industries Ltd	2,989.56	3,152.57	2,053.24	-5.17	53.54	34	4	38	
18	Electrotherm (India) Ltd	4,271.50	3,074.05	2,830.28	38.95	8.61	5	32	37	
21	Minda Corporation Ltd	3,844.50	3,492.40	2,734.80	10.08	27.7	17	13	30	
22	FIEM Industries Ltd	2,027.84	1,847.98	1,572.26	9.73	17.54	18	24	42	
23	Ion Exchange (India) Ltd	2,180.04	1,892.17	1,509.36	15.21	25.36	12	18	30	
23	Honeywell Automation India Ltd	4,058.20	3,447.59	2,948.32	17.71	16.93	8	27	35	
25	Rane (Madras) Ltd	2,142.25	2,123.55	1,555.00	0.88	36.56	30	7	37	
25	Sharda Motor Industries Ltd	2,809.26	2,699.94	2,255.31	4.05	19.71	27	22	49	

In “Very Large Category”, 34 “qualified companies” were analysed and ranked on the parameters (mentioned above). This list shows only the Top 25 Companies in the “Very Large Category”.

**Table 2: Top 25 Engineering Companies (Category: Large)
in India having revenues from ₹1000 crore to ₹2000 crore in FY24**

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
1	Greaves Cotton Ltd	1,778.59	1,549.76	1,177.59	14.77	31.6	11	7	18	
2	Kaynes Technology	1,273.94	1,086.56	671.39	17.25	61.84	9	2	11	
3	Jyoti CNC Automation	1,189.72	828.24	678.23	43.64	22.12	3	17	20	
4	HPL Electric & Power Ltd	1,420.92	1,214.87	1,004.28	16.96	20.97	10	20	30	
5	Genus Power Infrastructures Ltd	1,200.58	808.39	685.07	48.51	18	2	21	23	
5	Nelcast Ltd	1,266.94	1,263.97	927.34	0.23	36.3	29	4	33	
7	Salasar Techno Engineering Ltd	1,196.92	1,000.06	690.90	19.68	44.75	8	3	11	

**Table 1: Top 25 Engineering Companies (Category: Very Large)
in India having revenues from ₹2000 crore to ₹5000 crore in FY24**

	Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank			Aggre- gates (X + Y)	Final Ranking	Company
	FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)			
	112.25	83.78	61.43	33.98	36.38	15	13	28	63	12	Sandhar Technologies Ltd
	263.79	95.54	89.40	176.1	6.87	5	28	33	67	14	HBL Power Systems Ltd
	189.96	150.20	128.16	26.47	17.2	17	22	39	67	14	Sansera Engineering Ltd
	371.38	350.22	179.68	6.04	94.91	27	6	33	67	14	Lakshmi Machine Works Ltd
	484.48	388.09	353.54	24.84	9.77	18	26	44	69	17	Sona BLW Precision Forgings Ltd
	166.16	162.03	74.36	2.55	117.9	31	4	35	71	18	Automotive Axles Ltd
	280.42	237.61	164.40	18.02	44.53	21	12	33	71	18	Praj Industries Ltd
	319.43	-76.66	-54.32	516.68	-41.13	2	32	34	71	18	Electrotherm (India) Ltd
	188.50	240.60	160.20	-21.65	50.19	34	8	42	72	21	Minda Corporation Ltd
	165.84	139.63	95.26	18.77	46.58	20	11	31	73	22	FIEM Industries Ltd
	204.10	184.72	154.21	10.49	19.78	25	20	45	75	23	Ion Exchange (India) Ltd
	501.40	438.01	339.13	14.47	29.16	23	17	40	75	23	Honeywell Automation India Ltd
	14.88	-126.54	36.61	111.76	-445.64	8	34	42	79	25	Rane (Madras) Ltd
	294.90	205.43	161.49	43.55	27.21	12	18	30	79	25	Sharda Motor Industries Ltd

**Table 2: Top 25 Engineering Companies (Category: Large)
in India having revenues from ₹1000 crore to ₹2000 crore in FY24**

	Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank			Aggre- gates (X + Y)	Final Ranking	Company
	FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)			
	284.36	115.10	27.08	147.05	325.04	4	2	6	24	1	Greaves Cotton Ltd
	126.10	94.76	40.99	33.07	131.18	13	7	20	31	2	Kaynes Technology
	139.99	39.32	19.25	256.03	104.26	2	10	12	32	3	Jyoti CNC Automation
	41.26	27.76	7.12	48.63	289.89	11	3	14	44	4	HPL Electric & Power Ltd
	75.17	34.98	25.82	114.89	35.48	5	21	26	49	5	Genus Power Infrastructures Ltd
	54.41	29.74	14.22	82.95	109.14	7	9	16	49	5	Nelcast Ltd
	51.31	40.10	31.81	27.96	26.06	15	24	39	50	7	Salasar Techno Engineering Ltd

Table 2: Top 25 Engineering Companies (Category: Large)
in India having revenues from ₹1000 crore to ₹2000 crore in FY24

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
7	Alicon Castalloy Ltd	1,392.31	1,258.54	957.47	10.63	31.44	14	8	22	
9	WPIL Ltd	1,076.93	1,002.44	529.82	7.43	89.2	17	1	18	
10	Triveni Turbine Ltd	1,378.57	1,083.25	811.37	27.26	33.51	7	5	12	
10	PG Electroplast Ltd	1,417.72	1,331.15	1,021.94	6.5	30.26	20	9	29	
12	Salzer Electronics Ltd	1,135.58	1,013.17	783.63	12.08	29.29	13	11	24	
13	Bharat Bijlee Ltd	1,872.48	1,418.50	1,265.74	32	12.07	6	30	36	
14	Federal-Mogul Goetze (India) Ltd	1,669.57	1,608.54	1,321.98	3.79	21.68	23	18	41	
15	Cyient DLM Ltd	1,191.87	832.03	720.53	43.25	15.47	4	25	29	
16	Ingersoll-Rand (India) Ltd	1,213.69	1,150.79	909.92	5.47	26.47	21	13	34	
17	Banco Products (India) Ltd	1,011.36	1,003.79	795.37	0.75	26.2	28	14	42	
18	Bharat Seats Ltd	1,066.82	1,051.04	817.63	1.5	28.55	26	12	38	
19	Suprajit Engineering Ltd	1,536.74	1,431.02	1,271.28	7.39	12.57	18	29	47	
20	Shakti Pumps (India) Ltd	1,292.20	923.36	1,124.06	39.95	-17.85	5	36	41	
21	Pitti Engineering Ltd	1,201.60	1,100.17	953.82	9.22	15.34	15	26	41	
22	M M Forgings Ltd	1,527.08	1,409.29	1,087.98	8.36	29.53	16	10	26	
23	Kirloskar Pneumatic Company Ltd	1,322.62	1,239.34	1,021.18	6.72	21.36	19	19	38	
24	Techno Electric & Engineering Company Ltd	1,680.87	966.62	1,073.87	73.89	-9.99	1	35	36	
25	NRB Bearings Ltd	1,022.72	1,023.10	913.84	-0.04	11.96	30	31	61	

In “Large Category”, 36 “qualified companies” were analysed and ranked on the parameters (mentioned above). This list shows only the Top 25 Companies in the “Large Category”.

Table 3: Top 25 Engineering Companies (Category: Medium)
in India having revenues from ₹250 crore to ₹1000 crore in FY24

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
1	Solex Energy Ltd.	365.92	161.71	72.33	126.28	123.57	1	1	2	
2	Shilchar Technologies Ltd.	396.88	280.24	180.18	41.62	55.53	9	11	20	
3	Tembo Global Industries Ltd.	432.08	249.82	173.26	72.96	44.19	3	15	18	
4	NDR Auto Components Ltd.	601.57	392.79	232.55	53.15	68.91	6	7	13	

Table 2: Top 25 Engineering Companies (Category: Large)
in India having revenues from ₹1000 crore to ₹2000 crore in FY24

	Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank					Company
	FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)	Aggregates (X + Y)	Final Ranking	
	45.83	44.24	9.19	3.59	381.39	27	1	28	50	7	Alicon Castalloy Ltd
	142.03	143.03	63.87	-0.7	123.93	29	8	37	55	9	WPIL Ltd
	209.05	144.87	249.49	44.3	-41.93	12	35	47	59	10	Triveni Turbine Ltd
	78.06	44.20	32.97	76.61	34.06	8	22	30	59	10	PG Electroplast Ltd
	43.19	36.36	22.48	18.78	61.74	22	16	38	62	12	Salzer Electronics Ltd
	131.44	83.22	55.58	57.94	49.73	9	18	27	63	13	Bharat Bijlee Ltd
	125.05	97.23	52.75	28.61	84.32	14	12	26	67	14	Federal-Mogul Goetze (India) Ltd
	61.20	31.73	39.80	92.88	-20.28	6	33	39	68	15	Cyient DLM Ltd
	222.39	182.64	110.15	21.76	65.81	21	15	36	70	16	Ingersoll-Rand (India) Ltd
	255.23	245.55	85.65	3.94	186.69	26	5	31	73	17	Banco Products (India) Ltd
	25.05	21.55	11.91	16.24	80.94	24	13	37	75	18	Bharat Seats Ltd
	235.99	186.78	112.42	26.35	66.14	16	14	30	77	19	Suprajit Engineering Ltd
	117.15	23.99	55.59	388.33	-56.84	1	36	37	78	20	Shakti Pumps (India) Ltd
	90.20	58.83	51.89	53.32	13.37	10	28	38	79	21	Pitti Engineering Ltd
	145.46	125.59	111.77	15.82	12.36	25	29	54	80	22	M M Forgings Ltd
	133.28	108.58	84.92	22.75	27.86	20	23	43	81	23	Kirloskar Pneumatic Company Ltd
	269.74	218.37	260.34	23.52	-16.12	19	32	51	87	24	Techno Electric & Engineering Company Ltd
	250.47	85.80	70.14	191.92	22.33	3	26	29	90	25	NRB Bearings Ltd

Table 3: Top 25 Engineering Companies (Category: Medium)
in India having revenues from ₹250 crore to ₹1000 crore in FY24

	Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank					Company
	FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)	Aggregates (X + Y)	Final Ranking	
	8.73	2.71	0.99	222.14	173.74	7	8	15	17	1	Solex Energy Ltd.
	91.89	43.12	14.04	113.1	207.12	17	6	23	43	2	Shilchar Technologies Ltd.
	13.86	5.82	3.45	138.14	68.7	15	19	34	52	3	Tembo Global Industries Ltd.
	32.99	21.36	10.80	54.45	97.78	28	14	42	55	4	NDR Auto Components Ltd.

**Table 3: Top 25 Engineering Companies (Category: Medium)
in India having revenues from ₹250 crore to ₹1000 crore in FY24**

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
5	Kilburn Engineering Ltd.	293.21	221.53	122.75	32.36	80.47	15	4	19	
6	International Combustion (India) Ltd.	296.78	222.56	168.89	33.35	31.78	14	27	41	
6	Sanghvi Movers Ltd.	618.54	455.78	335.26	35.71	35.95	12	24	36	
8	Automobile Corporation Of Goa Ltd.	584.34	506.21	281.78	15.43	79.65	34	5	39	
9	Rane Engine Valve Ltd.	566.75	497.57	382.07	13.9	30.23	37	29	66	
10	Centum Electronics Ltd.	632.80	500.55	348.01	26.42	43.83	21	17	38	
11	Servotech Power Systems Ltd.	305.70	249.15	133.70	22.7	86.35	23	3	26	
12	Marine Electricals (India) Ltd.	533.73	391.27	322.89	36.41	21.18	11	38	49	
13	K&R Rail Engineering Ltd.	612.23	307.79	194.65	98.91	58.12	2	9	11	
14	The Anup Engineering Ltd.	550.38	411.34	288.24	33.8	42.71	13	18	31	
15	Igarashi Motors India Ltd.	725.05	656.25	556.41	10.48	17.94	42	45	87	
16	Apollo Micro Systems Ltd.	371.63	297.53	243.19	24.91	22.34	22	34	56	
17	ZF Steering Gear (India) Ltd.	477.82	450.43	312.80	6.08	44	51	16	67	
18	SAL Automotive Ltd.	307.52	303.79	150.58	1.23	101.75	60	2	62	
19	Lokesh Machines Ltd.	293.54	240.30	201.84	22.16	19.05	25	41	66	
20	Ahlada Engineers Ltd.	259.52	158.28	152.14	63.96	4.04	5	66	71	
20	Euro Panel Products Ltd.	395.23	329.54	216.25	19.93	52.39	28	12	40	
20	Talbro's Automotive Components Ltd.	778.27	647.18	577.24	20.26	12.12	27	55	82	
23	TD Power Systems Ltd.	983.88	821.48	718.81	19.77	14.28	29	52	81	
24	Enkei Wheels (India) Ltd.	716.14	663.49	450.53	7.94	47.27	46	13	59	
25	Racl Geartech Ltd.	417.29	358.21	271.21	16.49	32.08	33	26	59	

In “Medium Category”, 79 “qualified companies” were analysed and ranked on the parameters (mentioned above). This list shows only the Top 25 Companies in the “Medium Category”.

**Table 4: Top 25 Engineering Companies (Category: Small)
in India having revenues from ₹75 crore to ₹250 crore in FY24**

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
1	Eimco Elecon (India) Ltd.	227.50	172.70	84.44	31.73	104.52	8	4	12	
2	Star Delta Transformers Ltd.	140.15	71.35	31.15	96.43	129.05	4	3	7	

Table 3: Top 25 Engineering Companies (Category: Medium)
in India having revenues from ₹250 crore to ₹1000 crore in FY24

Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank					Company
FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)	Aggregates (X + Y)	Final Ranking	
39.67	30.14	1.55	31.62	1844.52	41	1	42	61	5	Kilburn Engineering Ltd.
19.95	8.31	4.15	140.07	100.24	14	11	25	66	6	International Combustion (India) Ltd.
187.94	112.04	29.43	67.74	280.7	25	5	30	66	6	Sanghvi Movers Ltd.
38.37	27.85	3.44	37.77	709.59	37	2	39	78	8	Automobile Corporation Of Goa Ltd.
11.46	-0.06	-11.86	19200	99.49	1	12	13	79	9	Rane Engine Valve Ltd.
36.25	19.40	11.77	86.86	64.83	23	20	43	81	10	Centum Electronics Ltd.
11.33	10.57	3.66	7.19	188.8	55	7	62	88	11	Servotech Power Systems Ltd.
28.35	19.51	12.47	45.31	56.46	32	23	55	104	12	Marine Electricals (India) Ltd.
7.12	5.27	6.06	35.1	-13.04	39	59	98	109	13	K&R Rail Engineering Ltd.
103.48	54.63	62.85	89.42	-13.08	21	60	81	112	14	The Anup Engineering Ltd.
9.57	5.24	1.19	82.63	340.34	24	3	27	114	15	Igarashi Motors India Ltd.
31.67	19.07	14.62	66.07	30.44	26	34	60	116	16	Apollo Micro Systems Ltd.
47.72	25.44	18.27	87.58	39.24	22	28	50	117	17	ZF Steering Gear (India) Ltd.
5.10	4.70	-2.33	8.51	301.72	53	4	57	119	18	SAL Automotive Ltd.
13.85	9.67	6.35	43.23	52.28	34	25	59	125	19	Lokesh Machines Ltd.
13.65	5.09	5.18	168.17	-1.74	10	54	64	135	20	Ahlada Engineers Ltd.
14.61	10.08	13.18	44.94	-23.52	33	62	95	135	20	Euro Panel Products Ltd.
129.06	43.70	37.05	195.33	17.95	9	44	53	135	20	Talbro's Automotive Components Ltd.
124.18	88.46	54.41	40.38	62.58	35	22	57	138	23	TD Power Systems Ltd.
11.70	3.71	16.28	215.36	-77.21	8	73	81	140	24	Enkei Wheels (India) Ltd.
39.81	37.45	23.95	6.3	56.37	58	24	82	141	25	Racl Geartech Ltd.

Table 4: Top 25 Engineering Companies (Category: Small)
in India having revenues from ₹75 crore to ₹250 crore in FY24

Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank					Company
FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total NP Rank (Y)	Aggregates (X + Y)	Final Ranking	
40.41	20.87	8.52	93.63	144.95	11	16	27	39	1	Eimco Elecon (India) Ltd.
11.12	5.76	3.65	93.06	57.81	12	26	38	45	2	Star Delta Transformers Ltd.

**Table 4: Top 25 Engineering Companies (Category: Small)
in India having revenues from ₹75 crore to ₹250 crore in FY24**

Final Rank	Company	Revenues in ₹crore			Revenue Growth (%)		Revenue Rank			
		FY24	FY23	FY22	FY24	FY23	FY24	FY23	Total Sales Rank (X)	
3	Innovators Facade Systems Ltd.	215.11	181.17	89.24	18.73	103.01	20	5	25	
4	G G Engineering Ltd.	212.11	99.57	15.14	113.03	557.66	3	1	4	
5	Auro Impex & Chemicals Ltd.	243.45	181.38	110.08	34.22	64.78	7	7	14	
6	Halder Venture Ltd.	94.47	31.81	18.38	196.98	73.07	1	6	7	
6	Nitiraj Engineers Ltd.	100.44	46.08	39.63	117.97	16.28	2	46	48	
6	Krishna Defence and Allied Industries Ltd.	106.43	63.65	49.92	67.21	27.5	6	30	36	
9	Jyoti Ltd.	175.35	154.55	120.24	13.46	28.53	27	27	54	
10	Brady & Morris Engg Co Ltd.	75.21	60.37	46.79	24.58	29.02	12	24	36	
11	Sintercom India Ltd.	87.71	82.21	59.89	6.69	37.27	43	19	62	
12	GTV Engineering Ltd.	120.62	96.08	77.42	25.54	24.1	11	38	49	
13	Hilton Metal Forging Ltd.	138.07	104.83	84.14	31.71	24.59	9	35	44	
14	De Neers Tools Ltd.	109.80	95.05	60.19	15.52	57.92	23	9	32	
15	Investment & Precision Castings Ltd.	170.96	170.11	132.03	0.5	28.84	49	25	74	
16	Jost's Engineering Company Ltd.	174.19	159.68	113.48	9.09	40.71	35	14	49	
17	Nitin Castings Ltd.	148.75	133.38	96.51	11.52	38.2	29	17	46	
18	Axtel Industries Ltd.	223.33	180.15	143.99	23.97	25.11	13	34	47	
19	Mold-Tek Technologies Ltd.	146.17	133.26	90.29	9.69	47.59	33	10	43	
19	Hercules Hoists Ltd.	179.53	150.77	108.45	19.08	39.02	19	16	35	
21	Frontier Springs Ltd.	135.42	107.36	83.66	26.14	28.33	10	29	39	
22	T & I Global Ltd.	183.50	152.34	103.39	20.45	47.35	16	11	27	
23	Emkay Taps and Cutting Tools Ltd.	103.45	88.62	70.81	16.73	25.15	22	33	55	
24	Uni Abex Alloy Products Ltd.	179.99	164.00	136.67	9.75	20	32	43	75	
25	KPT Industries Ltd.	151.63	149.76	116.48	1.25	28.57	47	26	73	

In “Small Category”, 70 “qualified companies” were analysed and ranked on the parameters (mentioned above). This list shows only the Top 25 Companies in the “Small Category”.

previously, now over 400 corporates and 600 unlisted entities (spread across 35-plus industries) are driving the current capex super-cycle. These investments in diversified sectors are poised to sustain growth in the long term.

For instance, the power sector is attracting substantial investments, with the market size reaching

₹65 billion for power transformers and ₹63 billion for distribution transformers. Additionally, the market for cables (both LV and HV) is valued at ₹662 billion, and there is significant investment flowing into insulators, energy meters, transmission towers, and conductors.

On the other hand, electronics manufacturing in India crossed \$ 100 billion market in 2023-24, which was

**Table 4: Top 25 Engineering Companies (Category: Small)
in India having revenues from ₹75 crore to ₹250 crore in FY24**

Net Profit (NP) in ₹crore			NP Growth (%)		NP Rank			Total NP Rank (X + Y)	Aggregates (X + Y)	Final Ranking	Company
FY24	FY23	FY22	FY24	FY23	FY24	FY23					
15.17	8.45	1.63	79.53	418.4	18	7	25	50	3		Innovators Facade Systems Ltd.
7.10	7.93	-0.24	-10.47	3404.17	50	1	51	55	4		G G Engineering Ltd.
5.81	5.57	2.04	4.31	173.04	40	14	54	68	5		Auro Impex & Chemicals Ltd.
1.31	0.55	0.84	138.18	-34.52	6	60	66	73	6		Halder Venture Ltd.
12.04	-0.37	-3.36	3354.05	88.99	2	23	25	73	6		Nitiraj Engineers Ltd.
9.79	5.30	2.46	84.72	115.45	17	20	37	73	6		Krishna Defence and Allied Industries Ltd.
8.31	4.17	1.46	99.28	185.62	9	13	22	76	9		Jyoti Ltd.
8.41	5.05	3.19	66.53	58.31	20	25	45	81	10		Brady & Morris Engg Co Ltd.
1.15	-0.01	-3.84	11600	99.74	1	22	23	85	11		Sintercom India Ltd.
5.41	4.10	0.92	31.95	345.65	28	9	37	86	12		GTV Engineering Ltd.
6.69	5.86	1.76	14.16	232.95	38	10	48	92	13		Hilton Metal Forging Ltd.
8.66	6.94	4.88	24.78	42.21	30	32	62	94	14		De Neers Tools Ltd.
7.81	5.56	0.18	40.47	2988.89	23	2	25	99	15		Investment & Precision Castings Ltd.
9.68	6.94	4.48	39.48	54.91	25	28	53	102	16		Jost's Engineering Company Ltd.
12.13	4.89	5.16	148.06	-5.23	4	53	57	103	17		Nitin Castings Ltd.
32.13	17.30	13.83	85.72	25.09	15	42	57	104	18		Axtel Industries Ltd.
27.67	29.08	13.17	-4.85	120.8	45	19	64	107	19		Mold-Tek Technologies Ltd.
36.02	103.31	14.94	-65.13	591.5	68	4	72	107	19		Hercules Hoists Ltd.
12.99	7.24	7.52	79.42	-3.72	19	52	71	110	21		Frontier Springs Ltd.
9.94	8.43	8.72	17.91	-3.33	34	51	85	112	22		T & I Global Ltd.
71.90	44.13	35.26	62.93	25.16	21	41	62	117	23		Emkay Taps and Cutting Tools Ltd.
35.46	18.53	12.30	91.37	50.65	13	30	43	118	24		Uni Abex Alloy Products Ltd.
12.06	8.42	5.01	43.23	68.06	22	24	46	119	25		KPT Industries Ltd.

\$ 49 billion in FY17. Electronics now has become the country's fifth largest export commodity (with \$ 30 billion in FY24), growing by 23 per cent annually.

Similarly, defence exports jumped by whopping 78 percent in the first quarter of 2024-2025 to ₹6,915 crore from ₹3,885 crore in Q1 FY24. Defence exports, which have been on a roll, hit a record ₹21,083 crore (approximately \$2.63 billion) in 2023-2024, up 32.5 per cent compared with ₹15,920 crore in FY22.

Engineering growth

India took a big economic leap in 2023-24, surpassing all market estimates of GDP, with 8.15 per cent year-over-year (YoY) growth. Indian exports surged by an impressive 8.1 per cent YoY in the fourth quarter of FY24 — the highest in the fiscal year. The engineering sector, which contributes approximately 40 per cent of the country's total manufacturing exports, is the largest contributor to India's overall exports (with a share of 24 per cent).

In fact, India's engineering exports edged up to \$ 109 billion in 2023-24 (2.13 per cent more than \$ 107.04 billion in 2022-23) despite a slowdown in some of the major global markets amid geo-political tensions. While growth in the traditional basket of exports continue to decline in the recent years, exports of high-value goods has seen consistent increase during this period. For example, exports of high-value manufactured goods like pharmaceuticals, chemicals, engineering products, and electronics achieved record levels in Q4 FY24, propelling overall growth in merchandise exports in the high value-added segment. This augurs well for India as it aims to increase its integration into the global value chain and increase its exports to \$ 2 trillion over the next six years.

In July 2024, India's engineering goods exports touched \$ 9.04 billion - a rise of 3.6 per cent compared to \$ 8.72 billion in July 2023. The sector's cumulative exports for the April-July 2024 witnessed a healthy 4.18 per cent increase to \$ 36.97 billion. In the last few quarters, the engineering (manufacturing) sector has been facing the headwinds due to high freight rates, protectionism, and weak demand in certain markets. Hence, this continued upward trajectory of India's engineering goods exports reflects the sector's resilience amid a challenging global environment.

India's engineering exports are competitive globally and expected to gain further market share in the coming years, with the country entering into more free trade agreements (FTAs), feels EEPIC India. Recent FTAs with the UAE and Australia have allowed Indian exporters to deepen their foothold in these key markets. With several measures aimed at boosting employment and skilling in the sector, the Union budget 2024-25 has put a spotlight on manufacturing. It is clear that the government sees manufacturing as crucial to achieving Viksit Bharat status by 2047.

Against this backdrop, we, at Smart Manufacturing & Enterprises (SME), present India's Top 100 Engineering Companies who have out-performed their peers in FY24 and have emerged as the winners in 2024 list.

Methodology for selection

For ranking, we have followed a rigorous, process-based method by focusing on two parameters - revenues and net profit. While net profit clearly shows how much is left for shareholders, revenue figures are important as they reflect how the demand for products or services is moving. Hence, both these parameters have been given equal weightage in the ranking process.

For ranking purposes, the annual reports from the last three years (FY24, FY23, and FY22) were analysed to assess growth over two periods: from FY22 to FY23 and from FY23 to FY24. Greater weightage was given to

recent performance, specifically from FY23 to FY24. Composite scores were calculated by multiplying the assigned weightage with the ranks for both revenues and net profit. These composite scores were then summed and ordered in descending fashion, with lower scores indicating higher rankings. After completing this ranking process, the top performers in the Indian engineering sector were identified and shortlisted.

Some might argue that a few companies that haven't demonstrated growth in sales or net profit are still making it to the top of the list. However, as noted, this is a weighted ranking system. Consequently, if a company has not shown growth in specific parameters or periods, it is ranked lower in the list.

We have made several adjustments, including removing some companies with manual intervention, as these diversified companies had significant income from real estate or other non-core segments. Companies that have not yet released their fourth quarter results of FY24 were not considered, and a few organisations opted not to participate in this process, so they are not included in the list.

Given that engineering involves both technical expertise and execution capabilities, we have categorised the companies into four distinct segments based on their revenues in FY24. We have specifically excluded companies with more than ₹5,000 crore revenues in 2023-24. Companies recording profits in 2023-24 were only considered for the selection process.

Based on their revenues in 2023-24, companies have been placed in 4 categories as follows:

- **Very Large:** Companies having revenues of above ₹2000 crore upto ₹5000 crore
- **Large:** Companies having revenues of above ₹1000 crore upto ₹2000 crore
- **Medium:** Companies having revenues of above ₹250 crore upto ₹1000 crore
- **Small:** Companies having revenues of above ₹75 crore to ₹250 crore

Since we are identifying the top 100 engineering companies, we have chosen the top 25 companies from each of the four categories.

