

THE MACHINIST

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OUR TRACTORS ARE MADE BY THE FARMER, FOR THE FARMER

In an exclusive interaction, **Harish Chavan**, CEO - Swaraj Division, Mahindra & Mahindra Ltd reveals that the engineers working with Swaraj hail from areas which share a dependence on farming, and thus are well-versed with farmers' grievances.

EV SUPPLY CHAIN

"WE HAVE ALREADY ACHIEVED 95 PER CENT LOCALISATION OF OUR EVS"

SPOTLIGHT

"WE ARE AIMING TO ACCELERATE GROWTH IN THE NON-AGRICULTURAL SEGMENT"



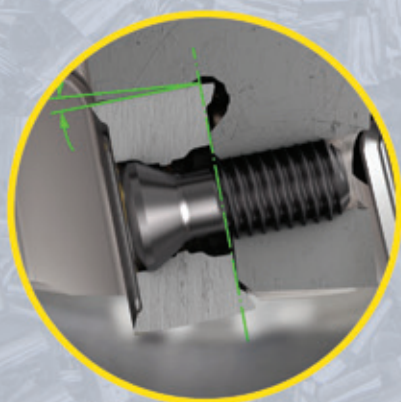
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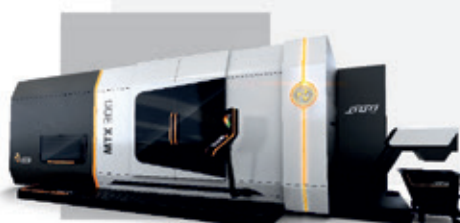
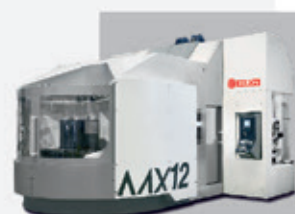
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TWINNING TOGETHER!

The practice of predictive maintenance in the industrial industry is being revolutionised by digital twins. Digital twins offer real-time monitoring of equipment performance and health as well as the early identification of potential problems or failures by building a virtual counterpart of physical assets.

Data from the physical asset is continuously gathered by sensors and IoT devices and fed into the digital twin, enabling a thorough study of the behaviour and status of the asset. The data is then processed using sophisticated analytics and machine learning algorithms to forecast performance in the future and spot possible problems, allowing maintenance personnel to take corrective action before a breakdown happens. Digital twins provide several benefits for predictive maintenance in manufacturing, such as reducing downtime, improving asset reliability, and optimising maintenance schedules.

By implementing digital twins for predictive maintenance, manufacturers can move from a reactive maintenance approach to a proactive one, resulting in cost savings and increased productivity. Additionally, digital twins for preventative maintenance allow for remote monitoring and control of manufacturing equipment, minimising the need for on-site visits and the risk of machine failures and breakdowns.

That said, data is critical for any business in this generation, and it can be viewed as the new oil. This edition's cover story on Swaraj Tractors is a testimony of their business heavily relies on data as the company is planning to introduce telematics on their tractors to gather customer data and understand how customers work with the machines.

What's more, in the current edition is an interview with Delta Electronics MD, wherein he emphasised the need for significant investment in the charging infrastructure to support the growth of EVs in India. That said, Euler Motors in an exclusive interaction with my assistant editor disclosed how the company is aggressively working towards end-to-end localisation of their EVs. In addition, the co-founder of HTL Group of Companies shared his outlook on India as a potential market for furniture manufacturing, innovating new fabric ranges, emerging trends, capacity expansion plans and the impact of Industry 4.0 on the furniture manufacturing.