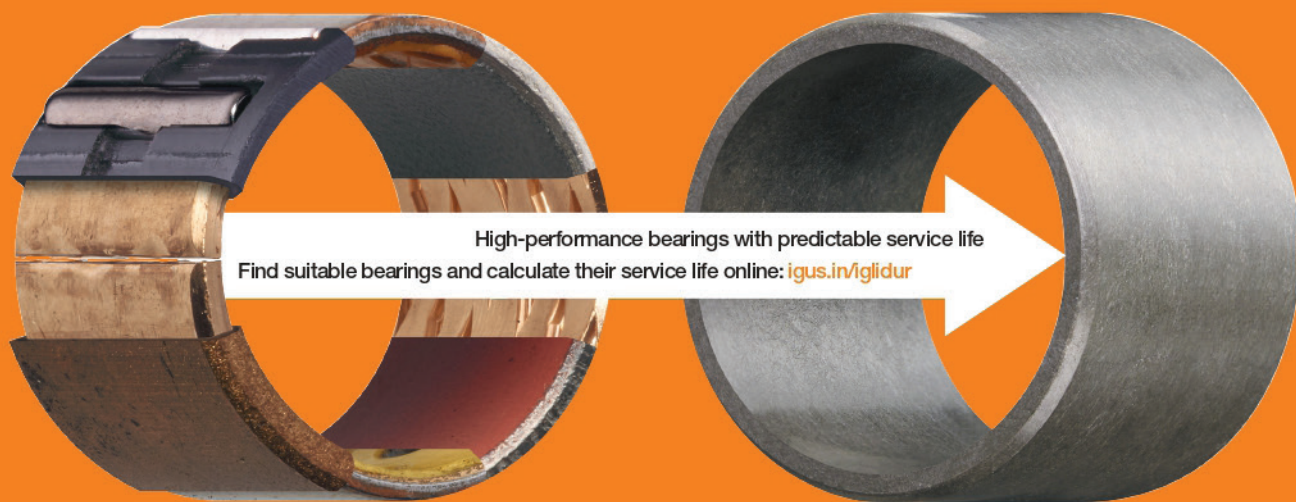
Based on these thorough observations, the companies that have demonstrated their ability to grow are genuine contenders, proving their strength in a challenging economic climate. Here, we provide a list of India's Top 100 Engineering Companies in 2024 by taking into account almost all aspects that needed to be considered.

Top 6 Very Large Engineering Companies

Given below are India's top six engineering companies in the "Very Large Category" (in the order of

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ranking as shown in Table 1) with revenues between ₹2,000 crore and ₹5,000 crore in FY24.

1 Jupiter Wagons Ltd

Kolkata (West Bengal)

As a leading provider of comprehensive mobility solutions, Jupiter Wagons Ltd (JWL)



excels in crafting railway wagons and alloy steel casting components, vital for rolling stock and tracks. In FY24, the company received orders for freight wagons totalling 2,150 units, amounting to approximately ₹1060 crore from private parties. It secured a contract with the Ministry of

Defence for the manufacturing and supply of 697 Boggie Open Military (BOM) wagons, valued at approximately ₹473 crore. The company entered into a substantial agreement with the Ministry of Railways for the manufacturing and delivery of 4,000 BOXN wagons, totalling around ₹1617 crore in value. JWL also obtained a significant order from a prominent automobile manufacturer for the manufacturing and supply of four rakes of Double Decker Automobile Carrier Wagons, amounting to approximately ₹100 crore. JWL DAKO CZ India Pvt Ltd, a JV of JWL, bagged an order totalling ₹112 crore for axle mounted disc brake systems from Indian Railways is received.

During the year, Jupiter Wagons also completed the acquisition of Stone India Ltd, which will enhance JWL's railway offerings, including braking systems and engineering products. In line with the 100-per cent electrification of the Indian Railways network, a high reach pantograph manufacturing line is being established at Stone India. Additionally, the facility will produce components for air brake systems, air springs, and more. Jupiter Wagons' order book as of March 31, 2024 stood at ₹7101.66 crore. New contract wins from the Ministry of Defense, a prominent automobile manufacturer, and the Ministry of Railways, coupled with its existing order backlog, provide strong visibility.

2 Titagarh Rail Systems Ltd

Kolkata (West Bengal)

Established in 1997, Titagarh Rail Systems Ltd (TRSL) is a leading comprehensive rail



TITAGARH
RAIL SYSTEMS LIMITED

mobility systems provider in India with over 25 years of experience. The

company is the largest wagon manufacturer with a market share of 18 per cent to 22 per cent in railway procurement in India in terms of total tenders and the largest market share of 25 per cent to 30 per cent in India

in terms of total tenders from Fiscal 2020 to 2023. The company is the only entity in private sector that manufactures both the freight rolling stock and passenger rolling stock. On a standalone level, TRSL's revenue from operations in FY24 went up to ₹1072.77 crore registering an increase of 38.58 per cent and EBIDTA of ₹497.60 crore in FY 23-24 was higher by 61.40 per cent as compared to ₹308.30 crore in FY 22-23, profit after tax, climbed from ₹103.37 crore in FY 22-23 to ₹296.91 crore in FY 23-24, an impressive increase of 187.24 per cent.

FY2024 manifested in some of the major developments for the company. In consortium with Bharat Electricals Limited, Titagarh Rail Systems was awarded "manufacturing cum maintenance of 80 Vande Bharat Trainsets including up-gradation of the government manufacturing units & trainset depots" and comprehensive maintenance of the same for 35 years in the mega tender of Indian Railways. Titagarh Rail, in consortium with Ramkrishna Forgings Limited (RKFL) incorporated a joint venture company, Ramkrishna Titagarh Rail Wheels Limited (RTRWL) on June 9, 2023, for execution of the project to manufacture forged wheels. TRSL received Letter of Acceptance in June 2023 from the Gujarat Metro Rail Corporation Limited (GMRL) for design, manufacture, supply, testing, commissioning and training of 72 nos. of standard gauge cars for Surat Metro Rail Phase-I Project.

The overall performance of the company during the FY24 was outstanding as is evident from the increase in all the key performance parameters. The robust order book aggregating ₹27,856 crores (as on March 31, 2024) and focus on participation in various tenders for wagons and metro coaches is expected to secure more orders to further consolidate TRSL's position in rolling stock industry.

3 Texmaco Rail & Engineering Ltd

Kolkata (West Bengal)

Texmaco Rail & Engineering Ltd (TREL) is primarily engaged in the business of



manufacturing railway wagons, coaches, and locomotives, as well as providing related services. For FY24, the company reported turnover of ₹3488.64 crore, profit

before depreciation and tax (PBDT) of ₹213.88 crore, and net profit of ₹112.69 crore. After a challenging few years, Texmaco Rail is undergoing a significant rejuvenation, driven by surging railway capex, robust wagon ordering; and net cash balance sheet, which has improved execution, margins and working capital trajectory.

TREL's steel foundry unit continues to perform well, operating full capacity across both the facilities at

Products		Applications		Images	
PLASTIC					
p1	MASTER BATCHES		 Master Batches  Vinyl Calendered Films		
p2	INJECTION MOULDING				
p3	BLOW MOULDING				
p4	VINYL CALENDERED FILMS				
PAINTS					
p5	AEROSOL SPRAY PAINTS		 Water Paints  Aerosol Spray		
p6	WATER BASED PAINTS				
p7	SOLVENT BASED PAINTS				
TEXTILES					
p8	TEXTILE PRINTING		 Textile Dyeing  Textile Printing		
p9	TEXTILE DYEING				
p10	TEXTILE PLASTISOL INKS				
WRITING INKS					
p11	HIGHLIGHTER INKS		 Highlighter Inks  Dry Erase Markers		
p12	DRY ERASE MARKERS				
p13	HIGHLIGHTER INKS (DYE BASED)				
COATINGS					
p14	PAPER COATING		 Paper Coating  Seed Coating		
p15	CLAY COATING				
p16	SEED COATING				
p17	GRAVURE COATING				
p18	PVC COATING				
INKS					
p19	FLEXO INKS WATER BASED		 Flexo Inks Solvent  Gravure Ink Solvent		
p20	FLEXO INKS SOLVENT BASED				
p21	GRAVURE INK WATER BASED				
p22	GRAVURE INK SOLVENT BASED				
p23	OFFSET INKS				
p24	SILK SCREEN INKS				
ARTS & CRAFTS					
p25	WAX CRAYONS		 Wax Crayons		
p26	PENCIL COATING				
p27	ERASER				
p28	PLASTIC CRAYONS		 Pencil Coating		
p29	POSTER COLORS				
p30	WATER COLORS				
p31	CLAY DOUGH				

Products		Applications		Images	
WAX					
p32	INDUSTRIAL MARKERS		 Industrial Markers  Candles		
p33	CANDLES				
p34	SOAPS				
COSMETICS					
p35	NAIL POLISH COLOUR		 Nail Polish Colour  Hair Color		
p36	HAIR COLOR				
NDT					
p37	CRACK DETECTION		 Leak Detection  Crack Detection		
p38	LEAK DETECTION				
ANTICOUNTERFEIT PRODUCTS					
p39	INVISIBLE PIGMENTS		 Invisible Inks  Invisible Pigments		
p40	INVISIBLE INKS				
MISCELLANEOUS					
p41	IDOL COATING		 Idol Coating  Sindhoor		
p42	SINDHOOR				
p43	RANGOLI COLORS				
p44	PAINTBALL				
p45	SPECKLE				
p46	HOLI COLORS				
ORGANIC PIGMENT DISPERSIONS					
p47	TEXTILE PRINTING		 COIR COATINGS  PAINTS & COATINGS		
p48	PAINTS & COATINGS				
p49	PERSONAL CARE				
p50	SEED COATINGS				
p51	COIR COATINGS				
p52	ARTS & CRAFTS				

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Belgharia and Urla. The unit has shown strong performance in both domestic and export markets. With a total foundry capacity of 48,000 MT, the company holds the largest railway casting foundry capacity in India. A new SBU was formed for railway component business to supply both domestic and global markets. The component business is gaining momentum now, supplying bogies, and parts of passenger rolling stock and metro rail to many global customers. To safeguard its core manufacturing business from the volatility and substantial working capital requirements of EPC business, Texmaco Rail had announced demerger of its Infra Rail & Green Energy Division (w.e.f. April 1, 2024).

4 Pricol Ltd

Coimbatore (Tamil Nadu)



Pricol Limited is one of India's leading players in the area of automotive technology and precision engineered products and solutions. The company's operations are classified into two verticals - Driver Information and Connected Vehicle Solution (DICVS) and Actuation, Control and Fluid Management System (ACFMS). The company has 8 manufacturing plants across India (Coimbatore, Manesar, Pantnagar, Pune, Sricity and Satara), and one manufacturing unit in Indonesia. In FY24, the company's growth was primarily fueled by a steady growth in the 2-Wheeler segment, which was to some extent partially offset by the muted growth in the commercial vehicles (CV) and the tractor segments. At consolidated level, Pricol managed to achieve a 16.05 per cent increase in its revenue in FY 2024 over the previous year. The company has steadily increased its EBITDA margin and achieved an EBITDA margin of 12.62 per cent in FY 2024. With no long-term debt, Pricol has started significantly reducing even its working capital deployment.

The recent spurt of activities in the EV ecosystem, charging infrastructure, and green mobility are heartening. Notably, majority of Pricol's products are propulsion agnostic, positioning it as a preferred partner for OEMs across diverse segments. In order to support the growth, the company is significantly expanding capacities and also modernising its plants in the North, West and South of India, in addition to setting up one greenfield plant in Pune. Pricol continues to invest heavily in new product development, and process engineering amounting to nearly 4.5 per cent of the company's annual turnover through its engineering and technology group in order to deliver best in class products and services to customers to maintain its market leadership. The company is eyeing to capitalise on both volume and premiumisation opportunities within the automotive industry.

5 Lumax Industries Ltd

Gurugram (Haryana)

Lumax Industries Limited (LIL), an integral part of the Lumax-DK Jain Group established in 1945, is a prominent supplier of end-to-end automotive lighting solutions and components in India. LIL's cutting-edge lighting solutions are tailor-fit for a wide cross-section of automotives, including two-wheelers, four-wheelers, and commercial vehicles, catering to OEMs across domestic and global automotive markets. It has 12 manufacturing units across six states. The company has forged strategic partnerships with global partners to fulfil the requirements of the Indian automotive lighting industry.

In 2023-24, Lumax Industries' total revenue increased by 13.7 per cent to ₹2,637 crore from ₹2,320 crore in FY 2022-23. PAT during FY 2023-24 was recorded at ₹86 crore, a rise from ₹71 crore in FY 2022-23, growing at a rate of 21.9 per cent Y-o-Y. This growth can be attributed to several strategic initiatives and market trends. First, the rising demand for automotive lighting solutions, particularly with the advent of advanced safety features and the growing popularity of electric vehicles, has expanded LIL's market reach. Additionally, the company's focus on innovation and product advancement has allowed it to capture a larger share of the automotive component market.

Strengthened by robust infrastructure investments, LIL has effectively responded to increased customer demands and market opportunities. During FY24, Lumax Industries inaugurated Phase-1 of the new Chakan plant in Pune, which is witnessing robust order flows resulting in strong capacity utilisation quarter-on-quarter. The company has announced plans for Phase 2 of the Chakan plant expansion, which will significantly enhance LIL's production capacity, enabling it to meet a wider range of client needs. In addition, Lumax Industries is establishing a new manufacturing facility in Sanand, Gujarat, to better address the growing demand for advanced lighting solutions from key OEM partners.

6 Shriram Pistons & Rings Ltd

New Delhi

Shriram Pistons & Rings Ltd (SPRL) is one of India's leading manufacturers of pistons, piston



pins, piston rings and engine valves. SPRL is also the leading exporter to the global OEMs and aftermarkets. Marketed under brands SPR and USHA,

it has diversified presence across Commercial Vehicles, Passenger Vehicles, Farm Equipment, Off-highway

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vehicles and Industrial Engines & gensets along with Railways and Defence applications. SPRL supplies its products to more than 45 countries across the world. By acquiring significant stakes in SPR EMF Innovations (EMFi) and SPR Takahata Precision India (TPI), SPRL aims to capture the market in EV mobility solutions and Plastic Injection moulding parts.

FY24 has been a breakthrough year for SPRL, as it delivered the highest ever financial performance, on both, the total income and profitability front. Shriram Pistons achieved a growth rate of 14.5 per cent in FY24, which was higher than 7 per cent growth witnessed by the domestic auto industry. SPRL's position as the leading manufacturer and exporter of its products in India, supported by its strategic technology partnerships with global industry leaders and state-of-the-art technology and manufacturing centres, has empowered the company to achieve these milestones. The growth is also attributed to the strong growth in the domestic markets, which was well supported by the export markets.

Shriram Pistons & Rings' focussed approach on improving operational efficiencies and productivity across all functions and business verticals have been fundamental in achieving the highest-ever profitability. During the Q4 FY24, SPRL commenced operations of its high-tech facility at Pithampur (Indore), Madhya Pradesh. It is also in the process of building an ultra-modern facility in Coimbatore, near to existing facility under EMFi, which will be focussed on growing the EV portfolio.

Top 6 Large Engineering Companies

Given below are India's top six engineering companies in the "Large Category" (in the order of ranking as shown in Table 2) with revenues between ₹1,000 crore and ₹2,000 crore in FY24.

1 Greaves Cotton Ltd

Mumbai (Maharashtra)

GREAVES
GREAVES COTTON LIMITED

Greaves Cotton Ltd (GCL) - a leading diversified multi-product and multi-location engineering company - provides fuel-agnostic powertrain solutions and e-mobility products. Greaves

operates across various sectors, including automotive, non-automotive, aftermarket, retail, electric mobility, technology, and finance. Leveraging upon the company's extensive history of engineering prowess, Greaves has embarked on purposeful endeavours to drive the advancement of clean technology solutions, emphasising electric mobility significantly. These efforts have positioned the company as a comprehensive player within India's mobility ecosystem.

The company's retailing network comprised approximately 10,000 retailers and over 130 distributors. Moreover, the company has established partnerships with more than - 20,000 mechanics nationwide in FY 2023-24. The company delivers world-class products and solutions through its thirteen state-of-the-art manufacturing facilities across India. Within the non-automotive domain, GCL offers a comprehensive range of products that covers gensets, agricultural machinery, and applications across marine and other industrial sectors. The company has also taken strategic steps to grow its legacy business in automotive and non-automotive engines. In FY 2023-24, GCL announced its acquisition of a majority stake in Excel Controlinkage Pvt Limited, a leading Indian manufacturer of mechanical and electronic motion control systems. Excel's products are exported to over 80 countries, strengthening the company's global presence.

2 Kaynes Technology India Ltd

Bengaluru (Karnataka)

KAYNES
TECHNOLOGY

Kaynes Technology is a leading integrated electronics manufacturer in India, renowned for its comprehensive end-to-end and IoT solutions. With a rich experience spanning over 30 years, the company excels in delivering a full range of ESDM (Electronics System Design and Manufacturing) services. These services include everything from conceptual design and process engineering to integrated manufacturing and life cycle support. The company's advanced manufacturing infrastructure allows it to produce high-quality products with flexible volume capabilities across various industry verticals. This infrastructure supports the company's ability to adapt to different production needs and technological advancements, ensuring it remains at the forefront of the electronics manufacturing industry. Kaynes Technology operates eight strategically located manufacturing facilities throughout India, specifically in Karnataka, Haryana, Himachal Pradesh, Tamil Nadu, and Uttarakhand. These locations are chosen to optimise production efficiency and reach. Additionally, the company has established service centers in Cochin and Mumbai, providing dedicated support and services to clients in sectors such as railways, aerospace, defense, and industrial applications.

The company achieved a revenue of ₹1804.6 crore in FY 2023-24, reflecting a 60 per cent year-on-year (YoY) growth. Kaynes Technology's operational EBITDA margin stood at 14.1 per cent, and its Profit after Tax (PAT) was ₹183.3 crore, marking a 93 per cent growth YoY. The industrial and EV aerospace, outer space, and strategic electronics verticals led the growth due to



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strong demand. The company's order book increased from ₹2648.2 crore at the end of FY 2022-23 to ₹4115.2 crore at the end of FY24, with the monthly average order inflow rising from ₹278.8 crore to ₹321.2 crore during this period.

3 Jyoti CNC Automation

Rajkot (Gujarat)

Established in 1989, Jyoti has grown into one of India's largest CNC machine manufacturers.



Starting with the production of gearboxes for machines, the company gradually expanded its expertise to develop precision all-g geared

head lathe machines. Recognising the industry's shift from conventional to advanced technology, Jyoti transitioned into producing highly sophisticated CNC machines. Today, the company's product range is extensive, offering CNC Turning Centres, CNC Turn Mill Centres, CNC Vertical Machining Centers, CNC Horizontal Machining Centres, CNC 5-Axis Machining Centres, and CNC Multi-tasking Machining Centres. As part of its backward integration strategy, Jyoti also runs various machine shops equipped with state-of-the-art machinery. Its Rajkot plant houses assembly, sub-assembly, sheet metal, and paint shops. At the heart of Jyoti's innovation is the Leonardo Da Vinci R&D Center, which drives the company's commitment to designing and developing cutting-edge CNC machine solutions for its diverse industrial clientele. This focus on innovation ensures Jyoti remains a leader in the CNC manufacturing space. The company commands a 10 per cent market share in India as of FY23, making it the third largest in the country. Globally, it ranks twelfth with a 0.4 per cent market share in 2022.

4 HPL Electric & Power Ltd

New Delhi



HPL Electric & Power Limited is a leading manufacturer of electrical equipment in India,

with a strong presence across five core verticals; metering solutions, switchgears, LED lighting, wires & cables, solar solutions, and modular

switches. The company's backward-integrated facilities enable comprehensive capabilities in product design and development, component manufacturing, tool making, and full-scale commercial production. With over four decades of experience, HPL has established itself as a trusted brand in the Indian electrical industry. In fiscal 2015, HPL held the largest market share in electronic energy meters in India, offering one of the most extensive portfolios in the sector. HPL's manufacturing

units and products have received multiple national and international certifications, reflecting their commitment to quality and safety.

HPL Electric registered 15.75 per cent YoY growth in revenue reaching ₹1460.86 crores in FY24 up from ₹1262.21 crores in FY23. Profit after tax stood at ₹43.63 crores in FY24 with growth of 44.22 per cent YoY. Overall strong order book of over ₹2,000 crores ensures revenue visibility for the short and medium term. The 'Metering & Systems' segment will be the driving segment and is anticipated to receive good traction with a strong execution cycle.

5 Genus Power Infrastructures Ltd

Jaipur (Rajasthan)



energizing lives

Genus Power is a leading provider of smart metering technology, offering a comprehensive

range of advanced metering solutions tailored to meet the evolving needs of utilities

worldwide. With over 80 million

installations globally, Genus is playing a key role in the transformation of energy infrastructure, driving the adoption of smart technologies across the energy sector. Positioned at the forefront of the smart metering revolution, Genus has forged a strategic partnership with Gem View Investment, an affiliate of GIC, Singapore. This collaboration strengthens Genus' ability to undertake AMISP concessions and reinforces its standing as a leading supplier of smart meters in India. The financial year 2024 marked a transformative period for the company, characterised by strong financial performance and significant milestones. Genus reported record-breaking revenue of ₹1,200.58 crore and a net profit of ₹75.17 crore. The company successfully navigated global supply chain challenges and capitalised on growing smart metering opportunities, positioning itself for continued growth. Genus' export performance also remained robust, contributing to an impressive order book that surpassed ₹21,000 crore (net of taxes) as of March 31, 2024.

5 Nelcast Ltd

Chennai (Tamil Nadu)



NELCAST LIMITED

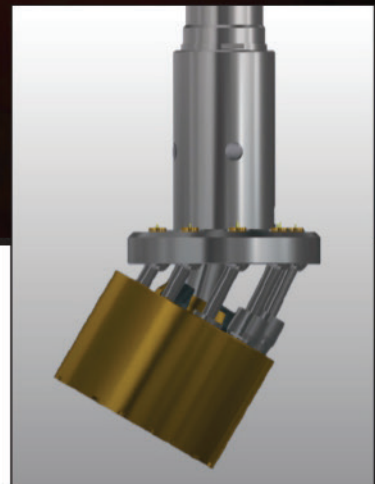
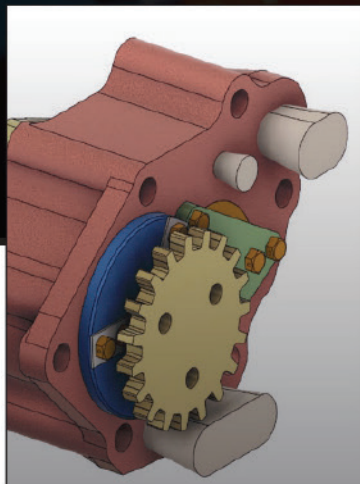
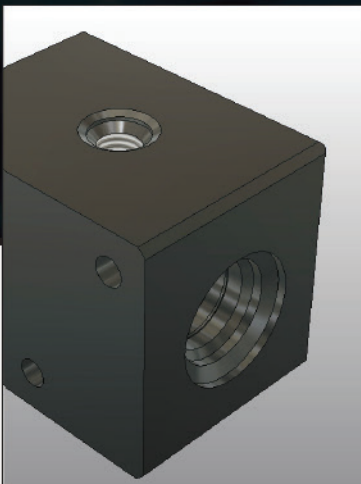


Nelcast is the largest jobbing foundry in India for the manufacturing of ductile & grey iron

castings. The company's products cater to the global automotive, tractor, construction, mining, railways and general engineering sectors. Established in 1985 with a

modest capacity of just 1,000 metric tonne/year, Nelcast has focused on producing superior quality castings for a wide range of Industries. Nelcast's export division has

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demonstrated impressive strength, achieving a 35 per cent year-on-year growth in exports and generating ₹445 crore in export revenue. This strong performance is highlighted by a seven-year compound annual growth rate (CAGR) of approximately 40 per cent since FY18. Furthermore, the company has improved its operational efficiency, reflected in a 10 per cent year-on-year increase in EBITDA per kg, reaching ₹12.48 in FY24 from ₹11.34 in FY23. In line with its commitment to sustainability and cost efficiency, Nelcast's Pedapariaya Plant in Andhra Pradesh has commissioned a 1 MW solar power facility, significantly reducing its carbon emissions. The company anticipates strong growth in the medium and heavy commercial vehicle (M&HCV) segment, driven by increased infrastructure investments and rising demand for tippers, a key revenue contributor requiring substantial castings.

Top 6 Medium Engineering Companies

Given below are India's top six engineering companies in the "Medium Category" (in the order of ranking as shown in Table 3) with revenues between ₹250 crore and ₹1,000 crore in FY24.

1

Solex Energy Ltd

Surat (Gujarat)

Solex Energy Ltd, established in 1995, initially focused on producing solar water heaters. The company expanded its operations in 2007 to include solar module manufacturing. In 2018, Solex Energy went public, marking a significant milestone in its growth journey. By 2022, the company had completed a major capacity expansion and is now on track to reach a total manufacturing capacity of 1.5 GW, with further expansions planned to increase this to 4.5 GW.

Solex Energy specialises in the design, development, and production of advanced solar modules, including Mono-PERC, TopCON, and HJT models with power capacities ranging from 540wp to 750wp. The company's facility integrates Industry 4.0 principles such as big data, robotics, and automation to enhance production efficiency. Along with manufacturing, Solex provides comprehensive Solar EPC (Engineering, Procurement, and Construction) services, catering to both ground-mounted and rooftop installations. It also manages solar assets under an Operation & Maintenance (O&M) model, ensuring a complete range of services for its customers.

Solex Energy's commitment to innovation extends to its investment in artificial intelligence for better quality control in manufacturing and enhanced productivity in business processes. The company is also engaged in the

development of solar parks in Gujarat. For the fiscal year 2023-24, Solex Energy reported significant financial growth, achieving revenue of ₹365.92 crore, a 126 per cent increase over the previous year, and a net profit of ₹8.734 crore, reflecting a 222 per cent year-on-year growth. Looking forward, Solex Energy Limited aims to contribute to India's renewable energy capacity, which is projected to rise to approximately 500 GW by 2030.

2

Tembo Global Industries Ltd

Navi Mumbai (Maharashtra)

Tembo Global Industries Ltd, established in 2010, is a leading company in the industrial sector, known for its expertise in engineering mechanics, design load calculations, manufacturing, supply, and project



execution. The company serves a wide range of sectors, including oil and gas, chemicals, construction, power, shipbuilding, nuclear power, HVAC, anti-vibration systems, and various industrial, commercial, utility, and OEM installations. It is also engaged in the trading of metal products and textiles. Despite the challenging global economic environment, the company has consistently demonstrated resilience and strategic excellence, reflected in its robust financial performance.

For the quarter ended June 30, 2024, Tembo reported revenue from operations of ₹128.41 crore, a significant increase from ₹81.09 crore in the same period of the previous year. Tembo Global Industries' diverse portfolio includes pipe support systems, fasteners, anchors, HVAC systems, anti-vibration systems, and specialised equipment for various industrial and commercial installations. The company recently secured a major contract through its joint venture, PES JV, for the construction of an offshore jetty in the Maldives, valued at ₹98.50 crores. This achievement further strengthens its position as a key player in the industrial sector.

To meet the growing market demand for its engineering products, Tembo Global Industries has acquired 3.5 acres of land for a major expansion project. The company plans to increase its manufacturing capacity by four to five times.

3

Shilchar Technologies Ltd

Vadodara (Gujarat)

Shilchar Technologies Ltd is a leading manufacturer of electronics & telecom and power & distribution transformers in India. Established in 1990, the company initially focused on the production of R-core transformers and later expanded into Ferrite transformers in 1995. Between 2004 and 2007, Shilchar ventured into manufacturing distribution and power

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transformers, solidifying its presence in the industry. The company caters to a diverse range of industrial sectors, from utility to renewable energy, and serves customers globally. With the commissioning of a new manufacturing

facility in April 2020, Shilchar now produces transformers up to 50 MVA and 132 KV Class, with an annual production capacity of up to 4000 MVA. Its product range is recognised for superior quality, attracting clients from various industries worldwide, including the utility and renewable energy sectors. Since 2011, Shilchar has generated over 40 per cent of its revenue from exports.

Shilchar Technologies Ltd has demonstrated growth, reporting an operating revenue of ₹397 crore with a 42 per cent annual growth rate, a pre-tax margin of 31 per cent, and a return on equity (ROE) of 43 per cent. The company is debt-free and has a strong balance sheet, enabling stable earnings across business cycles.

In the first quarter of FY 2024, Shilchar reported sales of ₹106.99 crore, up from ₹67.21 crore in the previous year. Revenue increased to ₹110.38 crore compared to ₹69.79 crore, while net income rose to ₹23.98 crore from ₹16.38 crore.

4 NDR Auto Components Limited

Gurugram (Haryana)

NDR Auto Components Limited (NACL) is a prominent player in the automotive



manufacturing sector and a part of the Rohit Relan Group. In the 1980s, the group diversified into the automotive manufacturing sector, establishing a strong foothold with the creation of Bharat Seats Limited and Sharda Motor

Industries Limited (SMIL), becoming key players in the auto components industry. Bharat Seats emerged as a fully integrated plant for the production of complete seating systems, serving the four-wheeler, two-wheeler, and surface transport segments. SMIL started as a stitching unit for seat trims and later expanded to supply metal structures and frames to Bharat Seats Limited, further cementing the group's position as a leader in the automotive manufacturing space.

NDR Auto Components Limited has demonstrated strong financial performance in recent years. For the financial year under review, the company reported revenue from operations and other income of ₹606.72 crore, a significant increase from ₹399.97 crore in the previous year. The company also recorded a net profit after tax (PAT) of ₹32.98 crore, up from ₹21.36 crore in the prior year, highlighting sustained growth and profitability.

5

Kilburn Engineering Ltd

Thane (Maharashtra)

Kilburn Engineering Limited is a leading company specialising in the design, engineering,



manufacturing, and commissioning of customised equipment and systems for

process plants across diverse industries. The company is a market leader in drying systems for solids, liquids, and gases, providing bespoke solutions to industries such as chemicals, steel, nuclear power, petrochemicals, and food processing. Kilburn Engineering's income from operations increased by 32.36 per cent to ₹293.21 crores in FY 2023-24, up from ₹221.53 crores in FY 2022-23, driving scale growth. The company's profit after tax surged by 31.62 per cent to ₹39.67 crores in FY 2023-24, compared to ₹30.13 crores in FY 2022-23. During the year under review, Kilburn Engineering completed the acquisition of M E Energy Pvt Ltd, a leading specialist in waste heat recovery and reutilisation systems. This strategic move marks a significant step forward in its growth trajectory, reaffirming its dedication to innovation and broadening its range of service offerings.

The company currently boasts an order book of ₹324.66 crores (as on June 30, 2024). The proposed acquisition of Monga Strayfield will enhance Kilburn's portfolio, particularly in radio frequency drying and heating, while expanding its reach into industries such as textiles and packaged foods. Monga Strayfield's expertise in sheet metal fabrication also strengthens Kilburn's position in international markets.

6

International Combustion (India) Ltd

Kolkata (West Bengal)

International Combustion (India) Ltd

(ICIL), established in 1936, originally focused on mineral grinding mills. Over the years, ICIL has evolved into a player in the heavy



engineering sector, serving major core industries with a

diverse product range. Its product offerings include vibrating screens and feeders, cone crushers, bulk material handling equipment, mining haulages, Raymond grinding mills, air classifiers, flash drying systems, and geared motors and gearboxes. ICIL is known for its foreign technical collaborations and licensing agreements with global leaders in various product categories, ensuring the manufacture of premium-quality equipment. A significant venture for the company is Mozer Process Technology Pvt Ltd, a joint venture with Allgaier Werke GmbH, Udingen. Mozer has established itself as a global brand in industrial dryers with over a

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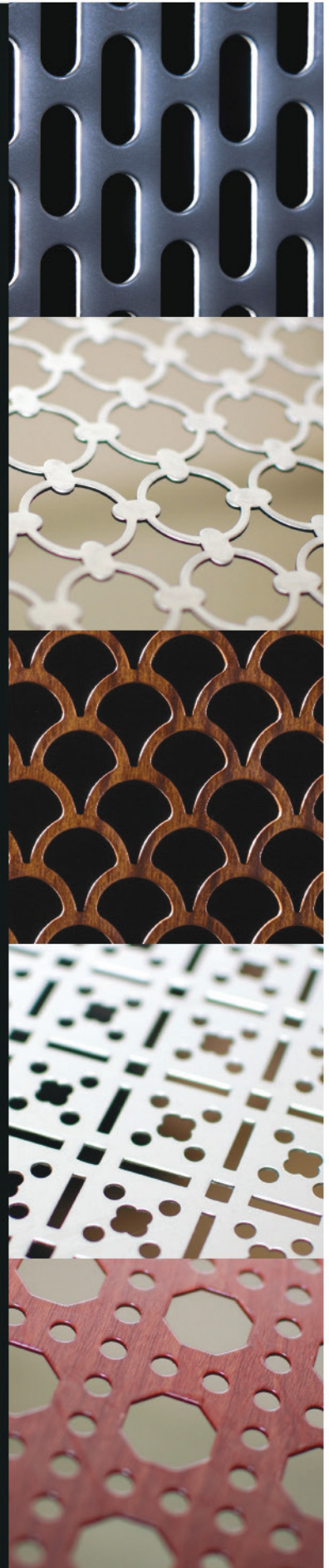
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thousand installations worldwide. The joint venture aims to strengthen International Combustion's presence in the Asian market and provide efficient, customised drying solutions.

The company's business has witnessed continued growth in the last few years. ICIL's revenue from operations for FY24 was ₹296.78 crores as against ₹222.56 crores during the previous year, registering a growth of over 33 per cent. The profit before tax for FY24 also increased to ₹32.07 crores as against ₹12.10 crores in 2022-23, registering a growth of over 165 per cent. The growth in business was primarily on account of much higher investment in various core sector industries where the company is active.

6 Sanghvi Movers Ltd

Pune (Maharashtra)

Sanghvi Movers Ltd (SML) stands as the largest crane rental company in India and Asia, and the fourth-largest globally, according to International Cranes. Its fleet primarily serves industries involved in the construction of power plants, steel, cement, fertilisers, petrochemicals, refineries, metro systems, and wind energy projects. With a presence across over 10 states

in India, SML has demonstrated exceptional financial performance in FY 2023-24. The company achieved a top-line revenue of ₹647 crores, reflecting a 33 per cent year-over-year growth. Profit after tax reached ₹188 crores, a 68 per cent increase from the previous fiscal year. EBITDA margins rose by 4 per cent, with the average capacity utilisation growing to 84 per cent. The company completed a capital expenditure of ₹334 crores, adding 34 cranes and 44 pieces of equipment. As of March 31, 2024, SML's fleet comprised 346 cranes valued at ₹2,490 crores.

SML's strategic initiatives include Project AAROHAM, collaboration with Bain & Company India, which aims to identify growth opportunities and implement actionable plans over a 12-month period. Additionally, Project Samruddhi involves a major organisational restructuring to create two independent subsidiaries: Sangreen Future Renewables Pvt Ltd and Sangreen Logistics Pvt Ltd. This restructuring is designed to enhance operational efficiency, accountability, and growth potential.

Top 2 Small Engineering Companies

Given below are India's top two engineering companies in the "Small Category" (in the order of ranking as shown in Table 4) with revenues between ₹75 crore and ₹250 crore in FY24.

1 Eimco Elecon (India) Ltd

Anand (Gujarat)

Eimco Elecon (India) Ltd is a prominent manufacturer and marketer of equipment for both underground and opencast mining operations. Established



in 1974, the company operates from a sprawling 15-acre facility located in Vallabh Vidyanagar, Anand, Gujarat. Eimco Elecon has been a pioneer in introducing intermediate technology for Indian mines, particularly through its Side Dump Loaders (SDLs), Load Haul Dumpers (LHDs), and Rocker Shovel Loaders, which have played a key role in partially mechanising underground coal and metalliferous mines. The company has introduced advanced mining equipment such as face and roof drills, coal haulers, and various models of LHDs and SDLs, further enhancing productivity. Additionally, Eimco Elecon has diversified into manufacturing construction equipment to cater to the growing construction sector. In FY24, Eimco Elecon recorded a significant increase in total revenue, reaching ₹227.50 crore compared to ₹172.70 crore in the previous year. Profit before tax surged to ₹49.95 crore, while profit after tax rose to ₹40.41 crore, reflecting the company's robust performance and strategic growth initiatives.

2 Star Delta Transformers Ltd

Bhopal, Madhya Pradesh

Star Delta Transformers Ltd has over 30 years of experience in manufacturing a wide range of transformers for various applications and utilities, establishing itself as a leading power and distribution transformer manufacturer in India. The company's state-of-the-art manufacturing facility is located in



the Industrial Area of Govindpura, Bhopal, Madhya Pradesh. This fully integrated facility is equipped to manufacture and test transformers up to 40 MVA and 132 KV class. Star Delta specialises in producing 11 KV and 33 KV class transformers, from single-phase to three-phase units up to 25 MVA, as well as 132 KV class transformers up to 40 MVA. The company's manufacturing plant has an installed production capacity of 1,000 MVA per shift annually.

The company was able to grow profits by ₹5.35 crore in 2023-24, which was a 93 per cent increase from previous year. During FY24, Star Delta Transformers also experienced increase in revenues by 96 per cent. As on April 1, 2024, the company has order book amounting to ₹216 crore, and it expects the order inflow to remain robust going forward.

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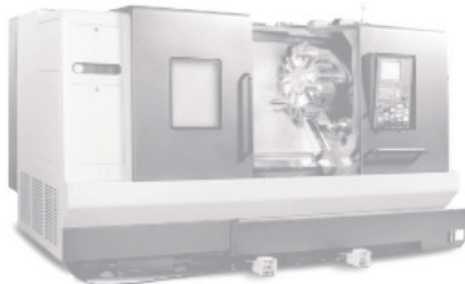
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Equipping Industries for Sustainability

Modern day factories are much larger in size, automated, and far more efficient, writes **R Jayaraman**. But, are they all tuned up to operate in a sustainable way?

India is on the path of becoming the 'manufacturing hub of the world', or the 'global manufacturing hub'. Easier said than done, but so was going to the moon. That India achieved going to that part of the moon not visited by others, that too, after a heart breaking 'failure', speaks volumes for the resilience of the scientific temper in the country. While the DRDO cannot be considered a part of the manufacturing industry, it does need this industry to supply various parts to the rockets and other space vehicles which it periodically test fires and sends on for regular production. Missiles, rockets, space vehicles, and more are productionised after rigorous testing and checks.

Similarly, an electric vehicle (EV) is also a developing product, although many models have now become available. Fuel powered cars, electric battery driven cars, hybrid cars and so on are now coming out of the automobile industry's R&D labs and testing grounds. Other innovations, like iPhones, ear phones, racing cars, heavy tonnage trucks, large cold rolled coils for sophisticated applications are all flooding out of the manufacturing industry's



Owing to use of technologies like pelletisation of iron ore, much of the wastes generated due to handling iron ores have been substantially reduced.

factories. And modern day factories are much larger in size, much more automated, much leaner in staffing and far more efficient in getting their output out the finished goods store. Yet, the concern is, are they all tuned up to operate in a sustainable way?

Going lean, reducing waste

Some years back, the ISO organisation put out certain standards to make manufacturing more environment-friendly. ISO 9000, 14000, 18000, and other similar ones like SAE 8000, were all thrust upon an initially reluctant industry which was used to its own ways of working. While the western countries and Japanese/Korean companies adopted automation as the way forward, thereby reducing waste by increasing manufacturing,

Indian companies were caught in a dilemma. India is a highly populated country, coupled with a high poverty level. Hence, automation solutions may not be welcomed as much as in the other countries. Nevertheless, they realized that the need of the hour was to eliminate waste, the underlying principle of Lean Management (LM).

Typically, LM promoted the concept of 'waste not, want not' through its emphasis on avoiding/eliminating/ minimising eight types of wastes – defects (defective products, intermediate outputs, practices), excessive processing (for example, intermediate storage of products to distributors, retailers, and then customers), overproduction (for example, large population), waiting (for example, waiting for a



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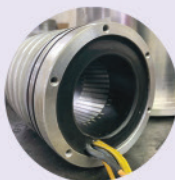
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bus in Mumbai), inventory (for example, fruits stored for more than two days will start rotting), transportation, motion (for example, movement of products from shop to shop during production) and, finally, non-utilised talent (which was added as an afterthought!). The last one is perhaps the most important in addressing the other seven wastes and controlling them; especially in light of the developments in Industry 4.0, and AI.

An interesting question is: which industry generates the maximum waste – agriculture, manufacturing or services. According to a study reported by the Indian Council of Agricultural Research in 2020, Indian agriculture generates a ‘waste’ of 350 million tonnes. The ICAR report also provides solutions on how to handle much of this waste. India also generated some 62 million tonnes per annum of solid municipal waste (2022/2023) of which some 42 million tonnes are processed. This waste is expected to go up to 162 million tonnes by 2030. Table 1 shows the tonnages of some of the key industrial wastes generated in India:



India is a highly populated country, coupled with a high poverty level. Hence, automation solutions may not be welcomed as much as in the other countries.

Some of the figures (in Table 1) are clearly underestimates, for example, blast furnace slag. According to the Blast Furnace Tracker data for 2024, India has 64 blast furnaces with a total capacity to produce 226 million tonnes per

Table 1: Major industrial wastes produced in India

Name of the Industrial Waste	Annual Production (million tonnes)
Flyash	184.14
Blast Furnace Slags	10
Steel Slag	12
Red Mud	4.71
Lime Sludges	4.5
Lead-Zinc Slag	0.5
Phosphorus Furnace Slag	0.5
Phosphogypsum	11
Jerosite	0.6
Kimberlite	0.6
Mine Rejects	750

Source: Jijo James and P K Pandian, *Soil Stabilization as an Avenue for Reuse of Solid Wastes: A Review*

annum of pig iron. About 300 kgs of slag is produced per 1000 kgs of pig iron produced. Hence, the current generation of blast furnace slag should be around 66 million tonnes, as against the figure of 10 million tonnes shown in the Table 1. One reason could be that the Table 1 is dated.

Adopting sustainable approach

Clearly, there is a case for reducing waste generation in agriculture and manufacturing industry. Such efforts will lead to sustainability of the industry. There has been a continuous effort, beginning in the early nineties, to reuse the blast furnace slag in pozzolona cement, to produce blast furnace slag cement, which can be used in construction. Granulation facilities are now standard equipment in blast furnace's in India, which will pulverise the blast furnace slag for use in cement manufacture. Such efforts should be adopted in many other manufacturing industries.

This effort can be, and, has to be done in two ways, one, to prevent waste generation, and, the other, to handle the wastes generated.

Preventive measures include improved processes, technology developments, automation, use of Industry 4.0 practices and AI. Waste management includes collection, processing, using appropriate technologies, recycling and circular economy practices. Management education can, and has, played a key role in improving manufacturing efficiencies. To cite an example, the integrated iron and steel industry, which is considered by some as a ‘pollution’ source, has achieved signal improvements over the years.

Owing to use of technologies like pelletisation of iron ore, much of the wastes generated due to handling iron ores have been substantially reduced. JSW steel and Tata Steel are leading practitioners of this technology. JSW Steel has reduced water consumption to 2.41 kl per tonne of crude steel in 20/21, down from 2.61 in 19/20, and 2.45 in 23/24. Whereas the same for Tata Steel was 2.25 in 2021/22. The auto industry has continuously reduced emissions, and is now in BI 6.0 stage in India. The hotel industry and office buildings have reduced carbon footprint by resorting to improving adherence to LEEDS standard. More and more big groups of companies are looking at circular economy processes to reduce waste by promoting reuse/ avoiding new use. Manufacturing companies are introducing changes in their operations strategies to make the total activity of manufacturing, including their supply chains, more sustainable.

SME



About the author:
R Jayaraman is the Head, Capstone Projects, at Bhavan's S P Jain Institute of Management & Research (SPJIMR). He has worked in several capacities, including Tata Steel, for over 30 years.

He has authored over 60 papers in academic and techno economic journals in India and abroad. Jayaraman is a qualified and trained Malcolm Baldrige and EFQM Business Model Lead Assessor.

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Germany's Igus Expands in India

The new Bengaluru facility represents an investment of over ₹1 billion.



Igus India has opened a new, state-of-the-art 92,000 sq ft manufacturing plant in Mandur, near Budigere in Bengaluru. This new facility is part of Igus's strategy to expand its focus on the semiconductor and renewable energy sectors, both expected to experience substantial growth. Since its establishment as a subsidiary in 2000, Igus India has become a major player in the motion plastics industry, serving over 19,000 customers across the country. The company offers an extensive catalogue of 125,000 parts, with more than 200 new products introduced annually.

The new Bengaluru facility represents an investment of over ₹1 billion. This investment is divided as follows; ₹200 million for the factory setup, ₹400 million for advanced injection moulding machines, and ₹200 million for manufacturing processes. Equipped with cutting-edge technology, the plant is designed to meet the high standards of motion plastics production, ensuring world-class products for Igus's customers.

Deepak Paul, Managing Director, Igus India, highlighted the strategic importance of this expansion, emphasising the tremendous potential of the Indian market. He noted that Igus's global focus on cost-effective and sustainable solutions aligns well with

India's approach to technology and innovation, driving significant growth in the country. Igus plans further expansion beyond Bengaluru, with new logistics and assembly centers planned in Pune, Gurugram, and Noida.

Igus India, currently the 6th largest subsidiary among Igus's 38 global subsidiaries, has seen its market growth double over the past two years, with revenue rising from ₹1.99 billion to ₹3.13 billion. The company expects this growth trend to continue, projecting revenue of ₹3.4 billion for 2024. Additionally, Igus India has invested in a clean room testing facility in Germany and plans to establish a similar facility in India to enhance product development and quality assurance.

Santhosh Jacob, Country Manager and Director, Igus India, emphasised that technology and innovation are central to the company's operations. With the ongoing expansion of its motion plastics product line and the integration of digitalisation and AI, Igus is making significant strides in embedding digitalisation as a key technology, which will be crucial for the company's future growth. Igus India also plans to focus on the emerging semiconductor and renewable energy sectors by investing in people and participating in industry-specific events with specialists from Germany.

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The Indian MCE Industry Surges Ahead

Road construction drives 35–45 per cent of Mining & Construction Equipment (MCE) sales in India followed by mining, real estate and others.

The Indian mining and construction equipment (MCE) industry has reported a 5 per cent YoY growth in volumes in Q1 FY2025 as per the initial data released by the Indian Construction Equipment Manufacturers Association (ICEMA). While this growth has been modest, compared to the 20 per cent YoY expansion seen in Q1 FY2024, the industry was, in fact, bracing for a contraction in domestic demand in H1 FY2025. This expectation was in line with the previous election cycles, driven by a slowdown in the new project award activity (due to the Model Code of Conduct in place on account of the Parliamentary Elections in April-June 2024) and the monsoon-related impact on construction activities in Q2 FY2025. Nonetheless, the performance in Q1 reflects customer optimism over the Government's sustained focus on

infrastructure development and the consequent impact on MCE demand.

Providing more insights, **Ritu Goswami**, Sector Head - Corporate Ratings, ICRA said “While the road construction activity remained weak in Q1 FY2025, relatively strong activity in mining and real estate sectors provided some support to the overall volume growth. With renewed confidence regarding policy stability towards infrastructure-fuelled economic development, the new project award activities (and MCE volumes) are expected to ramp up faster than previously anticipated in H2 FY2025.”

In Q1 FY2025, the growth in domestic sales (+5 per cent YoY) was driven by the earthmoving and concreting equipment segments, which saw 5 per cent and 8 per cent YoY growth, respectively. The road (+1 per cent YoY), material handling

(+1 per cent YoY), and material processing equipment (-2 per cent YoY) segments reported flattish volumes.

Road construction drives 35–45 per cent of MCE sales in India followed by mining (20–30 per cent share), real estate (10–20 per cent), and others. The trends seem to have been mixed across the sectors in Q1 FY2025. The execution data from MoRTH reflects a decline in road execution by 14 per cent YoY in Q1 FY2025. In contrast, mining of coal (+8 per cent YoY production as per Coal India Limited), iron ore (+4 per cent YoY in Apr-May), and limestone (+2.6 per cent YoY in Apr-May) reported continued traction, indicating strong demand momentum in the user industries like energy, steel, and cement. Healthy residential real estate demand supported concreting equipment

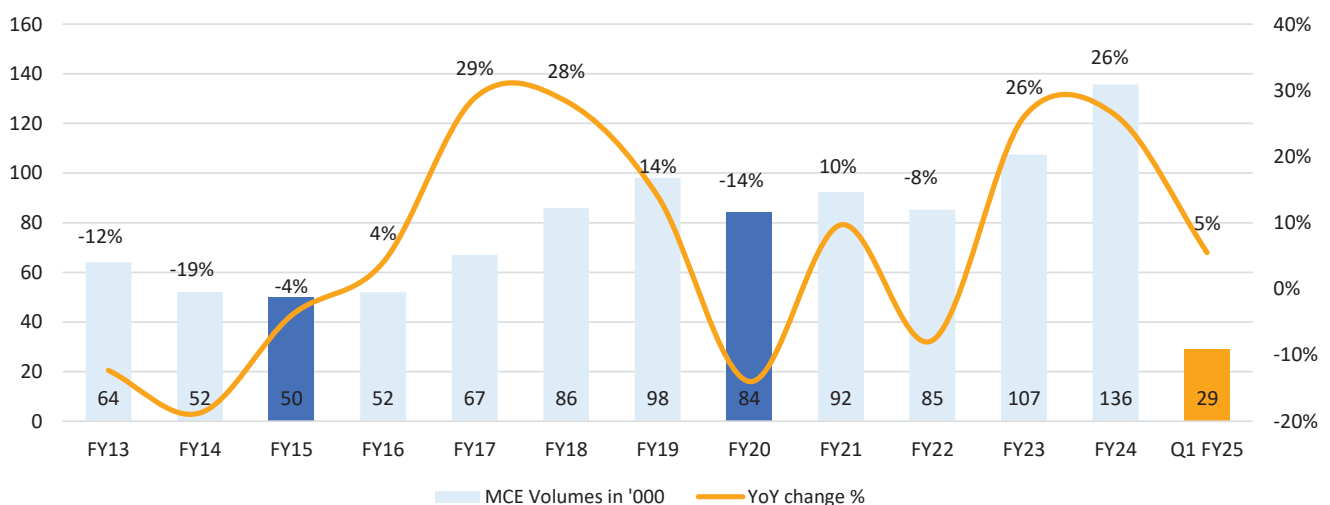
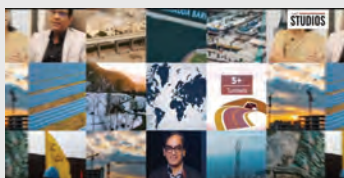


Exhibit: Trend in Indian MCE Industry Volumes

Source: ICEMA, ICRA Research

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volumes while YoY growth seen in port cargo traffic and rail freight is likely to have aided the demand for material handling equipment.

Going forward, the pace of awarding activity in the road sector has remained muted over the last 15 months due to the pending Cabinet approval for the revised cost pertaining to the Bharatmala Pariyojna-I plans; receipt of the same will be crucial for pushing up the pace of awards in the current fiscal. In other segments – healthy outlay in Budget FY2024-25 for the Jal Jeevan Mission, the PM Gram Sadak Yojana, and the PM Aawas Yojana – schemes which have been among the major drivers for new equipment demand – is a positive. While a pick-up in state government capex could yield a faster turnaround in construction activity/MCE volumes, given the severity of the monsoons in several states so far, the same will be more ascertainable only after a few months.

“While ICRA expects the construction sector gross value added (GVA) to ease to 4-4.5 per cent in Q1 FY2025 (Vs. 8.6 per cent in Q1 FY2024), the same is estimated to expand by 7.0-7.5 per cent (Vs. 9.9 per cent in FY2024) in FY2025, supporting the demand for MCE in the second half of the fiscal. An adequate order book of construction entities and their thrust on execution will support equipment utilisation levels. Some pre-buying due to the CEV-V emission norm transition in January 2025 should aid the volume

offtake in H2 FY2025. Given the better-than-expected Q1 FY2025 performance, ICRA expects a relatively moderate 5-7 per cent volume contraction in FY2025. The rental yields have softened in Q1 FY2025 compared to Q4 FY2024 levels and are expected to remain flattish on a YoY basis for the full fiscal. A material improvement in road sector awarding activity remains crucial and a key monitorable, Goswami added.



The execution data from MoRTH reflects a decline in road execution by 14 per cent YoY in Q1 FY2025.

In terms of financial metrics, given the anticipated decline in volumes, the aggregate revenues and operating margins for ICRA's sample set companies are expected to moderate in FY2025. On the cost front, steel prices have been trending upward since the first week of April 2024. In addition, container freight rates nearly tripled in Q1, owing to continued disruptions in the Red Sea region. With high import dependence, the MCE industry is likely to track the Red Sea crisis, as it could further push up commodity and other input prices, thereby impacting OEM margins.

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Prime Reset

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Features:

- Flexible and self-repairing door
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- Can be equipped with PVC vision windows
- Self-lubricating maintenance free guide
- Smooth and silent opening and closing
- Protects the traction unit, enables rapid wiring, and ensures a safe photocell
- Flexible curtain in self-extinguishing material
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- Quickly back to operation
- Control panel designed for intensive service

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(Communication provided by the management of the company)



The Indian HVAC Market Heats Up

HVAC (Heating, Ventilation, and Air Conditioning) systems are vital for creating and maintaining optimal work environments, while playing a key role in environmental responsibility. Its applications span across sectors like FMCG, ONG, chemical, pharmaceuticals and more. With a growing emphasis on sustainability and reducing ecological footprints, HVAC technology is gearing up to meet these challenges, says Sanskriti Ramachandran.



this promising growth, when compared on a global scale, the United States remains the leader in HVAC market revenue, generating a massive \$126 billion in 2024. However, the Indian market is showing remarkable potential, especially when considering the per capita revenue, which stands at \$2.64 in 2024.

India's heating and cooling market is experiencing a surge in demand due to rapid urbanisation and increasing consumer awareness about energy-efficient solutions. This trend is particularly evident in the industrial sector, where HVAC systems have become indispensable.

In today's world, where comfort and efficiency are paramount, the HVAC systems play a crucial role in maintaining optimal indoor environments. These systems are not just about controlling temperatures; they are integral to enhancing air quality, ensuring energy efficiency, and providing a healthier living and working space. As the technology behind HVAC continues to evolve, understanding the complexities and advancements in this field becomes increasingly important.

In 2024, the heating and cooling market in India has reached a significant milestone, with revenues amounting to a staggering \$3.79 billion. As the nation marches towards a more urbanised and industrialised future, this market is projected to grow at a steady annual rate of 7.01 per cent (CAGR 2024-2028). Despite

Rajarshi Datta, Director - Commercial & Healthcare, Data Centre and Manufacturing, Johnson Controls India notes, "Manufacturing facilities are energy-intensive powerhouses, contributing significantly to India's carbon footprint. As the second-largest contributor of greenhouse gas emissions in the country, the sector's impact is undeniable. In 2023, the cement, steel, and aluminium industries alone emitted a staggering 108 million tonnes of carbon dioxide equivalent (CO₂e). This alarming figure underscores the urgent need for manufacturers to adopt sustainable practices and reduce their environmental impact. HVAC systems have emerged as a critical component in this transition owing to their ability to simultaneously enhance energy efficiency and productivity within manufacturing facilities."

Market size and scope

The industrial sector in India is experiencing robust growth, with the HVAC market projected to reach \$29.4 billion by 2030 as reported by PSMarketresearch, growing at an impressive CAGR of 16.3 per cent between 2024 and 2030. This growth is driven by several factors, including rapid industrialisation, urbanisation, and increasing disposable incomes, all of which contribute to the rising demand for industrial HVAC systems.



Rajarshi Datta,
Director - Commercial & Healthcare, Data Centre and
Manufacturing, Johnson Controls India

“HVAC systems have emerged as a critical component in the transition owing to their ability to enhance energy efficiency and productivity within manufacturing facilities.”

Industrial HVAC systems encompass a wide range of equipment and solutions tailored to meet specific industry requirements. These include precision temperature and humidity control systems essential for industries like pharmaceuticals, electronics, and food processing. Additionally, large-scale air conditioning and ventilation systems are necessary for factories, warehouses, and industrial complexes. Heat recovery systems are also becoming increasingly popular as they improve energy efficiency and reduce operating costs. Furthermore, cleanroom HVAC systems are indispensable in industries with stringent air quality standards, such as semiconductor manufacturing or solar cell and battery production.

Key factors driving the demand for industrial HVAC systems include the need for advanced solutions in end-user industries like pharmaceuticals, food and beverages, electronics, data centres, and textiles. These industries require precise temperature and humidity control to ensure product quality, safety, and optimal operational conditions. Furthermore, increasing energy costs and government initiatives promoting energy efficiency have intensified the focus on energy-saving HVAC solutions. Datta highlights, “The convergence of these factors, alongside robust economic growth and the escalating impacts of climate change, presents a compelling case for the adoption of advanced HVAC solutions in Indian industries.”

Impact of regulatory standards

Governments set energy efficiency standards to encourage the use of equipment that conserves energy

and reduces greenhouse gas emissions, motivating industries to opt for more efficient systems. **Kishor Patil**, HVAC & Transport, India & SAARC Country Leader, Trane Technologies, explains, “Regulations on indoor air quality also influence decisions, pushing for HVAC systems that include advanced filtration and ventilation to ensure a healthy work environment. Additionally, meeting safety standards is essential, as HVAC systems need to adhere to specific safety requirements to protect employees and prevent accidents.”

Companies’ environmental policies, aligned with global sustainability goals, further encourage the adoption of more sustainable HVAC solutions. By upgrading to energy-efficient systems, industries can earn carbon credits, which can be traded or used to offset emissions. This creates a favourable environment for industries to choose HVAC systems that are not only efficient and reliable but also compliant with environmental regulations.

Balancing upfront costs with long-term energy savings

Upgrading to eco-friendly HVAC systems often requires a significant initial investment. However, the long-term energy savings can make it a wise financial decision. There are several strategies that industries can employ to balance upfront costs with future benefits. Patil suggests, “Opting for HVAC systems with high energy efficiency ratings is one approach. Additionally, financing options like leasing or loans can help spread out the costs, making them more manageable. Conducting a life cycle cost analysis is also crucial to compare the total cost of ownership across different systems, taking into account factors like energy consumption, maintenance, and repairs.”



Kishor Patil,
HVAC & Transport, India & SAARC Country Leader,
Trane Technologies

“Regulations on indoor air quality also influence decisions, pushing for HVAC systems that include advanced filtration and ventilation to ensure a healthy work environment.”

Investing in energy management systems can further enhance efficiency by optimising performance and pinpointing areas where energy savings can be achieved. Regular maintenance is also key to extending the lifespan of HVAC systems and ensuring they run efficiently. Industries should also explore available rebates from

utility companies or government agencies, which can help reduce the initial investment. By considering these strategies, industries can make informed decisions that balance upfront costs with long-term energy savings and environmental benefits.

Emerging trends

The HVAC sector is rapidly evolving, with new technologies and innovations making systems more efficient, sustainable, and high-performing. Key trends driving this evolution include the integration of IoT, which allows for remote monitoring, control, and optimisation, thereby enhancing predictive maintenance and energy management. Artificial intelligence and machine learning are also being leveraged to analyse data from HVAC systems, optimising performance and predicting maintenance needs, leading to cost savings and increased reliability.

Building Automation Systems (BAS) are linking HVAC with other building components, such as lighting and security, to improve overall energy efficiency and building performance. Additionally, there is a growing emphasis on renewable energy integration, with HVAC systems increasingly being paired with solar and geothermal sources to reduce reliance on traditional energy and cut operational costs.



“Today HVAC customers seek smart and new-age sustainable tech-enabled cooling solutions for their day-to-day needs.”

Abhishek Verma,
Business Head, Air Conditioners Group, PMIN,
Panasonic Life Solutions India

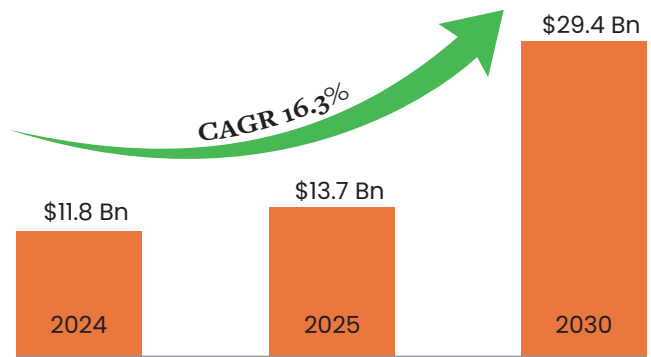
The sector is also seeing a shift towards the use of natural refrigerants or synthetic refrigerants like Hydrofluoroolefins (HFO) with low Global Warming Potential (GWP), which are more environmentally friendly.

Modular HVAC systems are gaining popularity for their flexibility, allowing them to be easily scaled to meet changing industrial needs. Even advanced filtration systems are enhancing indoor air quality by removing more contaminants, reducing health risks drastically.

As Patil notes, “These trends are driving big changes in industrial HVAC, making systems more adaptable, efficient, and sustainable to meet the demands of modern industrial settings.”

Future outlook

Despite the promising growth prospects, the HVAC



Indian HVAC Market

Source: P&S Intelligence

sector in India faces several challenges, including high initial investment costs, lack of skilled workforce, and the slow pace of adopting new technologies. However, these problems also present opportunities for innovation and growth. The focus on energy efficiency and sustainability is driving the development of new technologies and solutions that can help overcome all issues. The HVAC space in India is set for significant growth in the coming years, driven by urbanisation, infrastructure development, changing climatic conditions, and government initiatives. The Heating, Ventilation, Air Conditioning (HVAC) market, along with intelligent building solutions, is projected to reach ₹1,780 billion by 2028 according to data by The Indian Society of Heating, Refrigerating and Air Conditioning Engineers. The market is expected to see the introduction of feature-rich, IoT/AI-enabled machines that can be remotely controlled or managed online through smart devices.

Abhishek Verma, Business Head, Air Conditioners Group, PMIN, Panasonic Life Solutions India, observes, “Today an HVAC customer seeks smart and new-age sustainable tech-enabled cooling solutions for his day-to-day needs. Along with energy efficiency, the two aspects that consumers desire are sustainability and ease of operation. As a result, the market is currently moving toward smart controls, giving consumers the ability to manage their HVAC system remotely.”

The expansion of the HVAC market in India is also supported by various government initiatives, such as ‘Make in India’ – Atmanirbhar Bharat, Production Linked Incentive (PLI) schemes, and the commitment to become carbon neutral by 2070.

The HVAC market in India is on a growth trajectory, driven by increasing demand from various sectors, regulatory push for energy efficiency, and the adoption of new technologies. As the market continues to evolve, it will be essential for companies to stay ahead of the curve.



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"HVAC Systems Help Facilities Run Efficiently."

HVAC systems often requires a significant initial investment, but the long-term energy savings can make it a smart decision. There are several strategies that can help balance upfront costs with these future benefits, says **Kishor Patil**, HVAC & Transport, India & SAARC Country Leader, Trane Technologies.

Brief us on products and solutions offered by your company in HVAC space

Trane is a leading provider of HVAC solutions for industrial applications. We offer a comprehensive range of products and services designed to meet the specific needs of industrial facilities, focusing on comfort, efficiency, and sustainability.

Key products and solutions for industrial applications:

- **Chillers:** Trane offers various chiller types, including centrifugal, screw, and absorption chillers, to accommodate different cooling capacities. These chillers are designed for reliability, energy efficiency, and low noise levels.
- **Rooftop units:** Ideal for industrial buildings with limited space, Trane's rooftop units come in various capacities and configurations to meet specific requirements.
- **Air handling units:** These units deliver air distribution and filtration for industrial environments. Trane provides a wide range of air handling units with diverse features and capabilities.
- **Building automation systems:** Trane's Building Automation Systems (BAS) help optimise energy efficiency, improve indoor air quality, and enhance overall building performance.
- **Energy management solutions:** Trane offers energy management systems to help industrial facilities reduce energy consumption and lower operational costs.
- **Ductless systems:** VRF (Variable Refrigerant Flow) systems for zoned heating and cooling, which are highly flexible and efficient for varying industrial space requirements.
- **Condensing units:** Reliable solutions for refrigeration and cooling applications in industrial environments, known for their durability and



performance.

Trane is committed to providing innovative and sustainable HVAC solutions for industrial applications. Our products and services are designed to improve efficiency, reduce energy consumption, and enhance overall building performance.

Why are HVAC systems important for improving efficiency and productivity in manufacturing facilities?

HVAC systems are essential in making manufacturing facilities run more efficiently and productively for several key reasons. They help maintain a stable environment by controlling temperature, humidity, and air quality, ensuring that machinery and equipment operate smoothly, which reduces downtime and maintenance costs.

These systems also play a big role in keeping employees comfortable, leading to better morale, lower absenteeism, and higher productivity. By providing a consistent and pleasant work environment, HVAC systems make it easier for employees to stay focused and engaged. Stable conditions are also vital for protecting product quality, as temperature and humidity fluctuations can cause issues during production.

Modern HVAC systems are designed to be energy-efficient, which not only lowers operating costs but also reduces the facility's environmental footprint. Additionally, by filtering out contaminants and managing humidity levels, these systems contribute to a safer and healthier workplace, helping to prevent health problems and support overall well-being.

Overall, HVAC systems are crucial for keeping a manufacturing facility running smoothly, ensuring a comfortable and healthy environment for employees, protecting product quality, improving energy efficiency, and promoting reliability.

What is the market size and scope for industrial applications of HVAC in India? What are the key factors driving this market?

The Indian HVAC market for industrial applications is growing rapidly, driven by industrialisation, urbanisation, and an increasing focus on energy efficiency.

While exact figures for the industrial sector are hard to pin down, it is considered a significant part of the overall HVAC market in India.

Here are several key factors are fueling this growth:

- **Industrialisation:** As manufacturing continues to expand across India, more factories and plants require HVAC systems to keep operations running smoothly.
- **Urbanisation:** The fast-paced development of cities is creating a demand for modern infrastructure, including HVAC systems for commercial buildings, shopping malls, and other urban spaces.
- **Rising energy costs:** With energy prices on the rise, businesses are seeking energy-efficient HVAC solutions to help lower their operational costs.
- **Government support:** Government initiatives aimed at promoting energy efficiency and sustainable development are encouraging companies to adopt more advanced HVAC technologies.
- **Increased awareness of indoor air quality:** As concerns about indoor air quality grow, more businesses are looking for HVAC systems that offer better filtration and ventilation features.

How do regulatory standards and incentives influence the selection of HVAC systems in industries?

Regulatory standards and incentives play a crucial role in shaping the choice of HVAC systems in industries. Governments set energy efficiency standards to encourage the use of equipment that conserves less energy and reduces greenhouse gas emissions, motivating industries to opt for more efficient systems.

Regulations on indoor air quality also influence decisions, pushing for HVAC systems that include advanced filtration and ventilation to ensure a healthy work environment. Additionally, meeting safety standards is essential, as HVAC systems need to adhere to specific safety requirements to protect employees and prevent accidents.

Companies own environmental policies in line with global sustainability goals are also attractive businesses to opt for more sustainable solutions.

Industries can also earn carbon credits by upgrading to energy-efficient systems, which can be traded or used to offset emissions.

Overall, regulatory standards help create an environment that encourages industries to choose HVAC systems that are not only efficient and reliable but also aligned with environmental regulations. These factors are key in guiding industries toward selecting the best HVAC solutions for their needs.

How can industries balance upfront costs with long-term energy savings when upgrading to eco-friendly HVAC systems?

Upgrading to eco-friendly HVAC systems often requires a significant initial investment, but the long-term energy savings can make it a smart decision. There are several strategies that can help balance upfront costs with these future benefits. For instance, opting for HVAC systems with high energy efficiency ratings. Additionally, financing options like leasing or loans can help spread out the costs, making them more manageable. Conducting a life cycle cost analysis is also crucial to compare the total cost of ownership across different systems, taking into account factors like energy consumption, maintenance, and repairs.

Investing in energy management systems can further enhance efficiency by optimising performance and pinpointing areas where energy savings can be achieved. Regular maintenance is key to extending the lifespan of HVAC systems and ensuring they run efficiently. Industries should also research available rebates from utility companies or government agencies that can help reduce the initial investment. By considering these strategies, industries can make informed decisions that balance upfront costs with long-term energy savings and environmental benefits.

How is the HVAC market expected to evolve in the next five years?

The HVAC market is set to grow steadily over the next five years, driven by several important factors. As cities expand rapidly, especially in developing countries, there will be an increasing demand for HVAC systems in both homes and businesses.

What are your plans to further tap the HVAC market? (in terms of developing new technologies, expanding production capacity, tapping new end-user industries, exports, etc)

We are committed to introducing new innovations across HVAC&R that tie-in well with India's sustainability and growth mission. Our product innovations during the COVID-19 phase are the testimony of how we take people's health, customer efficiency and energy efficiency seriously. We will continue to tread this path.



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“The Indian HVAC Market is Approximately \$5.8 Billion.”

Along with energy efficiency, the two aspects that consumers desire are sustainability and ease of operation. As a result, the market is currently moving toward smart controls, giving consumers the ability to manage their HVAC system remotely, says **Abhishek Verma**, Business Head, Air Conditioners Group, PMIN, Panasonic Life Solutions India.

What is the market size and scope for industrial applications of HVAC in India?

The Indian HVAC market is approximately \$5.8 billion, including residential, commercial air-conditioning, ventilation and other ancillary products. The market is projected to grow by another 16 per cent - 17 per cent, out of which the industrial application would roughly be 20 per cent, i.e., \$1.2 billion.

There are several factors that contribute to the rise in demand for HVAC industry such as urbanisation, technological advancements, government initiatives and growing awareness to name a few.

For instance,

- **Increased industrialisation:** Rise in Indian economy and the parallel exponential industrial growth is creating a demand for commercial ACs across office/institutions /manufacturing plants.
- **Local manufacturing boost:** GOI's schemes such as PLI have been a game-changer for the AC industry increasing domestic value addition from 25 per cent to 45 per cent within a year and a half of its launch. The objective is to reach to 75 per cent value addition by FY28 and this will help further boost the demand for AC industry at large.

How can industries balance upfront costs with long-term energy savings when upgrading to eco-friendly HVAC systems?

Inverter air conditioners are more energy-efficient than conventional air conditioners, which can justify the higher upfront cost in many cases. Inverter ACs use variable-speed compressors that adjust their output to match the cooling demand, rather than running at a fixed, maximum capacity like standard units.



What are the emerging trends in HVAC technologies ?

Some of the trends seen across the HVAC industry are with respect to energy efficiency, sustainability, and improved indoor air quality. In the case of:

1. Energy efficiency:

- Variable speed inverter technology: They help reduce operational costs
- Heat recovery systems: These systems capture waste heat from industrial processes and use it to heat or cool other areas of the facility.
- Smart controls: Uses technology to

optimise HVAC system performance, reducing energy consumption and improving efficiency.

2. Sustainability:

- Green refrigerants: such as R410a and R32 (low O-depletion tech) are being used in our HVAC to lower environmental impact

3. Indoor air quality:

- Advanced filtration systems: Panasonic's nanoe™X and nanoe™MG technologies, helps ensure a healthy indoor AQI by eliminating PM 2.5 particulate matter, dust particles, bacteria, and viruses.

4. IoT and smart HVAC:

Additionally, HVAC industry has seen an increase in demand of modular chiller applications.

How is the HVAC market expected to evolve in the next five years?

Today an HVAC customer seeks smart and new-age sustainable tech-enabled cooling solutions for his day-to-day needs. Along with energy efficiency, the two aspects that consumers desire are sustainability and ease of operation. The market will soon see feature-rich, IoT/AI-enabled machines that may be remotely or online over internet, through smart devices.

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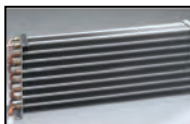
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"Automation Plays a Key Role in the T&M Industry."

Smart manufacturing and Industry 4.0, which are gaining traction across industries, necessitate continuous monitoring and testing. This in turn is encouraging the adoption of advanced test & measurement (T&M) solutions. According to **Sanjay Sangam**, Head of Sales and Marketing, India, Renishaw Metrology Systems Ltd, the integration of artificial intelligence (AI) and machine learning (ML) is revolutionising the T&M equipment industry. In this interview with Rakesh Rao, Sanjay Sangam highlights factors driving demand for advanced T&M solutions in India.

Globally, Renishaw has completed 50 years. How do you see Renishaw's journey in India?

Renishaw has spent 50 years engineering change globally, and its journey in India is a testament to this legacy. Established in 1973 by Sir David McMurtry, Executive Chairman, and John Deer, Non-Executive Deputy Chairman, Renishaw's first product, the touch-trigger probe, revolutionised three-dimensional coordinate measurement. This innovation laid the foundation for accurate measurement of machined components and assemblies, which has been pivotal for various industries in India.

In India, Renishaw has made significant investments in manufacturing facility at Pune and technology centres, including major hubs in Pune, Bengaluru, Vadodara, Gurugram and Chennai. These centres are crucial for customer demonstrations, training, and application development, reflecting Renishaw's commitment to supporting local industries.

Renishaw's product offerings in India include advanced metrology equipment, spectroscopy products, and smart manufacturing software, catering to key industries such as automotive, aerospace, medical devices, and precision manufacturing. The company's dedication to research and development (R&D), with around 13-18 per cent of annual sales invested in R&D, has enabled the delivery of solutions that provide unparalleled precision, control, and reliability.

Renishaw's growth in India has been driven by the expanding machine tool industry and increasing demand in both domestic and export markets. Their strategic investments in people, product development, and production capacity are underpinned by a commitment



to sustainability, ensuring we continue transforming tomorrow together.

For the company, what is the significance of the recently opened new technology hub in Chennai?

Since initiating operations in 2008 from a small office in Anna Nagar, Chennai, Renishaw India has grown significantly. The new office and technology centre - opened on 9 May 2024 at Unipunch Crown, Ambattur Industrial Estate, Chennai - encompasses a comprehensive office and a

state-of-the-art technology centre designed to serve the burgeoning markets in Chennai, Coimbatore, and Trichy. India is currently experiencing a dynamic period of growth, making it an exciting time to be part of this market. The machine tool industry is expanding, new investments are flowing in from abroad, and both the domestic and export markets are seeing significant demand. Renishaw is at the heart of this growth, actively supporting the precision manufacturing sector.

We view Chennai as a critical market and believe this centre will significantly enhance the capabilities of our customers and OEMs, helping to drive their businesses forward. The establishment of new technology centre in Chennai was critical for Renishaw India. Chennai's strength in the automotive sector and its robust local supply chain ecosystem necessitated new investments. Post-pandemic, we have seen sectors such as electric vehicles and consumer electronics investing in Tamil Nadu, with the city growing in multiple dimensions.

The new facility is strategically designed to more effectively serve Renishaw's customers and partners in the Tamil Nadu region. It provides a significant

advantage for potential buyers to test their components using the latest technology before investment and serves as a training hub for students, OEMs, Customers, and the Renishaw staff, and channel partners. With a robust team and advanced technological solutions, Renishaw continues to strengthen its global presence and leadership in precision engineering.

How do you analyse the market for the test & measurement (T&M) equipment in India?

The market for test & measurement equipment in India is experiencing robust growth, driven by several key factors and industries. From Renishaw's perspective, we see a significant demand coming from sectors such as automotive, aerospace, electronics, and telecommunications. The automotive industry is a major driver, especially with the push towards electric vehicles and the need for precise measurement and quality control in manufacturing processes. Similarly, the aerospace sector demands high-precision measurement solutions to ensure the safety and reliability of components. The electronics industry is another critical area, particularly with the rise of consumer electronics and the need for rigorous testing and measurement to maintain quality standards.

Additionally, the Indian government's focus on smart manufacturing and Industry 4.0 is encouraging the adoption of advanced T&M solutions. This includes the integration of IoT and automation in manufacturing processes, which necessitates continuous monitoring and testing.

Overall, the combination of technological advancements, industry-specific demands, and government initiatives is driving the growth of the T&M equipment market in India. Renishaw is well-positioned to support this growth with our innovative solutions and commitment to enhancing manufacturing efficiency and productivity.

How is Renishaw meeting the requirements of auto and auto component companies with the auto industry undergoing transformation (such as EVs, increased usage of electronics, etc)?

Renishaw is at the forefront of supporting the automotive industry's transformation, particularly with the shift towards electric vehicles (EVs) and the increasing integration of electronics. Our advanced metrology and process control solutions are crucial in this transition. For instance, our process control solutions help automotive manufacturers achieve higher precision and consistency in their production processes. This is especially important for EV components, which

require stringent quality control to ensure reliability and performance. We provide comprehensive training and support through our technology centres in Pune, Bengaluru and Chennai. These centres offer local industries access to cutting-edge metrology solutions and expertise, enabling them to fully leverage our technologies to improve their manufacturing processes. Overall, Renishaw's solutions are designed to help automotive and auto component companies navigate the complexities of this transformation, ensuring they can produce high-quality, reliable components efficiently and cost-effectively.

What are some of the emerging trends to watch out for in the T&M equipment industry?

The integration of AI and machine learning is revolutionising the industry by enabling predictive analytics and anomaly detection, which enhance fault detection, predictive maintenance, and overall system reliability. The adoption of 5G and wireless technologies is unlocking new possibilities in wireless test and measurement, crucial for optimizing network performance and device testing. IoT integration is becoming increasingly prevalent, with IoT-enabled devices autonomously collecting and transmitting data, facilitating remote monitoring and real-time feedback. This connectivity allows for immediate adjustments and enhances overall efficiency.

Additionally, automation is playing a significant role in the T&M industry, streamlining processes and reducing human error. There is also a growing emphasis on sustainability and energy efficiency, with companies seeking solutions that enhance productivity while reducing environmental impact. Renishaw is committed to developing technologies that support these trends, ensuring we meet the evolving needs of our customers.

What are your growth plans for Renishaw in India?

We are focused on increasing market reach evidenced by our new technology centre in Chennai and Bengaluru, which opened in May 2024 and December 2022 respectively. These facilities enhance our ability to meet the rising demand for advanced metrology solutions. Innovation remains at the heart of Renishaw, and we are continually developing new products to cater to the evolving needs of our customers.

We are also targeting growth in various industrial segments beyond automotive, such as aerospace, medical devices, electronics, and renewable energy. Additionally, we are committed to sustainability, integrating eco-friendly practices into our operations and developing energy-efficient products.



“AI will be Integral in Test & Measurement in the Future.”

Rising consumption of electronic components & products across industries is expected to lead to manifold increase in demand for the test & measurement (T&M) equipment in India. T&M equipment market is poised to grow well in future, says **Madhukar Tripathi**, Associate Director – Marketing & Business Development, Anritsu India Pvt Ltd, in this exclusive interview with Rakesh Rao.

How is Anritsu serving its customers in India?

Anritsu has been in India market since long time through its channel partners and later direct presence. Anritsu offers a wide range of test and measurement solutions for various technologies such as 3G, 4G, 5G & 6G, short wireless, Bluetooth, WiFi, RF & MW, millimetre Wave and Optical Fiber Communication. Anritsu test solutions are used in research & development, production, field testing by many industries such as mobile handset, mobile chipset, antenna, cable, network equipment manufacturers (NEMs), mobile network operators, internet service providers (ISPs), regulators, IoT, test house/labs, data centre, broadcast, education, automotive, satellite, aerospace, defence, navy and many more.

How is Anritsu helping companies to increase their efficiency and productivity?

Anritsu test and measurement solutions offers a unique value proposition to end user by very easy to use graphical user interface (GUI), meeting industry standard /specification, flexible, scalable option to meet future need. Easy GUI ensures learning curve is very short for instrument usage. All instruments are equipped with USB and Ethernet interface for automation. This is very useful in production and R&D environment.

SEEK- Network Master Pro MT1000A uses unique GUI known as Scenario Environment Editor Kit (SEEK) which makes less skilled worker to use 10G/100G/400G Ethernet testing without knowing more details of network or instrument. Any skilled team member can program instrument, create a short cut button at instrument and instrument is ready to use without issue. Test sequence, test results format, pass fail judgment etc are defined in SEEK and this saves time in measurement and improves productivity.



Similarly Access Master MT9085x series OTDR have Fiber Visualizer™ which provides network information in image format, very easy to understand network connection, network element, loss, fault location etc.

What factors/industries are contributing to the growth of the test & measurement (T&M) equipment in India?

India market is growing and poised to grow well in future. Various central and state government initiatives - based on

Make In India, Design & Development in India concept - are enabling industry growth. Many electronic clusters are being set up to promote Indian companies. State incentives have seen big success. Performance linked incentives (PLI) have seen good results and many consumer electronics and automotive companies are taking lead in production and have reached to Rs 34.01 billion as on May 31, 2024 for all sectors. Recent announcement by the government for reimbursement of testing charges for startups will help start ups and save capital.

As per GSMA, India is on its way to becoming the second-largest smartphone market globally by 2025 with around 1 billion installed devices and is expected to have 920 million unique mobile subscribers by 2025 which will include 88 million 5G connections. These are positive sign for growth of T&M industry. Defence industry has also reached new heights under Make in India (Atmanirbhar Bharat) initiative. India is among the top five military spenders and one of the emerging defence manufacturing hubs in the world. To support the growth of the defence sector and enhance manufacturing capacity in the sector, two Defence Industrial Corridors are being set up in India - one each in Uttar Pradesh and Tamil Nadu.

What are some of the emerging trends to watch out for in the T&M equipment industry?

Artificial intelligence (AI), machine learning (ML), hyperscale data centres, digital transformation, 6G R&D, EV, non-terrestrial network (NTN), Red Cap, etc are few emerging trends worldwide which will need new type of T&M. 5G is being deployed in more countries and now its time for 5G monetization along with creating more use cases. 5G Advanced & Red Cap (5G reduce capability) are new tech trends getting momentum worldwide. NTN is hot topic now and will be emerging in days to come.

Future T&M will be more software based, supporting cloud, remote operation support. AI will be in integral part of T&M in future.

With the auto industry undergoing transformation, How are changes in the auto industry leading to changes in the requirement of T&M equipment?

India's electrical vehicle (EV) market is expected to expand at a compounded annual growth rate (CAGR) of 45.5 per cent between 2022-2030, with the segment's

volumes set to cross annual sales of 16 million units by 2030. EV has increased demand of T&M in automotive sector.

General purpose (GP) and EV specific T&M have witnessed significant growth worldwide. Consumers have accepted connected car feature very well and EVs will add to the growth of electronics segment in automotive industry.

Which non-auto sectors are emerging as the key demand drivers for T&M equipment?

Aerospace, defence, education, telecom (5G & 6G), power (utility), EV automotive, telecom system integration etc are emerging areas for T&M sector.

How do you plan to take forward the growth of Anritsu in India?

Anritsu India is committed to support Indian customers by increasing sales, technical support team. We also recruit in R&D division and has been expanding our reach with new channel partners across India. Anritsu India has been ramping up repair and calibration facility in India every year.

SME

News Snippet

Teledyne FLIR IIS launches Forge 1GigE SWIR camera series

Teledyne FLIR IIS, a Teledyne Technologies company has introduced the Forge 1GigE SWIR (Short Wave Infrared) 1.3 MP camera. The first camera in the Forge 1GigE SWIR series is equipped with a wide-band and high-sensitivity Sony SenSWIR 1.3 MP IMX990 InGaAs sensor. The advanced sensor captures images across both visible light and SWIR light spectrums (VisSWIR) with 5µm pixels, providing an extended spectral range from 400nm to 1700nm. This capability enhances anomaly detection and material analysis, making it ideal for applications such as industrial semiconductor inspection, food and beverage quality control, recycling, security surveillance, environmental monitoring, precision farming, and more.

"We're excited to introduce the Forge SWIR camera series to grow our imaging portfolio from the visible spectrum to SWIR wavelengths. The series expands on Teledyne's SWIR line scan expertise to boost a range of



2D area scan applications such as industrial inspection, environmental monitoring, and recycling," said Sadiq Panjwani, General Manager at Teledyne IIS. The new camera features a design measuring 40mm x 40mm x 43mm that balances a compact size with superior image quality.

Forge 1GigE SWIR includes advanced camera features such as Pixel Correction, Sequencer with ROI (Region of Interest), Logic Block, and Counter which provide reliable and precise control for variety of complex applications.

All IIS cameras are supported by Teledyne software development kits (SDK) Spinnaker 4 and Samera Processing and a powerful Trigger-to-Image Reliability (T2IR) framework. T2IR is a set of programmable functions within the Teledyne SDK that combine hardware and software features that work together at a system level to help improve the reliability and accuracy of inspection systems.

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“Rising Automation pushes need for T&M equipment.”

With industries seeking advanced equipment to meet regulatory requirements and support their sustainability initiatives, the testing and measurement (T&M) sector is witnessing strong growth. In this interview, **Manish Dixit**, Sales Director – Instrumentation, ABB India, elaborates on factors contributing to the growth of T&M sector and the company's plans to tap opportunities in the sector.

Kindly brief us about ABB Measurement & Analytics' operations in India.

The Measurement & Analytics Division has three key business areas – Instrumentation, Analytical, and Force Measurement Products & Solutions. With over a century of experience serving customers worldwide, we have had a presence in India for several decades. ABB features a newly established Smart Instrumentation Factory and a specialised System Integration Unit for analytical measurement solutions in India. These facilities are crucial in delivering advanced products and solutions, specifically designed for energy sectors. Our products are integral to optimising process industries by providing accurate measurements for parameters such as flow, pressure, level, and temperature. Additionally, our smart positioners enhance precision in process control.

ABB solutions are pivotal in managing emissions and ensuring product quality with advanced gas and liquid analytical measurement technologies. We also support utilities in managing water resources through precise measurements of quantity and quality. Our technologies extend to diverse applications, including deep-sea exploration and greenhouse gas measurement for space missions. Globally, we operate 15 factories and system integration units, with the Bengaluru facility playing a critical role in our operations in India.

How is increasing awareness about pollution control in industries leading to growth in demand for testing and measurement equipment?

As the focus on pollution control and sustainability has intensified in India, industries are increasingly recognising the critical importance of managing effluents and emissions. The evolving regulations have had a



positive impact on the measurement and analytical business. Industries are now more aware of the need for precise measurement of various parameters that were previously neglected. As a result, there is a growing commitment to achieving sustainability goals, with companies allocating appropriate budgets to address environmental challenges.

This shift has driven substantial growth in the testing and measurement sector, as businesses seek advanced equipment to meet regulatory requirements and support their sustainability initiatives. At ABB,

sustainability is central to our development efforts in the measurement and analytics portfolio, reflecting our commitment to supporting industries in their environmental and regulatory compliance goals.

What is the effect of digitalisation/automation on the T&M equipment industry?

Testing & measuring equipment is the backbone of any effort towards digitalization and automation. As digitalization and automation aspirations grow, the need for advanced T&M equipment has risen, prompting more research and development in the industry. This has led to the creation of equipment that supports both wired and wireless digital networks, enabling data to be accessed centrally and remotely at any time. Consequently, this accessibility has facilitated data analytics and AI-driven solutions, enhanced process efficiency and improving asset management.

Digitalization, automation, artificial intelligence (AI), the Internet of Things (IoT), and data analytics are at the forefront of this transformation. These advancements are not only reshaping various industries but also driving increased efficiency and fostering innovation.

What factors are contributing to your business growth in India?

ABB has adeptly met the evolving measurement needs of the market with its extensive portfolio of measurement and analytical solutions. In the intricate landscape of process industries, which involves numerous measurement points across plants, ABB provides precision instruments renowned for their exceptional repeatability. Our focus has been on delivering solutions that are both globally proven and well-suited to local requirements. To support this goal, we are strategically investing in our manufacturing and system integration capabilities in India. Our substantial user base in India not only supports our solutions but also helps expand our business by sharing positive feedback with industry peers. Given the promising future forecasts for our target segments and our strong portfolio of solutions, we are confident in the robust growth prospects for our business in India.

What are your growth plans for India?

ABB views India as a crucial growth market with enormous potential. The company is dedicated to attaining substantial growth in the upcoming years and

plans to make significant investments in water, sanitation, infrastructure, and emissions monitoring projects. The recent launch of our smart instrumentation factory in Bangalore is just the start of ABB's ambitious strategy for India. To leverage local expertise, ABB is also focused on expanding its R&D efforts in India.



As digitalization and automation aspirations grow, the need for advanced T&M equipment has risen, prompting more R&D in the industry.

The company sees India not just as a market for its products and solutions but as a center for innovation and export. With its focus on digitisation, sustainability, and smart manufacturing, ABB is positioned to be a major participant in India's industrial advancement as it gets ready for the next five years.

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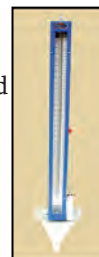
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“Cooper Corp sees big opportunities in aerospace & defence sector”



A firm believer in the tenet of Make in India, the 79-year-old **Farrokh N Cooper**, Chairman and Managing Director of Cooper Corporation Pvt Ltd, is the doyen of industrial excellence and the epitome of business practices which place customer satisfaction and social good at the core. Under his leadership, the 100-year-old Satara (Maharashtra) based Cooper Corporation has emerged as a pioneer in the field of manufacturing world-class engines, gensets and auto components which cater to Indian as well as global customers. In this interaction with Rakesh Rao, Farrokh Cooper highlights challenges and opportunities before the Indian manufacturing sector, and the company's plans to tap emerging trends in the industry.

How do you see the journey of Cooper Corporation over the years?

Cooper Corporation's journey has been one of consistent growth, global expansion, and innovation. Since its inception in 1922, the company has evolved from producing diesel engines and ploughs to becoming a diversified engineering leader with a wide product portfolio, including engines, gensets, and automotive components. Today, Cooper Corporation exports to over 30 countries, establishing a strong international presence. The company's growth is underpinned by significant investments in advanced manufacturing facilities and a relentless focus on research and development (R&D).

Cooper's cutting-edge technology and industry-

leading innovations in fuel efficiency, emission control, and performance optimisation have positioned it as a trailblazer in its field. As it looks to the future, Cooper Corporation remains committed to expanding its product offerings and global footprint. The upcoming launch of a state-of-the-art tractor is a clear testament to its forward-thinking vision and dedication to delivering advanced, high-quality solutions that meet the needs of an ever-changing market.

In February this year, Cooper Corporation expanded its manufacturing capabilities in Satara (Maharashtra). What is the significance of this move for your company?

The expansion of our manufacturing capabilities in Satara earlier this year marks a significant milestone for Cooper Corporation. It underscores our commitment to scaling up operations to meet growing domestic and global demand while reinforcing our focus on innovation and quality. This move enhances our production capacity, enabling us to cater to a broader market and introduce more advanced products across our portfolio. By expanding our facilities, we are better equipped to integrate cutting-edge technologies, streamline processes, and maintain the high standards of precision engineering we are known for. Additionally, this expansion supports our efforts in boosting exports, allowing us to further strengthen our presence in international markets, particularly in regions like Southeast Asia and the US.



The focus on compact, lightweight engines is growing, and we are meeting this need with high-performance solutions for automotive, defence, and off-highway applications.

Ultimately, this development reflects our vision for long-term growth, not just in terms of scale but in our ability to continuously push the boundaries of engineering excellence. It positions Cooper Corporation to seize new opportunities, stay ahead of industry trends, and drive sustained success in a competitive market.

What has been the contribution of automotive and other industrial sectors to the company's order books?

The automotive sector, including off-highway vehicles, has been a significant contributor to Cooper Corporation's revenue and order books. Our precision-engineered engines, components, and gensets have found wide applications across this sector, driving a substantial portion of our business. The demand from the automotive industry has been consistent, supported by our strong focus on delivering high-performance, fuel-efficient solutions that cater to stringent emission standards and diverse operational needs.

Similarly, the industrial sector, spanning segments like defence, railways, and power generation, has played a pivotal role in our growth. Our products cater to a wide

range of applications, ensuring a balanced revenue stream across various sectors. The synergy between these automotive and industrial segments has been crucial in driving sustained business growth, enabling us to maintain a healthy and diversified order book. As these industries continue to evolve, we remain focused on enhancing our offerings to meet their emerging requirements, contributing to our overall financial stability and future growth trajectory.

How do you see the future of the transportation sector? What are your plans to tap these changes?

The transportation sector is evolving rapidly, driven by shifts toward cleaner, more sustainable fuel options and advancements in engine technology. We anticipate a growing emphasis on hybrid and electric powertrains, alternative fuels (like CNG and hydrogen), and engines that comply with stringent emission norms. As the industry transitions, the focus will increasingly be on energy efficiency, reduced environmental impact, and innovative engine solutions. To align with these changes, Cooper Corporation is actively investing in R&D aimed at enhancing our product portfolio.

Our goal is to stay at the forefront of these trends, providing cutting-edge solutions that cater to the diverse needs of the evolving transportation sector. By integrating advanced technologies and adapting to regulatory shifts, we aim to continue delivering high-performance, reliable, and eco-friendly engines that align with industry demands. This proactive approach ensures that Cooper Corporation remains a key player in the next generation of transportation solutions.

Cooper Corporation provided vital components for Chandrayaan 3 mission. What kinds of opportunities are you exploring in the aerospace & defence sector going forward?

Cooper Corporation's contribution to the Chandrayaan 3 mission underscores our capabilities in delivering high-precision components for critical applications. Building on this success, we see significant opportunities in the aerospace and defence sectors. These industries demand cutting-edge technology, reliability, and precision—areas where Cooper Corporation excels.

Going forward, we aim to expand our presence in these sectors by focusing on developing advanced components and systems that meet the rigorous standards required for aerospace and defence applications. This includes high-performance engine components, specialised gensets, and precision-engineered parts designed for military vehicles, aircraft,

and space exploration initiatives.

As we deepen our expertise, we look forward to forging strategic partnerships and collaborating with key players in the aerospace and defence industries to further establish Cooper Corporation as a trusted partner in these high-growth areas.

With industries looking for decarbonisation strategies for growth, how is Cooper Corporation helping its customers in this transition??

Cooper Corporation is dedicated to helping its customers transition toward decarbonization by offering energy-efficient, low-emission engines that meet stringent global standards, along with exploring alternative fuel options such as hydrogen, biofuels, and hybrid solutions.

The company's gensets and power systems are designed with enhanced fuel efficiency and reduced emissions, aligning with sustainable growth strategies. Additionally, Cooper Corporation's significant investments in R&D drive innovation in cleaner technologies and green manufacturing processes, ensuring that its products actively contribute to a more sustainable future while supporting industries in achieving their decarbonization goals.

How is Cooper Corporation gearing up to tap emerging trends in the industry?

We are seeing key trends like sustainability, digital transformation, and localised supply chains shaping the industry. There's rising demand for cleaner, fuel-efficient solutions, and Cooper Corporation is responding by developing low-emission engines, exploring alternative fuels like hydrogen. The adoption of smart manufacturing and Industry 4.0 is critical, and we are modernising our facilities with automation and data analytics to enhance efficiency and quality.

Additionally, the focus on compact, lightweight engines is growing, and we are meeting this need with high-performance solutions for automotive, defence, and off-highway applications. By aligning with these trends and prioritising R&D, Cooper Corporation is well-prepared to seize emerging opportunities and drive continued growth.

Government has launched various initiatives under AatmaNirbhar Bharat scheme. Are you seeing the effect of these initiatives on the ground?

Yes, we are already witnessing the positive impact of the AatmaNirbhar Bharat initiatives, including the Production Linked Incentive (PLI) schemes, on the ground. These initiatives have created a more favourable environment for domestic manufacturing, encouraging greater investments, and boosting production capabilities across various sectors. For Cooper Corporation, the PLI scheme has provided a strong incentive to enhance our production capacity, focus on high-quality local manufacturing, and increase our competitiveness in global markets.

Additionally, the government's push for self-reliance has spurred innovation, enabling us to explore new opportunities, expand our product range, and contribute more actively to critical sectors such as defence, aerospace, and automotive. The emphasis on local sourcing and indigenous development is fostering collaboration within the industry and helping us strengthen our supply chains. Overall, these initiatives are driving growth, improving efficiency, and reinforcing the country's industrial base, aligning with our long-term vision for expansion and technological advancement.

What are your growth plans for Cooper Corporation?

Our growth plans for Cooper Corporation are centred on capacity expansion, product diversification, and tapping into new markets. We are significantly enhancing our manufacturing capabilities in Satara to meet rising demand across various sectors.

On the product front, we are focusing on launching advanced engines and gensets tailored for emerging applications in automotive, defence, and industrial segments, while also exploring alternative fuels like hydrogen and hybrid solutions. Diversification is a key priority as we aim to expand our portfolio into newer domains such as alternate fuel powertrains, alongside exploring opportunities in the aerospace and defence sectors. Export growth is another vital focus area, where we plan to increase our footprint in international markets by offering high-quality, cost-competitive solutions.

With investments in R&D, we are committed to continuous innovation, ensuring that our products remain at the forefront of technological advancements. By aligning our expansion and diversification strategies with global trends, Cooper Corporation is well-positioned for sustained growth and leadership in the industry.

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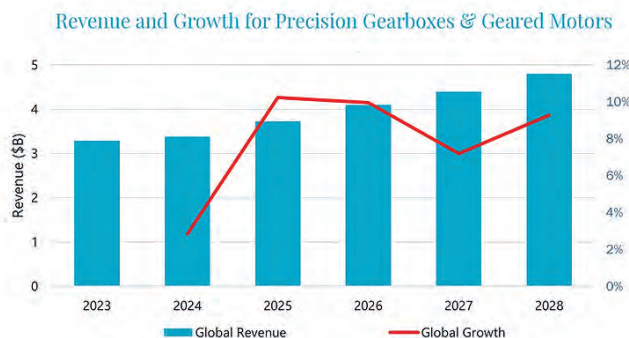
Mobile Robots Grow Precision Gearbox Market

The global market for precision gearboxes and geared motors used in mobile robots is predicted to reach a CAGR of 45.9 per cent out to 2028. This large growth will far outperform the wider automation market, comments **Jonathan Sparks**, Research Analyst, Interact Analysis.



The global precision gearbox and geared motors market is expected to generate revenue of \$3.4 billion in 2024, which is up 2.9 per cent from 2023. However, over the next five years we predict a steady growth rate of 7.9 per cent, with 2025 expected to be a strong rebound year and offering the biggest annual growth (10.2 per cent).

This is expected to drive growth in the global precision gearbox and geared motors, which is forecast to increase from \$3.3 billion in 2023 to \$4.8 billion in



Global precision gearboxes and geared motors has growth of 7.9 per cent over the next 5 years

Source: Interact Analysis

2028, with a compound annual growth rate (CAGR) of 7.9 per cent. The largest growth overall is attributed to planetary precision gearboxes and geared motors, where we anticipate a CAGR of 10.2 per cent, taking revenue from \$1 billion in 2023 to nearly \$1.8 billion in 2028.

Definitions are provided below for coaxial planetary precision gearboxes and geared motors, both of which are covered in this insight and also in the 'Precision Gearboxes and Geared motors 2024 report', from which the data and analysis outlined here is taken:

Coaxial Planetary Precision Gearboxes:

These comprise of a sun gear, planetary gears & carrier; and satellite gear. Examples include the CP series (Wittenstein) and P series (Stoeber).

Coaxial Planetary Precision Geared Motors: A combination of planetary gearbox and servo motor. Examples include the PS.F series (SEW Eurodrive) and SIMOTICSS-1FK2 (Siemens).

Planetary gearboxes do not offer the highest levels of precision, found with devices such as strainwave and cycloidal precision gearboxes (which most commonly have a backlash of <1 arc minute). However, they still have very low backlash ratings, which make them a cheaper and efficient alternative, especially in mobile robots where the "smoothness" of their acceleration and motion can be a benefit.

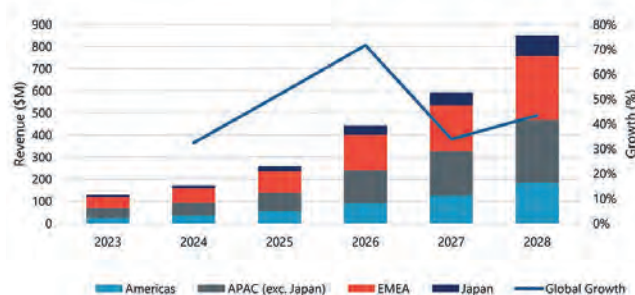
The mobile robot market has continued to outperform most other industries in recent years and the growth and appetite does not seem to be as heavily affected by the slowdowns felt in other industries. Our forecast for the mobile robots market has dampened from previous years, but we still expect to see consistent growth of between 30-50 per cent out to 2028.

Planetary gearboxes and geared motors will continue to benefit from this substantial growth. With all major regions showing significant growth out to

2028, we predict Japan will benefit from the highest CAGR (60.2 per cent), followed by the Americas (49.5 per cent), APAC (44.3 per cent), and then EMEA (42.3 per cent).

We forecast the global market for precision gearboxes and geared motors in the mobile robots

Revenue and Growth by Major Region for Mobile Robots



Precision gearbox and geared motors to benefit from continued growth in the mobile robots industry

Source: Interact Analysis

market to grow from \$129 million in 2023 to over \$850 million in 2028.

Fixed industrial robots and co-bots

While mobile robots offer by far the strongest growth potential for precision gearboxes and geared motors, it would be remiss not to discuss the industrial robots industry, as this is by far the most important largest user of precision gearboxes. Prior to a slowdown in 2022 and 2023, industrial robots and collaborative robots experienced strong growth and this led to strong growth for the precision gearbox and geared motors market.

The global market for precision gearboxes used in industrial robots was worth just over \$1 billion in 2023, and we forecast this will grow to over \$1.3 billion (with a CAGR of 5.5 per cent) for the period to 2028. Once one of the biggest growth industries for precision geared products, we now believe that the global market for industrial robots and co-bots has slowed considerably since 2022.

Most industrial robots consume 6 precision gearboxes, with larger axes serving bigger payloads generally consuming cycloidal gearboxes, and the smaller axes and lower payloads consuming strainwave gearboxes. If substantial growth returns in this industry in the future it will stimulate sharp growth once again in the overall precision gearbox and geared motors market.

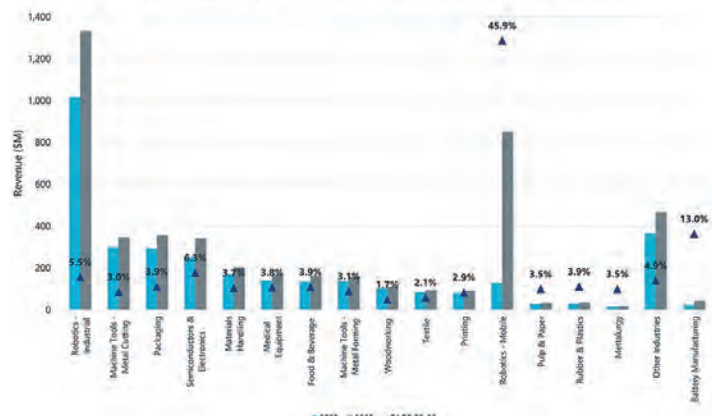
Definitions are provided below for coaxial cycloidal and coaxial strainwave precision gearboxes and geared motors, both of which are covered in this insight and

also in the Precision Gearboxes and Geared motors 2024 report, from which the data and analysis outlined here is taken:

Coaxial Cycloidal Precision Gearboxes: These comprise of an input shaft, an eccentrically mounted bearing, a cycloidal disc (or discs), ring pins and output rollers and shaft. Examples include RDS-E (Nabtesco) and the TS series (Spinea).

Coaxial Strain Wave Precision Gearboxes: These comprise of a rigid circular spline, flexible internal

Industries for Precision Gearbox/Geared Motors



Industrial robots are the largest industry for precision gear products, but for how long?

Source: Interact Analysis

spline and wave generator; also referred to as harmonic gearboxes. Examples include CSG-2UH (Harmonic Drive) and Flexwave (Nidec).

Although precision geared products still remain tightly aligned with the industrial robots industry, it is clear that mobile robots offer the largest growth potential currently for this market. Companies active in the planetary gearbox market will have the best exposure to this as they are the main gearbox type utilised by the mobile robot market.

One final thought, however, is this; if humanoid robots find a place in industry, then this could serve as a large potential growth driver for precision gearboxes – as it's believed that even the simplest humanoid robots would likely utilise a minimum of approximately 30 precision gearboxes. What products will be best suited to this application and which companies will be able to win in this market still remains to be seen.

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About the author:

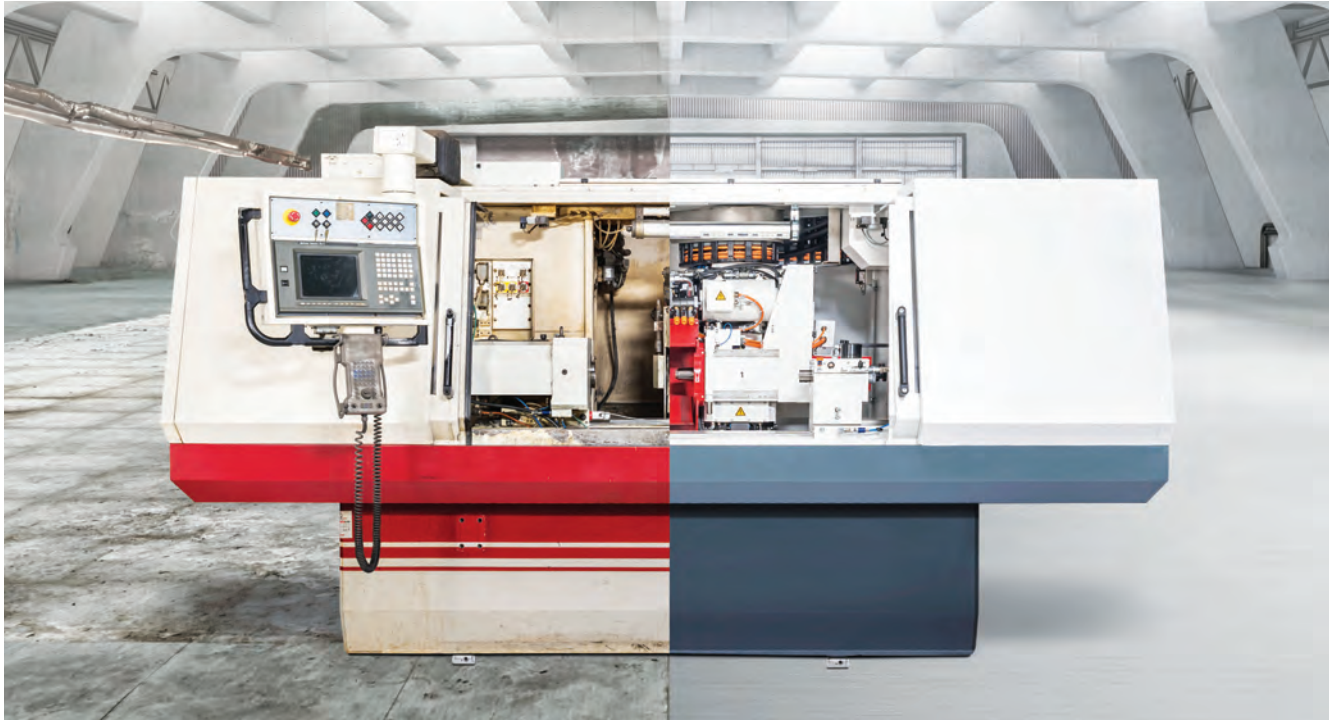
Jonathan Sparkes is the Research Analyst at Interact Analysis. A thoroughly professional, analytical, and highly educated researcher, Jonathan gained his analysis and modelling skills from a Bsc in Mathematics. He works in our industrial automation sector with a focus on machine vision and is particularly interested in how technology can be used to improve systems.



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Completely Renewed!

A machine overhaul by STUDER breathes new life into an old cylindrical grinding machine and provides the same precision as the day it was delivered.



STUDER machine overhauls – a new lease of life for your machine.

Whether in small series or high-volume production: If cylindrical grinding machines have performed at a high level for many years, their precision will eventually, at some point, deteriorate. With intensive machine use or when working with aggressive materials or certain cooling lubricants, this is often the case even sooner. A comprehensive overhaul can breathe new life into an old machine and restore it to the same condition as the day it arrived.

A machine overhaul can be a worthwhile option, especially if a company intends to grind the same workpieces as before and does not necessarily want a technological upgrade.

"The cost is around 50 to 60 per cent of the purchase price of a new machine," explains **Marcos Cotarelo**, Head-Customer Care Sales, Fritz Studer AG.

In addition to the complete overhaul of all sub-assemblies, Studer is the only machine manufacturer to completely replace and renew the guideways according to original specifications with the Granitan® S200 guideway coating. Consequently, the geometry after

installation of the sub-assemblies will correspond to that of a new machine and offer the same precision and accuracy as when it was first delivered.

Transforming old into new

A complete overhaul involves much more than just a simple repair. The machine is taken to the plant in the Swiss town of Thun, where it is disassembled completely for a thorough inspection. By using original parts combined with the expert knowledge of Studer employees, sustainable quality and maximum precision can be guaranteed once again. And that's not all – revision of components by the OEM (Original Equipment Manufacturer), cleaning of the enclosure by sandblasting, a new coat of paint, perhaps even with special coatings, and the replacement of wear parts – all of this, and more, helps to ensure that even a 20-year-old machine can work and look like new again. Customers are often surprised and delighted by this transformation as they now have an as-new machine again, with a great price-performance ratio. In addition to overhauling the

entire machine, overhauling individual sub-assemblies, such as the workhead, wheelhead, and tailstock is also an option.

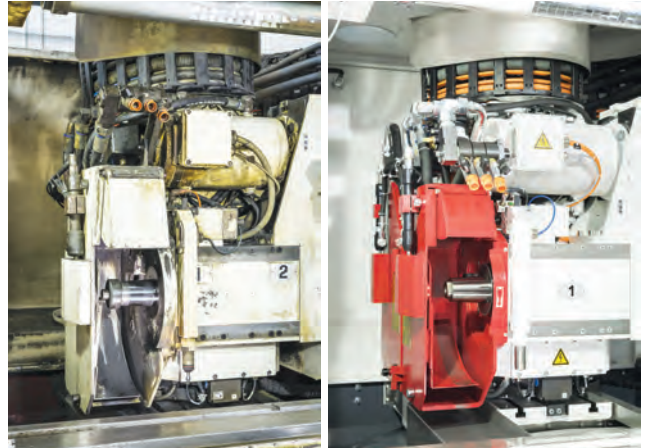
A major benefit of a global company like Studer is its many years of experience and expertise at an international level. After all, delivery and return transport of a - grinding machine weighing several tons, as well as managing the necessary permits and customs formalities is no mean feat. As a Studer customer, you can be confident that wherever you are in the world, once you have contacted us, a customer care consultant will visit your premises to provide individual advice based on your requests and requirements. If, once you've considered the relevant factors, you decide that a machine overhaul is what you need, our overhaul team will get to work.

A team of more than 25 employees takes care of various machine and sub-assembly overhauls each year. In addition, specialists from the new machine production, electronics or mechanics, as well as import-export, logistics, and customs ensure that everything runs seamlessly, whether in Europe or elsewhere in the world.

They help to keep the complex logistics and technical processes of a machine overhaul as simple as possible. This includes delivery and return shipment, as well as commissioning of the overhauled machines. Before

A machine overhaul at a glance

- Machine bed: Completely overhauled, the knobbed pattern is milled off, the guideways recast, and the base repainted
- El. Enclosure: Replacement of the wear parts in the electrical cabinet
- Pneumatics: New valves, hoses, and filters
- Hydraulics: New hydraulic and lubrication system, all valves and hoses are replaced
- Workhead: Completely overhauled
- Wheelhead: Completely overhauled
- Tailstock: Completely overhauled
- Axes: Table as good as new, installation of a new recirculating ball screw and bearings
- Machine enclosure: Sandblasted, new topcoat, color according to STUDER design or customer preferences
- Control system: Existing controller retained
- Delivery: Always with careful measurement of the geometrical tolerances of the new machine, including test protocols
- Loan machine: Studer can provide a loan machine on request
- New original CE certificate
- Automation solutions on request



STUDER wheelhead before and after.

shipment, all machines undergo a function and geometry test in the manufacturer's plant and are issued with a new original manufacturer certificate.

Trusted machines with new capabilities

After a machine overhaul, companies can enjoy a one-year warranty and support from an outstanding technical service team. It takes Studer an average of 12 to 14 weeks to complete a full overhaul. During the overhaul, companies can take advantage of a machine on loan to prevent production standstills. It is not uncommon in the course of an overhaul, that customers opt for a modernisation or expansion of the range of parts that they would like to manufacture.

This could mean retrofitting a measuring head, an additional internal grinding spindle, new spindle cooling, a hydraulically swiveling dressing unit, or a new workhead- there are countless options available. Importantly though, a machine overhaul can bring new capabilities to a trusted system.

A significant improvement in production efficiency can be achieved with a subsequent automation solution if desired. This would allow a supposedly 'old' machine to process workpieces independently and automatically, giving employees the flexibility to spend time on other tasks once the loader has been replenished. In addition, a software update can facilitate assistance systems for monitoring or maintenance purposes.

Despite the additional features and the as-new look that a machine overhaul can bring, the machine remains the same machine that users will be familiar with. That means not having to relearn something that they already know. Along with the efficiency that an overhaul adds, this is an important point that makes it appealing to so many companies. They can continue using a familiar machine long into the future, as it will now have the same service life as a new system.



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Axitec Unveils 300 MW Solar Module Plant in Tamil Nadu

This expansion is part of Axitec's ongoing efforts to meet growing market demands and enhance its ability to deliver high-quality solar solutions swiftly.

Axitec, a leader in solar technology, inaugurates its latest manufacturing plant in Tiruvallur, Tamil Nadu. This new facility, with a production capacity of 300 MW, represents a significant leap forward in the company's commitment to advancing solar energy solutions.

The plant is designed to manufacture DCR and NDCR solar modules using the latest NType TOPCon technology. This innovative technology enhances the performance and efficiency of solar modules, aligning with Axitec's goal of delivering high-quality solar products to the market. The plant's strategic location on the outskirts of Tiruvallur not only supports effective production but also allows for improved control over the supply chain, ensuring timely delivery of products.

The facility is already operational, with ambitious plans to double its manufacturing capacity in the near future. This expansion is part of Axitec's ongoing efforts to meet growing market demands and enhance its ability to deliver high-quality solar solutions swiftly. The plant is also in the process of obtaining ALMM certification, with expectations to be listed shortly, ensuring compliance with national standards for government-supported projects.

In addition to its technological advancements, the new plant has created numerous job opportunities across various sectors, including quality control, manufacturing, accounting, and logistics. This job creation will have a positive impact on the local community, providing new employment opportunities and contributing to regional economic development.

Maintaining its commitment to quality, Axitec's new plant will adhere to rigorous German standards. This dedication ensures that every product manufactured meet high performance and reliability benchmarks, reinforcing the company's reputation as a leader in the solar industry.

The facility also underscores Axitec's dedication to sustainability. Solar energy is an inherently sustainable industry, and the new plant will soon be powered by solar energy, further reducing the company's carbon footprint. This commitment to sustainability aligns with Axitec's broader environmental goals and enhances its



efforts to support a greener future.

The opening of this new plant is a significant milestone for Axitec, as it aligns with the company's mission to provide high-quality, efficient solar solutions while positively impacting the local community. By increasing production capabilities and improving product delivery times, Axitec is well-positioned to better serve its customers and drive growth in the solar market.

Tanmoy Duari, CEO, Axitec Energy India Pvt. Ltd said, "The inauguration of our new manufacturing plant in Tiruvallur marks a pivotal moment in Axitec's journey towards advancing solar energy solutions in India and beyond. This facility embodies our commitment to quality, innovation, and sustainability. By leveraging cutting-edge NType TOPCon technology, we are not only enhancing the efficiency and performance of our solar modules but also contributing to the local economy through job creation. This plant is a testament to our dedication to delivering high-quality solar products that meet the evolving needs of the market while maintaining our core values of sustainability and excellence. We are excited to continue leading the way in the solar industry and look forward to the positive impact this facility will have on our customers and the community."

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Booster Dose for Indian Pharma Industry

While Indian active pharmaceutical ingredients (API) companies' profit margin will improve to 12-14 per cent in FY2025, capital expenditure is expected to moderate to ₹5.6 billion in FY2025 from an estimated ₹7.6 billion in FY2024, says an ICRA report.



Revenues of Indian active pharmaceutical ingredients (API) companies is expected to grow by 7-8 per cent, while their operating profit margin is likely to improve to 12-14 per cent in FY2025, according to a recently released research note by ICRA, the rating agency. ICRA expects the revenues of its sample set of companies to expand at a CAGR of 7-8 per cent between CY2023 and CY2029 from an estimated size of \$ 13-14 billion in CY2023. This will be driven by a steady ramp-up in the pharmaceutical formulations industry, which in turn, will be aided by an increasing geriatric population, higher prevalence of chronic diseases, and rising demand for contract manufacturing with global customers looking to diversify their supply chain along with greater focus on domestic sourcing. ICRA forecasts the operating profit margin (OPM) of its sample set of companies to improve mildly in FY2025.

Indian API industry players faced considerable volatility in earnings over FY2021-FY2023 on account of multiple headwinds such as rising raw material costs due to elevated crude oil prices and pandemic-induced lockdowns in China, resulting in a shortage of key starting materials (KSMs) and APIs globally, inflationary pressures and increased energy costs in Europe, as well as heightened volatility in foreign exchange rates. Nonetheless, raw material prices have softened post

FY2023. The container availability issues during the lockdowns were further accentuated by the Russia-Ukraine war, which led to a considerable increase in global freight rates.

Deepak Jotwani, Vice President & Sector Head – Corporate Ratings, ICRA, said, “Given the subsequent remission in many of these headwinds, ICRA expects revenues of its sample set of companies¹ to grow by 7-8 per cent in FY2025, post an estimated increase of 3-5 per cent in FY2024. Given the lower input costs, along with growth in revenues, ICRA expects the earnings improvement recorded in FY2024 to sustain in FY2025 and the OPM to enhance to 12-14 per cent from 11-13 per cent in the previous fiscal. However, the impact of subdued demand from some key export markets such as Europe and tensions in the Red Sea impacting supply



“As of now, about 62% of the originally envisaged investment of ₹65 billion (in the PLI scheme) has been made in 32 commissioned projects out of a total of 48 envisaged projects.”

Deepak Jotwani,
VP & Sector Head – Corporate Ratings, ICRA

chain and freight costs will continue to be monitored.”

India imported APIs and bulk drugs worth about ₹377 billion in FY2024, accounting for about 35 per cent of its total API requirement, of which China accounted for approximately 70 per cent. Moreover, dependence on Chinese imports of APIs for certain essential medicines is as high as 80-100 per cent. Almost the entire requirement of certain fermentation-based APIs like ciprofloxacin and norfloxacin is sourced from China.

The cost advantages with the Chinese API industry and the volatility in the prices of APIs have made domestic production of certain APIs unviable for Indian manufacturers, resulting in continued dependence on

China. Even where APIs are manufactured locally, KSMs are primarily sourced from China. The Chinese API industry, which accounts for about 40 percent of the global requirement, is supported by higher economies of scale, subsidies, and fiscal incentives offered by the Chinese Government, along with lower power, fuel, and borrowing costs.

India has witnessed favourable traction in the production linked incentive (PLI) scheme launched by the Central Government for the bulk drugs industry. The scheme particularly focuses on select molecules such as Penicillin G and 7-ACA, which require sizeable investments and involve high energy consumption during the manufacturing process.

Commenting on the updates on the PLI scheme, Jotwani said, “As of now, about 62 per cent of the originally envisaged investment of ₹65 billion has been made in 32 commissioned projects out of a total of 48 envisaged projects. One of the key products approved under the scheme is penicillin-G, for which India remains highly dependent on China. A leading Indian

API manufacturer is likely to commission its penicillin-G manufacturing facility under the PLI scheme in FY2025, helping reduce India’s dependence on China for this bulk drug. Domestic manufacturing will also help formulations manufacturers reduce their inventory carrying cost through efficient supply chain management. However, the overall lowering of dependence on China for APIs will ultimately depend on the ramp-up in production of various approved products and price competitiveness of the Indian manufacturers.”

With the completion of capacity expansion by most companies in ICRA’s sample set, the capex is expected to moderate to ₹5.6 billion in FY2025 from an estimated ₹7.6 billion in FY2024. Credit metrics for ICRA’s sample set of companies are thus expected to remain comfortable, with Total Debt/ OPBDITA at 1.2 times and interest coverage of 10.0 times in FY2025, supported by a marginal improvement in OPM and modest capex plans. This is after the weakening of debt coverage metrics in FY2023 due to pressure on earnings and range-bound movement noted in FY2024.

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News Snippet

Honeywell and Repsol to collaborate on renewable fuel development

Honeywell and Repsol will collaborate to create new production pathways for biofuels and circular materials. The two will also explore the possible integration of these methods into Repsol’s existing facilities. The companies plan to scale and

commercialise Honeywell’s technologies, which use various wastes like fats, oils, greases, biomass and solids for chemical production and renewable fuels at Repsol’s refineries. Their goal is to produce different biofuels, including sustainable aviation fuel (SAF) and renewable diesel, while making use of existing refinery assets. This collaboration supports the alignment of Honeywell’s portfolio with the energy transition megatrend.

Bryan Glover, Chief Growth Officer and CTO of Honeywell Energy and Sustainability Solutions, said, “As a global leader in sustainable fuel technologies, we seek collaborations to provide innovative solutions that help our customers and stakeholders to reduce carbon and greenhouse gas emissions through biofuel production. Our collaboration with Repsol illustrates how Honeywell can apply new technologies to reduce carbon emissions while producing biofuels and



advanced materials leveraging current refinery infrastructure.”

The multi-energy company is also analysing the deployment of Honeywell’s UpCycle Process Technology, which turns waste plastic into Honeywell Recycled Polymer Feedstock for new plastics. It can

recycle diverse plastics like colored, flexible, multilayered packaging and polystyrene. When used in conjunction with other chemical and mechanical recycling processes - along with improvements to collection and sorting - Honeywell’s UpCycle Process Technology has the potential to help create the capability to recycle nearly 90 per cent of waste plastics. This would represent a considerable increase in the amount of waste plastics that can be turned into polymer feedstock.

“Renewable fuels and plastics recycling are crucial to Repsol’s commitment to achieve net zero emissions by 2050. Our collaboration with Honeywell to advance and adopt cutting-edge technologies will help us reduce our carbon footprint and become a benchmark in renewable fuels and hydrogen production by 2030,” said Berta Cabello, Director of Renewable Fuels, Repsol.

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“EV Public Charging Stations Have Surged Ninefold.”

India needs to scale up public charging infrastructure to meet the growing demand and reduce range anxiety. By 2030, electric vehicles are projected to make up almost one-third of India's passenger vehicle market, highlighting the significant infrastructure requirements says **Rohit Chaturvedi**, Partner, Transport and Logistics- Government, Infrastructure and Development Sector Advisory Services, Forvis Mazars India.

What were the factors that contributed to the increase in BEV charging stations?

The increase in BEV charging stations can be attributed to several key factors, primarily driven by the wider adoption of electric vehicles (EVs) and robust government initiatives. The Indian government's recent launch of the Electric Mobility Promotion Scheme 2024 (EMPS 2024) on March 13, 2024, has significantly contributed to this growth.

Initially set to run from April 1st to July 31st, 2024, with a total outlay of ₹5 billion, the scheme's budget has now been revised to ₹7.78 billion. Under EMPS 2024, buyers can avail themselves of substantial subsidy benefits—up to ₹10,000 for two-wheeler EVs, up to ₹25,000 for small three-wheeler EVs, and up to ₹50,000 for large three-wheeler EVs. The scheme targets supporting 560,789 electric vehicles (EVs), comprising 500,080 electric two-wheelers (e-2Ws) and 60,709 electric three-wheelers (e-3Ws), including 13,590 rickshaws and e-carts, as well as 47,119 e-3Ws in the L5 category.

To promote advanced technologies, incentives are available only for EVs equipped with advanced batteries, ensuring that the infrastructure supports the latest innovations in EV technology. The Indian government's broader policies, such as the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME) scheme and the National Electric Mobility Mission Plan (NEMMP), further incentivise EV adoption.

Can you elaborate on the main challenges faced in expanding the EV charging infrastructure in India?

The country faces a number of difficulties, including a lack of robust electrical charging infrastructure, battery



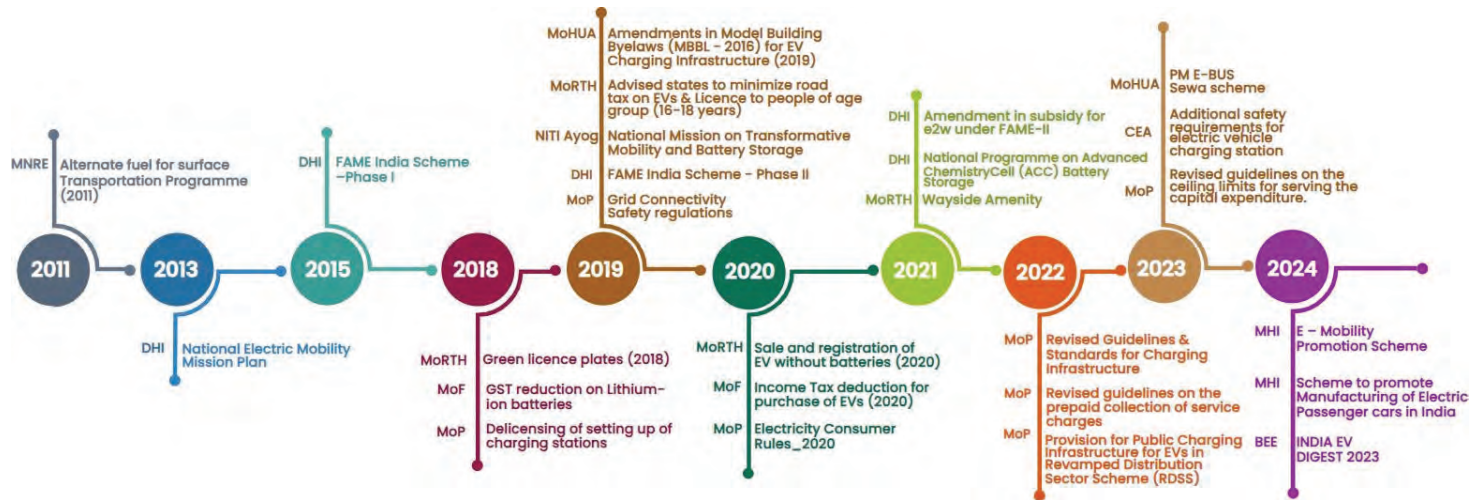
production capabilities, electricity consumption, charger compatibility, improper charging location, and high prices for electric vehicles, particularly four-wheelers.

Limited grid capacity: While EVs can reduce the strain on India's power grid, they add to the volatility of instantaneous demand, affecting grid stability. India's growing power demand surged by about 12 per cent in the first half of 2023 alone putting the power grid under significant stress. With increasing pressure on the power grid, the power grid across the country is witnessing gradually added pressure.

What strategies are being used to address issues of range anxiety and charging accessibility for EV users?

The widespread adoption of Electric Vehicles (EVs) hinges significantly on two critical factors: public awareness regarding EVs and their benefits, and the availability of a reliable and extensive charging network. These elements are pivotal in assuaging concerns related to range and charge anxiety, which often deter potential buyers from embracing EV technology. The charging infrastructure landscape in India has experienced significant expansion in recent years. Within just two years, from February 2022 to March 2024, the number of public charging stations surged from 1800 to 16,347- an almost ninefold increase.

To address range anxiety, a vehicle can be designed as a dual-fuel hybrid, combining an electric powertrain with a conventional internal combustion engine (ICE) that runs on either petrol or diesel. This configuration allows the car to operate on electric power alone for shorter trips and switch to the ICE for extended range on longer journeys, ensuring that drivers have the flexibility and



peace of mind to travel longer distances without worrying about recharging.

The Ministry of Power is collaborating with agencies like the BEE to build EV charging stations in India, along highways, in cities, and in public areas. Under the FAME India scheme, the Ministry of Heavy Industries has sanctioned the construction of 2,877 EV charging stations across multiple states, as well as 1,576 stations across 16 highways and 9 expressways. These major roads cover 10,275 kilometers across India, so providing sufficient charging stations along them will significantly reduce range anxiety. The government is also incentivising businesses, shopping malls, parking lot owners and RWAs to set up EV charging stations on their premises. The government is providing more education on the benefits of charging stations for businesses, and simplifying the installation processes. These incentives must continue in order for India to reach its EV charging infrastructure goals.

Developing fast charging technology and its associated software can reduce EV charging times. Slow chargers take anywhere from 1 to 5 hours, but fast chargers take less than an hour. This can alleviate range anxiety, especially for long-distance travel. Fast charging technology can also cut down the total required number of charging stations. Since fast-charging stations can charge an EV in a matter of minutes, a small number of fast-charging stations can provide the same level of service as a large number of conventional charging stations.

How does the rapid growth of global electric vehicle sales influence India's approach to expanding its charging infrastructure?

The rapid increase in global electric vehicle (EV) sales is significantly influencing India's strategy in expanding its charging infrastructure. The large-scale

adoption of EVs has led to innovations and cost reductions in charging networks and overall infrastructure.

The large-scale adoption of EVs has led to innovations and cost reductions in charging networks and overall infrastructure. A parallel can be drawn to the solar panel industry, where initial costs were high, but emerging technologies have driven costs down to a fraction of their original prices.

The growing EV market globally attracts significant investments in charging infrastructure and related technologies.

Observing successful strategies from leading EV markets like China and Europe, India is adopting similar practices to enhance its network. This includes deployment of both slow and fast chargers.

The Bureau of Indian Standards (BIS) and other Indian regulatory bodies are actively working on ensuring that the charging standards for electric vehicles (EVs) align with international norms. This alignment facilitates the seamless integration of foreign EV models into the Indian market, crucial for India's goal to become a global leader in electric mobility.

Recent initiatives by BIS include the introduction of standards like IS 18590: 2024 and IS 18606: 2024, which focus on the safety of the EV powertrain and battery performance. These standards reflect India's commitment to integrating global safety measures while also tailoring them to meet local requirements, such as India's unique environmental and traffic conditions.

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Sources: Ministry of Heavy Industries, DIYguru, Hindustan Times Auto, EVpedia, Greening the Grid, Drive Electric, Kimley-Horn, Bolt Earth, Enplus Tech, Business Standard, Tata Motors, EV Tech News, Press Information Bureau (PIB), Ministry of Heavy Industries, NITI Aayog, Economic Times, MarketsandMarkets, International Energy Agency (IEA), Autocar Professional, Bureau of Energy Efficiency (BEE)



Vivad Se Vishwas, 2024: Resolving Tax Disputes

Vivad Se Vishwas, 2024 is a welcome measure which provides opportunities to settle pending disputes thereby facilitating ease of doing business. **Pramod Achuthan**, Partner and **Shraddha Mandlecha**, Senior Consultant, Global Compliance and Reporting for Direct Tax, Ernst & Young LLP delve into the applicability, procedural aspects and manner of settlement of disputes under the newly launched Vivad se Vishwas Scheme 2024 brought in by the Hon'ble Finance Minister vide Finance Budget 2024.



Considering the encouraging response received from the taxpayers towards the Vivad se Vishwas Scheme 2020 and the mounting pendency of litigation at various levels of appellate forums due to pendency of appeals, VSVS 2024 has been launched for settling the disputed tax, interest, penalty and prosecution pending as on 22 July 2024 under the Income-tax laws after payment of certain normative amount determined under the VSVS 2024. The date from which the taxpayers can begin to settle their disputes as well as the sunset date, are yet to be notified by the Central Government.

Who is eligible to opt for VSVS 24?

VSVS 2024 covers those cases wherein appeals, writ petitions and special leave petitions are pending as on 22 July 2024 whether filed by the tax payer or by the tax authorities before any of:

- Commissioner (Appeals) or Joint Commissioner (Appeals);
- Dispute Resolution Panel (DRP);
- Income Tax Appellate Tribunal;
- High Court; and
- Supreme Court.

It covers assessments pending after the issue of directions by DRP and pending applications for revision filed by taxpayer before the Commissioner.

It also covers disputes relating to taxes determined under the provisions relating to Tax Deducted at Source (TDS) and Tax Collected at Source (TCS).

What amount is payable to settle disputes?

*In case appeal, writ petition or SLP is filed by the tax authority on any issue which is to be settled then amount payable shall be 50 percent of the amount shown in Table 1.

*In case appeal or objections filed by the taxpayer are

Figure 1: Region-wise growth in machine vision revenues

Nature of tax arrears	Taxpayer settles before 31 December 2024*	Taxpayer settles after 31 December 2024*
Cases involving disputed tax, interest and penalty		
Disputes eligible for settlement under 2020 Scheme, which remain pending at the same appellate forum as on 22 July 2024	110 percent of the disputed tax	120 percent of the disputed tax
All other eligible disputes	100 percent of the disputed tax	110 percent of the disputed tax
Cases involving disputed interest or penalty or fee		
Disputes eligible for settlement under 2020 Scheme, which remain pending at the same appellate forum as on 22 July 2024	30 percent of disputed penalty, interest or fee	30 percent of disputed penalty, interest or fee
• All other eligible disputes	25 percent of the disputed penalty, interest or fee	30 percent of the disputed penalty, interest or fee

to be settled and if the taxpayer has already got a decision on any issue in its favour by the appellate authority or the High Court and the same has not been reversed by any higher authority or court, the amount payable shall be reduced to 50 percent of the amount in the above table.

How to calculate disputed amounts?

Where the settlement of the dispute results in

Nature of tax arrears	Disputed tax (inclusive of surcharge and cess, but excluding interest)
Where appeal/writ/SLP is pending before any appellate forum as on 22 July 2024	Tax payable if such appeal/writ/SLP was to be decided against the taxpayer
Where objections are pending before DRP as on 22 July 2024	Tax payable if DRP was to confirm variation proposed in the draft order
Where DRP has issued directions but tax authority has not completed the assessment on or before 22 July 2024	Tax payable as per the assessment order to be passed by the tax authority in conformity with the directions of the DRP
Where an application for revision filed by the taxpayer is pending as on 22 July 2024	Tax payable if such application was not to be accepted

reduction of Minimum Alternate Tax (MAT)/Alternate Minimum Tax (AMT) credit, losses, depreciation, the taxpayer can opt for either of the following:

- Include tax related to reduction of MAT/AMT credit, loss, depreciation in the disputed tax; or
- Carry forward the reduced MAT/AMT credit, loss, depreciation without payment of disputed tax

What is the procedure to opt for VSVS 2024?

Step 1: File a declaration to the designated authority ('DA') on or before a notified date

Step 2: Within 15 days of receipt of the declaration, DA to certify tax arrears and amount payable under VSVS 2024

Step 3: Pay the amount as per DA's certificate within 15 days from the receipt of such certificate and intimate DA about the payment

Step 4: DA shall pass an order to conclude the dispute and no matter covered by such order shall be re-opened in any other proceedings under the income tax laws or any other laws.

Appellate Forum not to proceed to decide any issue relating to order passed by DA.

In case where the taxpayer or tax authorities appeal is pending before CIT(A)/ JCIT(A)/ ITAT then the appeals so pending are deemed to be withdrawn from the date of issue of certificate from DA determining the amount payable under VSVS 2024. However, the appeal will stand restored if the declarant exits VSV due to breach of conditions (eg. Non-payment of tax payable as per DA's certificate).

In case where the appeal is pending before HC/ SC then the taxpayer should withdraw such appeal with leave of the court and the proof of withdrawal of the appeal is to be furnished to DA along with intimation of payment.

Who is ineligible to opt for the scheme?

- 1) A person in respect of disputed tax, interest, penalty, or fee relating to:
 - Tax year in respect of which an assessment or reassessment has been made on the basis of search
 - Tax year in respect of which prosecution has been instituted
 - Any undisclosed income from a source located outside India or undisclosed asset located outside India
 - An assessment/reassessment made basis information received pursuant to tax information exchange agreements.
- 2) A person in respect of whom prosecution has been instituted or he has been convicted under the provisions of Unlawful Activities (Prevention) Act, 1967, the Narcotic Drugs and Psychotropic Substances Act, 1985, the Prohibition of Benami Property Transactions Act, 1988, the Prevention of Corruption Act, 1988, the Prevention of Money-Laundering Act, 2002
- 3) A person in respect of whom prosecution has been initiated by an income-tax authority for any offence punishable under the provisions of the Bharatiya Nyaya Sanhita, 2023 or for the purpose of enforcement of any civil liability under any law for the time being in force. A person who has been convicted of any offence punishable under Bharatiya Nyaya Sanhita, 2023.
- 4) A person in respect of whom a detention order is passed under The Conservation of Foreign Exchange and Prevention of Smuggling Activities Act, 1974 and such detention order is not revoked or set aside by a higher authority

- 5) A person notified under section 3 of the Special Court (Trial of Offences Relating to Transactions in Securities) Act, 1992

Conclusion

This is a one-time opportunity for taxpayers to clean up their balance sheets by opting for VSVS 2024 in terms of those cases which are eligible to be disposed off. Disputes where merits are not strong (e.g. cases where there is a Supreme Court decision against the Assessee) or where documentation supporting the case of Assessee are not adequate should be evaluated for filing under the scheme. Issues where there is multiplicity of litigation (eg TDS issues with appeals by both the tax deductor and tax deductee) need careful planning in deciding which appeals should be filed under VSVS 2024. In terms of fact sensitive cases, considering the time limit to make the payment of taxes, the taxpayers should proactively consult tax professionals in order to evaluate the facts and take appropriate actions.

The Government's initiative of introducing VSVS 2024 is in the right direction to help taxpayers settle past litigations. In order to further instil confidence among the taxpayers, it is expected that the CBDT would shortly issue FAQs/clarifications to address the some of the debatable aspects around VSVS 2024. To end, the following quote seems appropriate *"Learn the wisdom of compromise, for it is better to bend a little than to break"*.

SME

About the author:

Pramod Achuthan, Partner (Global Compliance and Reporting), Direct Tax at Ernst & Young LLP, India
Shraddha Mandlecha, Senior Consultant (Global Compliance and Reporting), Direct Tax at Ernst & Young LLP, India

News Snippet

Waaree Energies secures 90 MW solar module contract for Juniper Bikaner project

Waaree Energies Limited, India's largest manufacturer of solar PV modules with an aggregate installed capacity of 12 GW as of June 30, 2023 (Source: CRISIL Report), has secured a 90 MW order to supply of 540/545Wp dual glass bifacial modules to Juniper Green Cosmic Private Limited, for their solar project in Bikaner, Rajasthan ('Juniper'). This collaboration underscores Waaree Energies' commitment to driving India's renewable energy transformation and meeting its escalating power demands.

Sunil Rathi, Director Sales, Waaree Energies, shared

his enthusiasm for this initiative, stating, "Our bifacial modules will not only enhance the region's solar capacity but also foster economic growth and create employment opportunities."

The deployment of Waaree's bifacial solar modules will boost Bikaner's renewable energy capacity, contributing to reduction in carbon emissions and promoting environmental sustainability. As India advances towards its ambitious renewable energy targets, the projects like this are essential in achieving the nation's vision of a greener and cleaner future.



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G&B Launches India's First Li-ion Powered Forklift Truck

The benefits of Li-ion technology are extensive and transformative, offering more than 4 times longer battery life compared to traditional lead-acid batteries.



Godrej & Boyce (G&B), a subsidiary of the Godrej Group, has launched India's first lithium-ion powered forklift truck. This move aligns with the company's 'Make in India' vision, which began in 1987.

G&B has introduced this innovative forklift truck with an indigenously developed Battery Management System (BMS), aiming to achieve 100 per cent localisation of lithium-ion cells by the end of next year. The electric forklift market in India currently stands at around 7,000 units, and G&B's latest offering is expected to make a substantial impact, potentially influencing 50 per cent of the market. Despite India's 4-5 per cent disadvantage in the logistics sector compared to global competitors, G&B believes that the introduction of this lithium-ion powered forklift will help bridge that gap. **Anil Lingayat**, Executive Vice President & Business Head, Godrej Material Handling, remarked, "It is an underserved industry." The sector is estimated to be worth approximately 400-500 billion.

Specifications:

- Battery: 80V, 320 Ah
- Battery Weight: 903 kg
- Forklift Weight: 4,321 kg
- Maximum Lifting Height: 4,500 mm

India's market share in electric forklifts has seen significant growth over the years, from 10 per cent in

2000 to 32 per cent in 2017, and now stands at 43 per cent in 2024. **Anil Verma**, Executive Director and CEO, G&B commented, "This is the first Indian e-forklift that is 100 per cent developed in India. Our logistics sector is at a pivotal juncture, experiencing robust growth driven by infrastructure advancements across sectors such as automotive, FMCG, consumer durables, retail including e-commerce, pharmaceuticals, fuelled by rising consumer demand."

The benefits of Li-ion technology are extensive and transformative, offering more than 4 times longer battery life compared to traditional lead-acid batteries. Charging from 20 per cent to 80 per cent takes only 2.5 hours for Li-ion compared to 6 hours for lead-acid, with 30 per cent less energy consumption. Li-ion batteries offer up to 15 per cent more run time to 2 and 3 tonne forklifts. Lingayat added, "We plan to export the e-forklift to the Middle East and APAC countries."

The company is also set to inaugurate a new manufacturing facility in Khalapur, with the capacity to produce 15,000 forklift trucks annually. Operations at the factory are expected to commence by the end of 2024.

Godrej & Boyce is India's largest manufacturer of industrial forklifts and the only Indian company in the global top 20. With over 80 touchpoints across India, a live population of over 30,000 forklifts, and a rental fleet of 1,600 units, the company continues to lead the way in the material handling industry.

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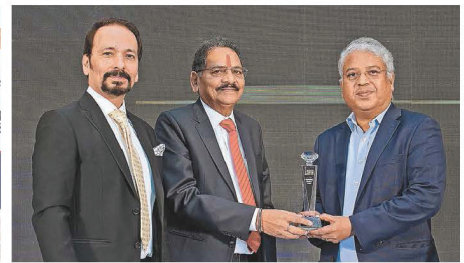




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Monitoring Air Quality Becomes Smarter!

Maintaining air quality within industry premises and surrounding areas is becoming increasingly important today. Smart sensors can be an effective tool to improve air quality, says **Emily Newton**.

Industrial air quality is becoming increasingly important, especially as scientists learn more about pollutants' effects on nearby residents and others not directly engaged in activities that cause decreased cleanliness.

However, smart air quality sensors provide improved visibility, telling factory leaders whether current conditions are within expected parameters or reaching dangerous levels. How do decision-makers apply them to meet needs?

Improving air quality in a challenging area

Contaminant awareness can help executives understand the extent of problems, giving them the tools and insights to solve them. Leaders at New Zealand's Port of Tauranga installed air quality monitors and preventive measures in 2019, hoping the combined efforts would make dust and debris more manageable.

Measurements taken in 2022 showed progress, with a 22 per cent reduction in fine particulate matter compared to two years earlier. Additionally, port officials invested in 12 new air quality sensors. They are less accurate than those installed in the facility's central industrial zone, but they detect salt and nitrogen dioxide. A color-coded system makes connecting current data with potential health risks easy.

The project also involves using sensor technology in nearby residential areas. It will collect dust for later analysis, allowing researchers to examine the general makeup and most common pollutants. They can use those details to make more informed decisions about improving air quality for workers and anyone else affected by the facility's air quality.

Involved parties said sea spray, petrol and diesel exhaust, and ship emissions were some of the primary pollutant sources. The sensors do not identify all of them, but they help parties pinpoint the most significant contributors. Additionally, some detectors send real-time statistics to a public-facing website, creating a useful information source for residents and others who may wish to alter their activities based on the most recent readings.



Helping occupants detect indoor air quality changes

Smart air quality sensors also allow factory managers and others in oversight roles to understand when unusual changes need further investigation. For example, leaky ductwork in a facility can cause air loss, adversely affecting temperature regulations and economic operations. Statistics indicate systems can become up to 20 per cent more efficient once people repair those issues.

Tools that track industrial air quality could provide early warnings that convince the appropriate parties to look into issues before they get out of control. Over the last several years, many industrial managers have also become more concerned with air quality due to its link with infectious illnesses that could require employees to take off and recover.

Some sensors also reduce or eliminate manual maintenance steps, such as alerting the relevant employees when it is time to change an air filter. Waiting too long to switch it out could mean a system does not remove contaminants as effectively.

Faulty equipment could also worsen air quality, especially if it causes slow leaks that lead to contaminant buildups. A practical preventive measure is to combine air quality sensors with those attached to industrial equipment to detect unusual operations. The associated data can simultaneously reveal machine problems that are affecting air quality or could soon if professionals do not take urgent action.

Promoting positive and lasting changes

Data shows ambient and household air pollution causes 6.7 million premature deaths annually. Improving how people track air quality trends in industrial environments could reduce that figure and show authority figures how to make the most meaningful changes.

Leaders have strong business cases for addressing poor air quality because ignoring it could result in regulatory action, including fines. Additionally, industrial executives must take decisive steps so that their companies can operate as harmoniously as possible in local communities.

In one North Carolina county, concerned residents and environmental organizations are working together to measure the air quality effects of the area's hog farms. Statistics show the eastern part of the state has 95 per cent of those facilities, and nearby residents are primarily low-income or marginalized groups.

Participants hope they can pull data from the sensors to show a link between environmental racism and industrial air quality problems caused by factory farming. Community members in the affected area only recently got access to federal air quality monitors. However, numerous collaborative efforts seek to close the information gap.

If data shows an apparent problem, that information should motivate industrial executives and others in power to make meaningful and effective choices to reduce pollutants and take residents seriously. Even once an industrial facility has a long-standing presence

in the community, those working there must continually listen to external feedback and genuinely take concerns seriously. Otherwise, protests and reputational damage could restrict operations and profits.



Leaders have strong business cases for addressing poor air quality because ignoring it could result in regulatory action, including fines.

Sensors make industrial air quality more controllable

Those supervising industrial environments must correctly understand the conditions before deciding how to tackle them. Did a specific pollutant become more prominent over the last three months? What are the likely causes of all or most of the identified contaminants? Air quality sensors can answer those questions and many others. Reliable information can empower modern leaders, showing them that air quality is a factor within their influence.

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About the author:

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

News Snippet

Luminous Power aims to make Chhattisgarh energy efficient

Luminous Power Technologies, owned by French engineering company Schneider Electric, aims to transform the energy landscape of Chhattisgarh significantly with its solar solutions. With a dedicated focus on energy solutions along with the widest range of solar products and solutions, supported by complete end-to-end project execution capabilities, the company intends to make Chhattisgarh energy sufficient and efficient. Luminous Power Technologies recently engaged in pivotal meetings with Chhattisgarh Government officials including Shyam Bihari Jaiswal (Health Minister, the Government of Chhattisgarh) and Rajesh Singh Rana (CEO of CREDA),



Luminous Power's Amit Shukla (left) with Shyam Bihari Jaiswal, the Chhattisgarh Health Minister

along with key government officials from the energy sector. Convened to deliberate upon the potential of solar energy, Amit Shukla, Senior VP & Country Business Head, Luminous Power Technologies presented Luminous' comprehensive solar energy solutions, highlighting their efficiency, reliability, and suitability for the region's energy needs.

Luminous boasts the widest array of solar products, solutions, and end-to-end project management capabilities. Luminous aims to provide comprehensive solar solutions under one roof catering to the diverse needs of residential, commercial, and industrial segments.

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Schmalz India: Creating Healthy Workspaces

Mayura Kunachi, HR Manager and **Philip Mani**, Managing Director, Schmalz India, explain how Schmalz cares about the well-being of their employees, foster professional development, and cultivate a positive work environment.



L-R: Philip Mani & Mayura Kunachi.

At Schmalz India, employee well-being is more than just a buzzword; it is a core value. We recognise that a healthy work-life balance contributes to productivity and job satisfaction. Our flexible work hours and remote work options empower employees to manage their schedules effectively. Whether it is spending time with family or pursuing personal interests, Schmalz India encourages a harmonious blend of work and life.

Professional development

Schmalz India invests in its most valuable asset: its people. Our commitment to professional development is unwavering. Regular training sessions, workshops, and mentorship programs equip employees with the skills needed to thrive in a dynamic industry. Whether it is mastering cutting-edge technologies or honing leadership abilities, Schmalz India provides a fertile ground for growth.

Cultivating an inclusive environment

Diversity is our strength. Schmalz India celebrates differences—whether cultural, gender-related, or experiential. We organise cultural festivals, team-building events, and knowledge-sharing sessions. Open communication channels ensure that every voice is

heard and valued. We have been honored with the 'Pune Best Employer Brand Award 2023' by CHRO Asia.

Employee perks

Schmalz India's benefits package goes beyond the basics. Competitive compensation, health insurance, and performance-based bonuses are standard. But we don't stop there. Team outings, long term service awards and a supportive work atmosphere create a holistic employee experience. We believe that happy employees drive business success.

Environmental sustainability

Schmalz India is committed to environmental sustainability and the welfare of all our staff. Hence, we celebrate Environment Day with a tree plantation drive in order that the message of saving the environment is brought out by planting more trees to conserve the environment for future generations.

Work culture

Schmalz India's work culture thrives on collaboration, respect, and camaraderie. We celebrate milestones, both big and small. From project successes to personal achievements, every win matters. Our leaders lead by example, emphasising teamwork and mutual support. The result? A motivated workforce that feels like family.

"Prioritising employee well-being and fostering a supportive work environment are essential for driving business success. Embrace flexible work arrangements, invest in professional development, and cultivate a culture of inclusion and respect to empower your workforce and achieve excellence", affirms Mayura Kunachi.

SME

For details, contact Schmalz India Private Limited, EL 38, J Block, MIDC, Bhosari, Pune 411026 on
Tel: 020-69115500
Email: marketing@schmalz.co.in

(Communication provided by the management of the company)

CUTTING FACING CHAMFERING MACHINE, ITL-CFC 50

ITL Industries Ltd offers ITL-CFC 50 cutting facing chamfering machine, which performs cutting, facing and chamfering both in ID & OD in single setting.



Features:

- It can achieve very high production rate of 450-600 Pcs/hour, which saves material handling time.
- Cutting Capacity (Min) : Min. OD 16 x ID 10mm & Cutting Capacity (max) : Max. OD 50 x ID 48mm.
- Both chamfering heads are feed motions operated through servo motor and ball screw.
- Pipe indexing is done through servo motor and ball screw. It has specially-designed cartridge type facing and chamfering tool & tool holder. The cutter feed motion is controlled by ball screw & servo motor.
- The saw speed is controlled by AC frequency drive depending upon the application and cutter details, automatically through PLC. The machine is equipped with "micro mist cooling" arrangement as standard supply.
- Chamfering head and collect clamping positions indexing through servo motor and ball screw.

About the Company: ITL Industries Ltd is the leading manufacturer and exporter of a wide range of circular saw machine, horizontal band saw machine, vertical band saw machine, etc.

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Contact:

ITL Industries Limited, Indore
Tel: 0731-7104400, 7104412, 7104416
Email: info@itl.co.in,
marketing@itl.co.in

END MACHINING CENTRE

Brisk Tech Engineers offers a wide range of end machining centre.

Features:

- This machine is suitable for tractor manufacturing and conveyor manufacturing applications. Cutting edge operations are as follows: Rotary triller: facing, ID/OD chamfer, turning, threading. Idler conveyor pipe-boring, facing, ID/OD Chamfer.



About the Company: Brisk Tech Engineers was established in 2003. A design consulting firm developing products designed for various machine tools.

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Contact:

Brisk Tech Engineers, Bengaluru
Tel: 080-28364403
Mobile: 09448479855, 07892743816
Email: info@brisktechengineers.com,
briskanand500@gmail.com

AUDIO VISUAL ANNUNCIATOR FOR FEEDER - JAU-FD -1

JVS Electronics Pvt Ltd offers a wide range of audio visual annunciator for feeder - JAU-FD -1.



Features:

- Visual indication with audio output; Compact size; Priority level in identifying the faults.
- The solid state annunciator, type JAU provides an audible and visible annunciation when the fault is present in the system.
- Technical Data: Aux. Supply: 30 V DC, 220 V AC; Supply Variation: 85% to 110% of rated supply; Sound level: Above 90dB at 1meter.

About the Company: JVS Electronics Pvt Ltd is an exporter, manufacturer and supplier of audio indicating instruments, visual indicating instruments, electrical indicating instruments, etc. Conceptualizing new designs, developing new products, making more customer friendly and adding value to customers businesses is the daily mantra at JVS owning many design and product patents, JVS has scaled heights thanks to virtues of patience.

Contact:

JVS Electronics Pvt Ltd, Bangalore
Mobile: 09448288863
Email: bangalore@jvselectronics.in

Scan the QR Code for instant product enquiry



E2 SELF-LUBRICANT BALLSCREW

IBK Engineers Pvt Ltd offers a wide range of E2 self-lubricant Ball screw..

Features:

- HIWIN uses precise procedure to create groove profiles, either by grinding or rolling. Accurate heat treatment is used to ensure the hardness of ball screws. These result in maximum load capacity.
- E2 series self-lubrication design extends the maintenance period, it is easy to be installed and reduces maintenance time. E2 can prevent oil leaking issue and it is environmentally friendly.



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, steel rear sprocket, safety equipment, automotive components, electric equipment, etc.

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Contact:

IBK Engineers Pvt Ltd, Bengaluru
Tel: 080-26321112 Mobile: 09880566644
Email: raju.kn@ibizkart.com

WIN SERIES INTERFACE RELAY MODULES

Werner Electric Private Limited offers a wide range of WIN Series interface relay modules.

Features:

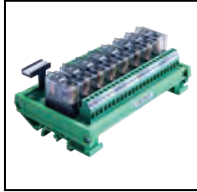
- It is bright SMD LED's Indications. 10A Relay Contacts.
- It has brass cage Terminal blocks.
- Thick End-plates for rigidity and longer life.
- It has more than 200 type of interface modules availabl.

About the Company: Werner Products are created by top industry leaders in mechanical design and with extensive feedback of user experience. They are obsessed with their customer's success and take pride in their achievements. They pursue ideas that could change their company, their country and maybe even the world.

Equality. They respect and value employees from every background, and they thrive as a result. They communicate openly with their customers and do what it takes to keep them happy.

Contact:

Werner Electric Private Limited, Mysore
Mobile: 7353947299
Email: info@wernerelektrik.com



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CENTRIC GRIPPERS-DPZ-PLUS

Schunk Intec India Pvt Ltd offers a wide range of centric grippers-DPZ-plus.

Features:

- Despite the high moment load of the base jaws, this sealed 3-finger centric gripper meets the requirements of IP67 and does not permit the ingress of any substances from the working environment into the interior of the component.
- Its applications include: Robust interior multi-tooth guidance: for the precise handling of different workpieces; Lip seal at the outside round guidance: for permanent, secure gripper sealing; High maximum moments possible: suitable for using long gripper fingerst.

About the Company: Schunk Intec India is engaged in products distribution and supply of industrial automation systems, automation work holding, tool holding, heat shrink tool holder, etc.

Contact:

Schunk Intec India Pvt Ltd, Bangalore
Tel: 080-40538999
Email: rakhi.singh@in.schunk.com,
info@in.schunk.com



Scan the QR Code for instant product enquiry



MAGNET-SCHULTZ AC VIBRATORS

Magnets India offers a wide range of Magnet-Schultz AC vibrators.

Features:

- Offered open and encapsulated designs, devices for direct connection to the AC network (vibration frequency = twice the supply frequency) or devices for connection to the AC network via one-way rectifier (vibration frequency = supply frequency).
- Vibrators are components consisting of solenoid body and armature which are installed as electromagnetic drives in vibratory drives of the customer.
- The armature is kept by means of a suitable spring-mass-system so that there is always a nominal air gap.
- By applying the AC power supply, the system is put into vibration by the alternating voltage curve. If the vibrator is connected directly to an alternating current mains, the system vibrates at twice the mains frequency. When using a half-wave rectifier, the system vibrates at mains frequency.
- Application Examples: As drive unit for vibratory systems in the materials- handling technology, e. g. mining, sieving and compressing
- Need a wear free drive which sets masses into vibration? This AC vibrators are your solution.

About the Company: Established in the year, 1997, we 'Magnets India', are one of the leading trader, distributor & suppliers of an extensive range of Electromagnetic Actuators and Electromagnetic Products.

Contact:

Magnets India, Chennai
Tel: 044-42833346 Mobile: 09840091969
Email: info@magnetsindia.net



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MILL SAW FILES HAND

PFERD offers a wide range of mill saw files hand.

Features:

- Mill saw files are versatile tools for sharpening cutting edges on saw blades, knives and other tools that have sharp metal edges.
- Rectangular file, tanged and cut on all four sides. Second cut for universal sharpening tasks.

About the Company: PFERD engages in development, production and support and distribution of tool solutions on jobs for surfaces and material cutting.

Contact:

PFERD, Bengaluru
Tel: 080-42187117
Mobile: 09880665415, 09741481117
Email: sales@swit.in



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AUTO RECLOSE RELAY - JRV 144

JVS Electronics Pvt Ltd offers a wide range of auto reclose relay - JRV 144.

Features:

- The auto reclose function is normally used in feeder protection relays that are protecting an overhead line. Most of the overhead line faults are temporary in nature. Upto 85% can be cleared by using the auto reclose function.
- The relay receives the fault initiation from the protection relay and that triggers the auto reclose function. After tripping the circuit breaker (CB), the Auto reclose function can reclose the CB.
- Normally, the first reclose (or shot) is so short in me, that the consumer cannot notice anything. However, the fault will cleared and the feeder will continue in normal service. Even though the basic principle of Auto reclose is simple, there are a lot of different parameters and parameters that have to be set.

About the Company: JVS Electronics Pvt Ltd is an exporter, manufacturer and supplier of audio indicating

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instruments, visual indicating instruments, electrical indicating instruments, etc.

Contact:

JVS Electronics Pvt Ltd, Bangalore
Mobile: 09448288863
Email: bangalore@jvselectronics.in

CABLE DRAG CHAINS

Elektromag offers a wide range of metallic/plastic cable drag chains.

Features:

- This Elektromag drag chains enable the conveyance of flexible cables/ hoses, etc to movable units with maximum reliability.
- Its advantages of Elektromag cable drag chains is avoidance of mechanical strain on the cables/hoses.
- No tensile stress or compression, no frictional wear as there is no relative movement between the cables/ hoses and the cable drag chain, no bending below an established radius, no crushing, buckling or forming of loops or torsion strain.

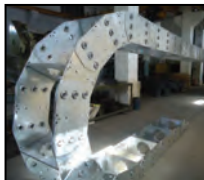
About the Company: Established in the year 1958, Elektromag is engaged in manufacturing of metallic/ plastic cable drag chains and supplying to various steel plant, machine tools, cement, foundries, etc.

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Contact:

Elektromag Methods, Mumbai
Mobile: 09820192772
Email: cablereels@elektromag.com



VIBRATORY FURNACE CHARGER

Elektromag-Joest Vibration Pvt Ltd offers a wide range of vibratory furnace charger.



Features:

- This vibratory furnace chargers are a cost effective method of increasing productivity and quality of melt.
- With constant improvement in technology, furnaces require rapid and uniform charging to keep pace with the melting power of the system for which the Furnace chargers are the optimum solution.
- The entangled pieces of scrap metal form a layer above and if unrecognized by furnace operator, bridging can lead to super heating of bath and failure of furnace lining and run out.

About the Company: Elektromag-Joest Vibration Pvt Ltd., is a leading manufacture of Vibrating equipments for foundry, steel, mining, quarrying, chemical, food, recycling, air separation and thermal processing.

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Contact:

Elektromag-Joest Vibration Pvt Ltd,
Mumbai
Tel: 022-66624444
Email: vibration@elektromag.com

HOSE REELS - AIR/ WATER/OIL

Vijay Air Control offers a wide range of hose reels - air/water/oil.



Features:

- An included spring works to retract a hose into the device automatically.
- A contained hose solves the short of air consumption for air tool owing to a large inner diameter.
- A ratchet system applied for the device can keep a tool suspended at any position on the hose travel where your want. Available in both closed body construction as well as open today.

About the Company: Vijay Air Control is a one large workplace where work is done and then put on the market in the form of products and services. This work must be benefit if it is to hold its own in the face of competition. Only company based on sound economic, technical and organisation principles and which is in a position to have a say in future developments is a match for the challenges presented by the market and competition.

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Contact:

Vijay Air Control, Bengaluru
Tel: 080-23148871, 23141136
Mobile: 08951101436, 09880652082
Email: saivacblr@vacpneumatic.co.in

MEASUREMENT SOFTWARE

Blum-Novotest Measuring & Testing Technology Pvt Ltd offers a wide range of measurement software.

Features:

- User-friendly software for workpiece measurement and temperature compensation with BLUM touch probes.
- They can be used both for workpiece referencing as well as for measuring during the production process.
- NC-based measuring cycles for measurement of the Kinematics of 4 or 5 axes milling machines. Measurement of the accuracy and correction of the kinematics of 1 or 2 rotary axes. Identification of machine problems caused by incorrect machine settings, collisions or wear.

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.

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Contact:

Blum-Novotest Measuring & Testing Technology Pvt Ltd, Bangalore
Tel: 080-23185468 Mobile: 09075004435
Email: info@blumnovotestindia.in, shyambv@blumnovotestindia.in



PRECISION TWIN MACHINE VICE

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

Features:

- Twin machine vices are capable of clamping two pieces simultaneously with one single movement of the handle keeping the total length constants.
- This makes it ideal for machining series of work pieces in machining centers. The exterior clamping system towards the center makes the elevated forces in the clamp area to be compensated dynamically thus avoiding deformations.
- Grinding of all surfaces, Possible working positions supported on the base on the side or vertically on the head. Suitable for working in horizontal and vertical machining centers Squareness and parallelism accuracy at 0.02 Microns.

About the Company: B R Precisions is dedicated to the manufacturing of clamping solutions; our main products are high pressure and precision vices.

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Contact:

B R Precisions, Bangalore
Mobile: 09845208854, 09449648171
Email: brvices@rediffmail.com



SERVO TYPE DRILLING/ TAPPING SPINDLE HEAD UNIT

Secon Technological Solutions Inc offers a wide range of servo type drilling/tapping spindle head unit.

Features:

- Every hardy precision spindle is built with high rigidity and quality housing material which is process by boring and honing.
- The accuracy of the spindle is strictly under 0.003mm, this unit allows it to perform all types of machining applications such as drilling, peck drilling, threading, tapping, chamfering, reaming and countersinking.
- Standard 3-phase AC motor 0.75kW is included, optional motor up to 1.5kW. Belt driven at fixed speed and incorporated with a timing, V or Poly-V belt. Feed rate is programmable and driven by a preferable servo motor.

About the Company: Secon Technological Solutions Inc. is engaged as a manufacturer, trader, service provider, distributor of CNC machines tools, preventive maintenance and consultancy services.

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Contact:

Secon Technological Solutions Inc, Bangalore
Telefax: 080-23575752
Email: secontech2000@gmail.com



SURFACE GRINDING MACHINE (MANUAL)

Universal Machine Tools Corporation offers surface grinding machine (manual).

Features:

- The machine is built of heavy cast iron hand scrapped to fine tolerance, easy movement of table slide by providing V – ways & flat ways.
- The grinding wheel spindle is hardened and round and runs in precision contact angular bearing and driven by flange, vertical grinding wheel slide movement down at right side in the body.
- The vertical wheel dial least count in 0.01mm and micro feed least count in 0.001 mm.
- These machines are available in various sizes: 450 X 225 mm , 600 X 300 mm.

And also available in hydraulic version.

About the Company: Universal Machine Tools Corporation, established in 1981, is one of the leading companies in the machine tool industry.

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Contact:

Universal Machine Tools Corporation, Bangalore
Tel: 080-23356231 Mobile: 09845006959
Email: universalblr@gmail.com, info@universalblr.com



FLUORESCENT PIGMENTS FOR TRAFFIC CONE

Aron Universal Limited offers a wide range of fluorescent pigments for traffic cone.



Features:

- This Rubber Paint is extensively used for colouring steel structural and concrete surfaces of chemical & fertilizer industries.
- These products are available in various colours and shades to suit varied client's requirement.
- Its features include: safe to use; non-toxic nature; long shelf life.

About the Company: Aron Universal Limited was established in the year 1974 and is headquartered at Bengaluru, India. It is India's leading manufacturer and exporter of vivid daylight Fluorescent pigments, Fluorescent Toners, Fluorescent ink bases, Fluorescent dispersions and pigment dispersions through relentless research and development.

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Contact:

Aron Universal Limited, Bangalore
Tel: 080-27825331
Mobile: 09791427847
Email: enquiry@aronuniversal.in

WIRE HARNESS

Miracle Electronic Devices Pvt Ltd offers a wide range of wire harness.



Features:

- As a leading looms manufacturer in India, we exemplify the commitment to excellence in providing cutting-edge wire harness solutions that meet the highest industry standards. And, as a versatile looms manufacturer in India, we offer a range of wiring solutions, including circular connectors, D sub connectors, etc.
- These harnesses cater to various applications such as single & discrete EMI cables, EMI-shielded cable harnesses, wiring harness multiwire, flat cable harness assembly, RF cable assembly, airborne looms, ribbon cable harness assembly, etc.

About the Company: Miracle Electronics is a renowned Transformer manufacturer in India, engaged in manufacturing power transformers, toroidal transformers, EI transformers, SMPS transformers, etc.

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Contact:

Miracle Electronic Devices Pvt Ltd,
Bangalore
Tel: 080-28362750
Email: sales@miracle.net.in

33kV VACUUM CIRCUIT BREAKER

Excel Power Switchgear Pvt Ltd offers a wide range of 33kV vacuum circuit breaker.



Features:

- The Medium Voltage Switchgear are manufactured in accordance with the relevant standard and widely used in various utilities and industries.
- The cubicle is made of high grade sheet steel and with the aid of numerically controlled machines precision punching, cutting, bending and welding techniques ensures all cubicles to be identical in every dimension; rigid and distortion resistant under short circuit conditions and during transport.

About the Company: Excel Power Switchgear, a high tech manufacturing unit established in 1998, is engaged in R&D, production, and manufacturing of low & medium voltage switchgear. Since then, Our company has displayed a rapid growth in the switchgear industry by attaching primary importance to customer oriented approach and by producing quality products.

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Contact:

Excel Power Switchgear Pvt Ltd, Chennai
Tel: 044-22254870
Email: sales@excelpower.co.in

DUSTBAG

Powertech Pollution Controls Pvt Ltd offers a wide range DustBag.



Features:

- DustBag dust collectors are fitted with non-woven polyester fabric of capturing dust particles as small as 10 microns.
- This equipment can capture large quantities of dust from any generating source with high capture efficiency.
- The DustBag uses non-woven polyester cloth as the filter media. It can incorporate additional safety features such as pressure differential switch fire retardant as well as antistatic filter media etc.

About the Company: Powertech Pollution Controls Pvt Ltd was established in the year 1996, for the design and manufacture of a wide range of air pollution control equipment, specifically electrostatic filters, for the capture and control of most types of fumes. mist, smoke and fine dust, reduction process.

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Contact:

Powertech Pollution Controls Pvt Ltd,
Bangalore
Tel: 080-23452156, 23452256
Email: powertech@airtelmail.in,
philipthomas@powertechindia.com

HYDRAULIC AND MECHANICAL PULLERS

Enerpac India Private Limited offers a wide range of hydraulic and mechanical pullers.

Features:

- A complete line of pullers with the widest range of sizes, capacities and styles. Made of high strength steel alloys, you can depend on Enerpac pullers to provide years of trouble-free operation, even in the harshest environments.
- Commonly known as bearing pullers and wheel pullers, these hydraulic pullers provide a simple solution for removing shaft mounted items such as bearings, gears, sleeves, wheels and sprockets and eliminate time-consuming and unsafe hammering, heating or prying.



About the Company: Enerpac is pushing the industry forward with a wide range of advanced industrial tools and services that first and foremost ensure its customers operate safely and productively every day.

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Contact:

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

HYDRAULIC ROTARY ACTUATORS

Rotodyne Fluid Technic offers a wide range of hydraulic rotary actuators.

Features:

- Rotary Actuators are devices for converting the pressure energy in a fluid medium to useful Rotary Power.
- The Rotary Motion is usually limited to one revolution or less and hence they are also known as Partial Rotation Motors or Oscillators
- Rotodyne Rotary Actuators are of Vane type design and Standard Models are available with upto 500Kg.
- The designs with double vane are also available. External stops will be required to stop and hold loads at desired position and deceleration of high inertia loads shall be achieved through proper meter out circuits.



About the Company: Rotodyne Fluid Technic is design and manufactures rotary joints for various sectors like machine tool, earth moving, construction, hydro power and defence.

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Contact:

Rotodyne Fluid Technic, Bangalore
Tel: 080-28396831
Email: info@tornadofluidpower.com

LINE INTERACTIVE UPS

Powerone Micro Systems Pvt Ltd offers a wide range of line interactive UPS.



Features:

- Line interactive UPS is used for small business, web and departmental servers. Power-one has the complete range of Line interactive UPS from 650 VA to 1000VA.
- Providing complete protection to your computers and electronic equipment against surges, blackouts and power fluctuation, these UPS are your perfect choice.
- For equipment with larger power requirement, their line interactive UPS system are the most reliable by providing solid battery backup to maintain sufficient power to save work when the power fails.
- These Line interactive UPS are being used by various small Industries, household works and IT sector around the globe..

About the Company: Power-One Micro Systems Pvt Ltd is a leading manufacturer of power conversion technology in India.

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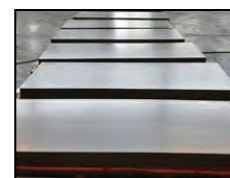


Contact:

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

SHEETS PLATES

Ratnamik Metal (India) offers SS sheets plates and coils.



Features:

- These plates and sheets are available in stainless steel, nickel alloy, carbon steel, alloy steel and duplex steel. They produce sheets and plates of standard quality, high strength, corrosion resistance and finished product of no defect.
- Plates and sheets are highly customized and available in different range as per the requirement stated by our clients. Plates and sheets offered by us are of superior quality, high durability and ductility.

About the Company: Ratnamik Metal is built for result oriented work culture, to fulfill customer's needs in terms of cost, quality and delivery. By enhancing effectiveness of people and plant equipment safely. Management style has been the key to their success as they delegates responsibility to the specific need of every customers and we have made every customer a member of our family.

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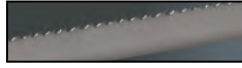


Contact:

Ratnamik Metal (India), Mumbai
Tel: 022-23864009
Mobile: 09833864009
Email: ratnamikmetal@yahoo.com

TOOTH DESIGN

Unique Saws And Machinery offers XN tooth design. It has shock absorbing tooth design, rationalised tooth spacing for better life, extremely good on manual machines, good surface finish and quicker operations.



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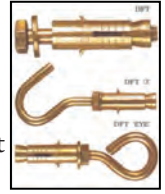


Contact:

Unique Saws And Machinery Pvt Ltd,
Indore
Tel: 0731-4002281, 4073815
Mobile: 09755599683/686
Email: info@uniquesaws.com

UNIF B/O/EYE UNIQUE FISHER

Unique Industries (India) offers unique fisher type Unif B/O/Eye. The product is used for false ceilings, partions, electrical fittings, ducting etc. The side lugs prevent it from rotating during expansion. DFT is the



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only sleeve type anchor which has small drill diameter compared to other sleeve type anchors.

Contact:

Unique Industries (India), Jalandhar
Mobile: 09463711124
Email: support@uniquefastners.com

NEW THREAD MILLING

Tungaloy India offers a wide range of thread milling. A vast range of diameters are available in the new thread milling line of economical head-changeable and indexable tools. SolidThread solid



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threading tool series is for machining small diameters.

Contact:

Tungaloy India Pvt Ltd, Mumbai
Tel: 022-61248804
Email: info@tungaloyindia.com

PRECISION AUTOMATIC LATHE

Tsugami Precision Engineering India offers CNC precision automatic lathe. This is high precision automated machine for bar



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working components.

Basic three axis machine provides maximum benefits.

Contact:

Tsugami Precision Engineering India Pvt Ltd, Kanchipuram
Tel: 044-6717 6717

COOLING PROCESS CHILLER

Tropicool eNovations And Cooling Systems offers cooling process chiller. Air-cooled industrial process chillers treat each process cooling application as unique and Motivair has the ability to design its air-cooled chillers to meet each client's needs.



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Contact:

Tropicool eNovations And Cooling Systems, Pune
Mobile: 08411004467, 09881230707
Email: sandip@rautgroupindia.com

MIXING BLENDING UNITS

Toshiba Machine (Chennai) Pvt Ltd offers mixing blending units. These blending units help in mixing precise percentages of additives or masterbatch at the feed-throat of the machine in an injection molding, blow molding or extrusion molding process.



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Contact:

Toshiba Machine (Chennai) Pvt Ltd, Chennai
Tel: 044-26812000
Email: sales@toshiba-machine.co.in

LATHES RIGID CLAMP

Unity Gauge And Tool Co offers a wide range of lathes rigid clamps. These products are suitable to use on milling, planning, shaping, lathes, etc. They are very useful in fixture building for fast clamping and unclamping, especially for job heights more than 60 mm.



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Contact:

Unity Gauge And Tool Co Pvt Ltd, Pune
Tel: 020-27120345, 27120455
Mobile: 09881995099
Email: marketix@unitygroup.co.in

CIRCULAR SAW MACHINE

V V Engineering Works supplies circular saw machines. The highly advanced ACS-80 CNC high-speed metal cutting circular saw machine can cut large diameters from 10 to 80 mm



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with the possibility to cut any alloy steel materials with fast cycle time and high accuracy.

Contact:

V V Engineering Works, Junagadh
Mobile: 07573880883
Email: inquiry@exacut.in

ADDITIVE MANUFACTURING

Voestalpine High Performance Metals India Pvt Ltd offers additive manufacturing services. Additive manufacturing adds to the range of products and services Voestalpine offers its customers and underscores the research capabilities of



the group as well as its ability.

Contact:

Voestalpine High Performance Metals India Pvt Ltd, Navi Mumbai
Tel: 022-27577441
Email: office.india@voestalpine.com

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CROSS CUTTING PLATE SAWS

Viswa Engineering Traders offers cross cutting plate saws. Full stroke hydraulic front and rear vises enable clamping and unclamping from the control station with the touch of a button. Both front and rear vises are



shuttle vises, allowing for easy loading, positioning and unloading from either side of the roller workbed.

Contact:

Viswa Engineering Traders, Coimbatore
Mobile: 09842270777
Email: viswatools@rediffmail.com

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DIAMOND ROTARY TOOLS

Vollmer Technologies India offers a wide range of diamond rotary tools. These manufacturing rotary tools are used where these are diamond-tipped or solid carbide. The grinding process plays the lead role, because it determines the tool's level of precision and service.



Contact:

Vollmer Technologies India Pvt Ltd, Bengaluru
Mobile: 09008844977
Email: info-india@vollmer-group.com

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3D PRINT

Altem Technologies offers a wide range of uPrint SE Plus 3D print. This product relies on FDM Technology to build in real ABSplus thermoplastic, creating models



and functional prototypes that are durable, stable and pinpoint accurate.

Contact:

Altem Technologies (P) Ltd, Bengaluru
Mobile: 09986048669
Email: enquiry@altem.com

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3-AXIS HOBBING MACHINES

ARK Mach Tek offers a wide range of shaping machine. Conventional and 3-axis hobbing machines are converted into 5-axis machines; all original strokes of various axes are maintained as it is; and all the linear axes movements are through ball screws of higher accuracy grade.



Contact:

ARK Mach Tek Pvt Ltd, Pune
Mobile: 09011016774, 09011016772
Email: office@arkmpl.com

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COIL NAILER

Apt Tools And Machinery India offers a wide range of pneumatic coil nailer. High performing and superior in quality, these tools are extensively used in the packaging sector for closing wooden crates. Moreover, these nailers are utilised for marking straight lines.



Contact:

Apt Tools And Machinery India Pvt Ltd, Coimbatore
Mobile: 09600912132, 09790016774,
Email: apttoolsindia@gmail.com

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INDUSTRIAL DEVICES

Ascent Intellimation offers Plant Connect Insights – an Internet of Things (IoT) platform for industrial devices. PlantConnect Insights is a real time data management and reporting solution for process plants. It provides aggregation platform for reporting along with historian.



Contact:

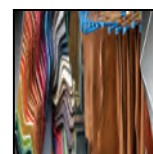
Ascent Intellimation Pvt Ltd, Pune
Tel: 020-25465217
Email: careers@aiplindia.com

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PROFIT ERP VERTICAL

ACE Software Solutions offers a wide range of Ace Profit ERP vertical. ACE Profit ERP for the tannery industry is targeted at vertically integrated units that manage (in tanneries) raw, wet blue, tanning, finished



tannery, shoe uppers, full shoe, leather garments and tannery gloves etc.

Contact:

ACE Software Solutions Pvt Ltd, Chennai
Tel: 044-24795144
Email: sales@acesoft.in

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TORQUE WRENCHES

ASI Datamye India offers a wide range of torque wrenches. Whether the mission is assessing residual torque on previously tightened fasteners, measuring real time dynamic torque on production power tools or precision torque on hand tightened joints.



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Contact:

ASI Datamye India Pvt Ltd, Ghaziabad
Tel: 0120-4300147
Email: india@asidatamye.com

VIDEO MEASURING MACHINE

ATQ Metro offers a wide range of video measuring machine. This product offers powerful 3 axis measurement solution with high precision and high accuracy. It provides fast and accurate measurement of complex precision parts; the image processing technology and high speed stage control enable high through-output measurements.



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Contact:

ATQ Metro, Pune
Mobile: 07875444909
Email: info@atqmetro.com

PIN GRINDER FIXTURE

Bestek Engineering offers a wide range of Pin Grinder Fixture. Indigenously developed crankshaft pin grinder with auto indexing fixture in hydraulically clamped conditions; machine offers higher flexibility in pin grinding operation for multi-cylinder crankshafts.



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Contact:

Bestek Engineering Pvt Ltd, Ghaziabad
Tel: 0120- 4232964
Mobile: 09711155184, 09711155190
Email: info@bestekmachines.com

DOT PEEN

Stamp IT Robotai And Solutions offers Dot Peen, pneumatic. The firm aims to provide solutions to the needs of wide marking application areas and desktop hybrid



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machine is one of the most popular solutions for such usage.

Contact:

Stamp IT Robotai And Solutions Pvt Ltd, Thane
Tel: 022-65131554, 65300580-95
Email: enquiry@stampitcnc.com

CENTER-LOCK CLOSURE - PLASTIC TUBE

Rose Plastic India offers a wide range of plastic tube. It is simple handling due to 'center-lock closure' technology. It ensures efficient packaging with fast and easy loading and unpacking. It has highly secure closure, but with minimal force.



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Contact:

Rose Plastic India Pvt Ltd, Pune
Tel: 020-26741000
Email: info@rose-plastic.in

RESHARPENING BROACH RESHARPENING

Suntech Landriani Machine Tools offers broach resharpener. This machine is used for resharpener services and the resharpener process is a precision grinding operation. Removing too much material reduces the tool life.



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Contact:

Suntech Landriani Machine Tools Pvt Ltd, Pune
Tel: 020-67920500
Email: broaches@suntechlandriani.com

SKODA MACHINE TOOL

Swastik Overseas offers wide range of Skoda Machine Tool. Skoda Machine Tool has upgraded its key products. In horizontal boring machines, Skoda represents a new line of heavy pinolových horizontal milling type of HCW, which represent the company's core business.



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Contact:

Swastik Overseas, New Delhi
Tel: 011-26197739
Email: mail@swastikoverseas.in

ER COLLET SPINDLES

Tecnicafts Industries offers a wide range of ER collet spindles. This range of cylindrical ER Collet shanks is made from high quality special steels under controlled process. The Shank is made to h6 standards for providing higher accuracy and tool life. The run-out is maintained within 0.005mm from shank diameter to ER cavity taper.



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Contact:

Tecnicafts Industries, Coimbatore
Tel: 0422-4278039, 4278040
Email: info@tecnicafts.com

CLAMPING SYSTEM

The New Ball Bearing Co offers Modular Clamping System. This product is modular vice systems as standard and dedicated solutions for the highest performance. The modular system is used in application from conventional machines to high-end 5-axis automated systems.



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Contact:

*The New Ball Bearing Co, Pune
Tel: 020-25533101, 25534590
Email: pune@nbbc.co.in*

TURNING CENTRE

Tekcel Automation offers a wide range of turning centre. CNC turning centre combines high capacity metal removal with high level of accuracy, rigidity and stability. Generally conceived and executed to match any imported machines.



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Contact:

*Tekcel Automation Pvt Ltd, Bengaluru
Tel: 080-23113807/08/09
Mobile: 08095558500
Email: harish@texcel.in*

TUBE HEAT EXCHANGER

Simon Coil And Heat Exchanger manufacturers of a broad collection of tube heat exchangers. These offered products can be used in industries for cooling or heating of air or other gases.



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Contact:

*Simon Coil And Heat Exchanger, Ahmedabad
Mobile: 09904341600
Email: info@simoncoil.com, simon_coil@yahoo.com*

PORTABLE SMOKE GENERATORS

Measuretest Instruments offers portable smoke generators. The MiniColt 4SP has been designed for air flow testing, visualization tests, and particle recovery work..



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Contact:

*Measuretest Instruments, Mumbai
Tel: 022-49701393
Email: info@measuretest.com*

ROTAMETER

Process Control Devices offers a series of rotameter. It is designed to measures the flow rate of a fluid flowing through vertical pipelines. glass tube rotameters are using for general in line metering applications for varied liquids & gasses.



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Contact:

*Process Control Devices, Navi Mumbai
Mobile: 08655587403
Email: sales@pcd-flowmeter.com, sales.pcdpl@gmail.com*

PIPE NIPPLE

Fit Wel Industries manufacturers pipe nipple. These fittings are designed to withstand high temperature and pressure. Forged threaded fittings swage nipple are designed for wide use in different industries like oil refineries, chemical processing.



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Contact:

*Fit Wel Industries, Mumbai
Tel: 022-23829256, 23829257, 23829258
Email: info@fitwelindia.com, fit@fitwellindia.com*

FILTER CARTRIDGE

Pure Aqua Engineers offers a wide range of filter cartridge. These cartridge is a kind of deep filter cartridge, which is made of the textile fabric string (polypropylene, absorbent cotton and so on) preciously winding onto the multi hole axles according to the specific technology.



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Contact:

*Pure Aqua Engineers, Ahmedabad
Tel: 079-22971320
Mobile: 09586023661
Email: viral@pureaquaengineers.com*

ROBOAGGREGATES

Robo Silicon Pvt Ltd offers a wide range of Roboaggregates. These roboaggregates are obtained by crushing of parent rock and exhibit better bonding at the interface of aggregates with cement paste. Its crushed by a three-stage configuration consisting of a jaw crusher followed by a cone crusher



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Contact:

*Robo Silicon Private Limited, Hyderabad
Tel: 040-45467210
Email: robosand@robo.co.in*

Event	Date & Venue	Contact
ADEX INDIA BOND EXPO - GREATER NOIDA	September 19-21, 2024 India Expo Centre & Mart Greater Noida	ADEX India India Expo Center & Mart Greater Noida Tel: +91 8177053335 Email: sales@theadexindia.com
IFAT INDIA - MUMBAI	October 16-18, 2024 Bombay Exhibition Centre (BEC) NESCO, Mumbai	MMI India Pvt Ltd Mumbai, India Tel: 022-42554700 Email: info@mmi-india.in
INDIA FASTENER SHOW - PUNE	October 17-19, 2024 Auto Cluster Exhibition Center, Mumbai Pune Road, Chinchwad East, Pune	FME (Future Market Events) Media Pvt Ltd Noida Email: eisha@futuremarketevents.com
LASER WORLD OF PHOTONICS INDIA - MUMBAI	November 07-09, 2024 Jio World Convention Centre, Mumbai	MMI India Pvt Ltd Mumbai Tel: +91 (2)2 42554700 Email: info@mmi-india.in
PUNJAB MACHINE TOOLS SHOW - CHANDIGARH	November, 21-24, 2024 Sub. City Center, Sector 34, Chandigarh	K AND D Communication Ltd. (KDCL) Ahmedabad Mobile: 09909041613 Email: info@kdclglobal.com
FACTORY AUTOMATION EXPO - PUNE	November 22-24, 2024 Pune International Exhibition and Convention Center, Pune	FME (Future Market Events) Media Pvt Ltd Noida Email: eisha@futuremarketevents.com, futuremarketevents.com
WIRE INDIA - MUMBAI	November 27-29, 2024 Bombay Exhibition Centre (BEC) NESCO Mumbai	Messe Düsseldorf GmbH Germany Tel: +49 (0)211 456001 Fax: +49 (0)211 4560668 Email: infoservice@messe-duesseldorf.de
IFSEC INDIA - NEW DELHI	December, 12-14, 2024 Pragati Maidan Exhibition Center New Delhi	Informa Markets India Private Limited Mumbai Tel: 022-6172 7000 Email: informamarkets@informa.com
GLOBAL INDUSTRIAL EXPO - PUNE	December, 13-15, 2024 Auto Cluster Exhibition Center, Mumbai Pune Road Chinchwad East, Pune	Global Media Communication Sanskriti Darshan Pune Email: satish@globalindustrialexpo.com
INTERNATIONAL		
INTERNATIONAL INDUSTRIAL AUTOMATION SHOW (IAS) - SHANGHAI	September 24-28, 2024 NECC National Exhibition and Convention Center, Shanghai, China	Hannover Milano Fairs China Ltd, Shanghai, China Email: fapa@hmf-china.com
INTERNATIONAL METAL TECHNOLOGY - 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
CHINA INTERNATIONAL AUTO AIR-CONDITIONING & TRANSPORT REFRIGERATION EXHIBITION (CIAAR)- SHANGHAI	October 21-23, 2024 Shanghai New International Expo Center - SNIEC, Shanghai, China	Shanghai Gehua Exhibition Planning Co., Ltd. Shanghai, China Tel: +86 (2)1 67759083 Email: stephaniegh@126.com

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India is proud to be the second-largest steel producer and consumer in the world. The Indian Steel Industry also has the highest investment commitment within the manufacturing sector, meeting the entire range of steel requirements with state-of-the-art technology. The Hon'ble Finance Minister was briefed on how the Indian Steel Industry is moving toward Aatmanirbharta in steel, including specialty steel. In the last four years, the domestic steel industry has added 37 MMT of capacity by investing more than ₹2.5 lakh crores. The industry needs support to safeguard the ongoing investments.



Adani Group

Adani Ports & SEZ Ltd. has acquired 80% stake in Astro Offshore, a global OSV operator, for USD 185 million. This strategic move strengthens APSEZ's position in key markets.



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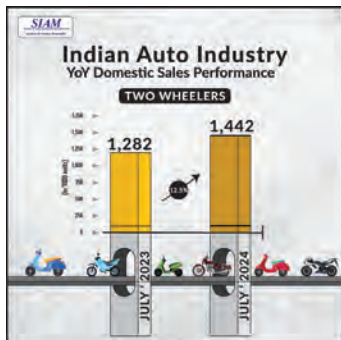
Ministry of MSME



Ministry of MSME, Government of the Republic of India signed Memorandum of Understanding with the Small Business Administration (SBA) of the Government of the United States of America for promoting Cooperation on Small and Medium-size Enterprises (SME) on 13.08.2024.



Society of Indian Automobile Manufacturers (SIAM)



In July 2024, Passenger vehicle segment de-grew by (-)2.5% compared to July 2023, posting a sales of about 3.42 lakh units. Three Wheelers posted a growth of 5.1% compared to July last year, with sales of 0.59 Lakh units in July 2024, which is close to the peak of 2018-19. Two-Wheeler segment also posted a decent growth of 12.5% in July 2024 as compared to July 2023, with sales of 14.42 Lakh units.



NTPC Limited

Shri ANIL JADLI has taken charge as Director (HR), NTPC on 23rd August 2024. He started his career in NTPC way back in 1993 as an Executive Trainee. His ascent from his humble beginning as an Executive Trainee to the top echelon of HR function in NTPC signifies his passion, commitment and hard work. He is a postgraduate in Organic Chemistry from Garwal University and did his post graduate diploma in Business Management in Human Resource Management from MDI, Gurgaon. He has also received management and leadership training inputs from ESCP-EAP (Paris, Berlin and Turin).



He has an illustrious career spanning over more than three decades encompassing both line and HR functions. After working in line function for around a decade, he switched over to HR function in 2004. From 2004 onwards, he looked after various facets of HR in various projects of NTPC in different capacity including Head of HR. He moved to Corporate HR in the year 2020, where he was instrumental in formulation and implementation of various HR strategies and initiatives.

He is a strong believer of "people before PLF" philosophy. With his rich and varied experience, HR in NTPC will achieve new feats in the days to come.



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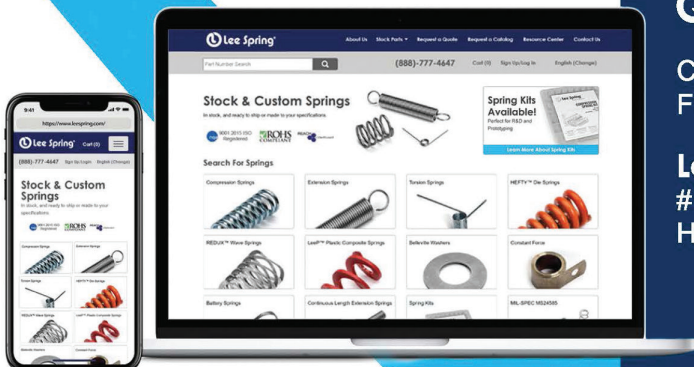
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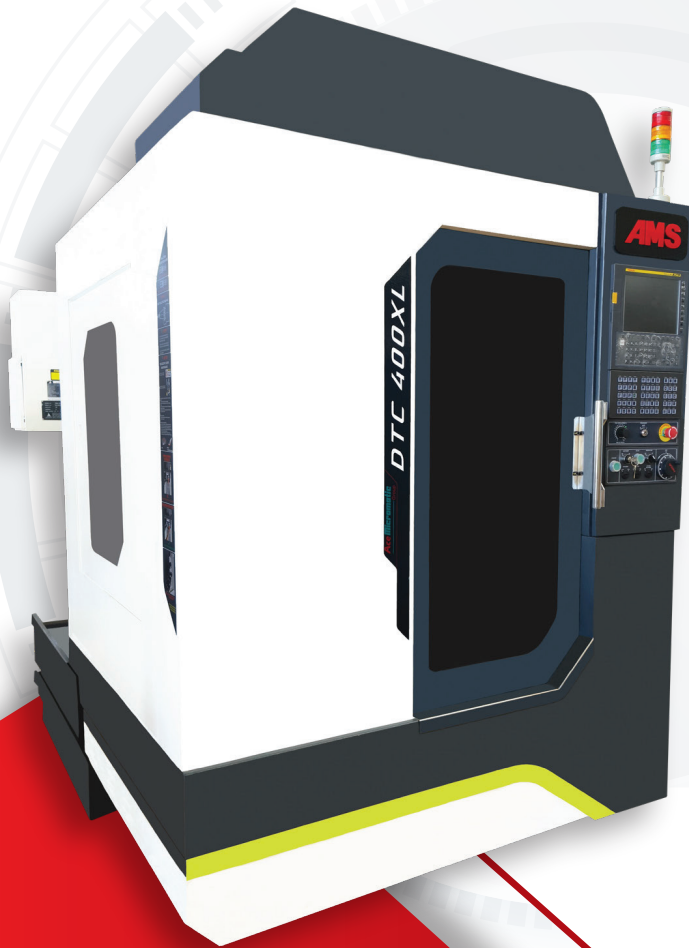
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