R Kamat
Editor

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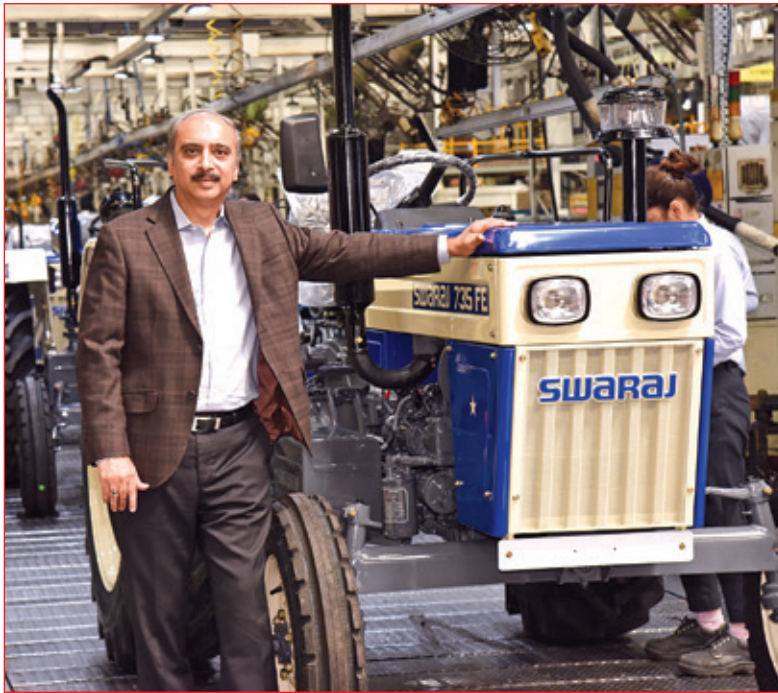
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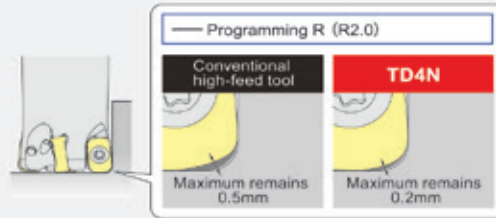
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TD4N

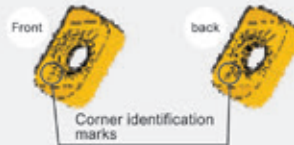
Radius mill TD4N

Reduces uncut remnants on work pieces

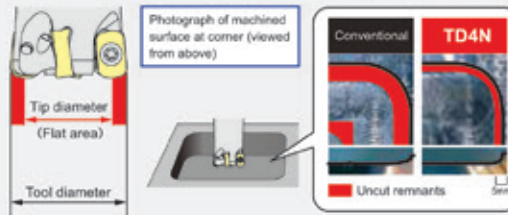
The cutting edge shape was reviewed for TD4N so that uncut remnants are reduced. This enables the load on the next process to be reduced by up to 40% compared to conventional products.



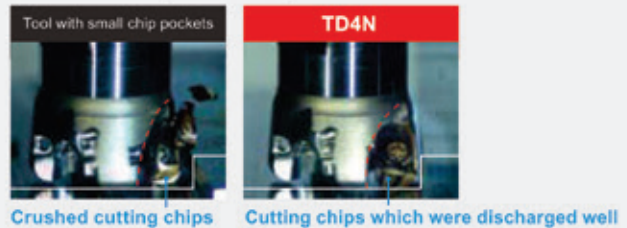
Economical 4-corner inserts with chip breakers for various applications



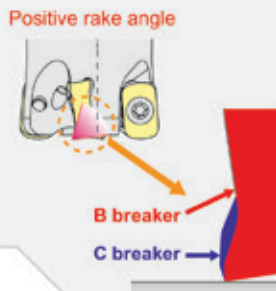
Large tip diameter for excellent handling



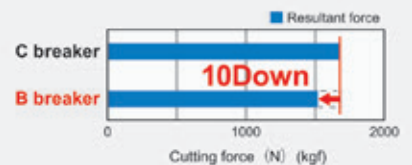
Excellent chip discharge characteristics



Magnified view of cutting edge cross section



Comparison of cutting force



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YOUR GLOBAL CRAFTSMAN STUDIO

MG Motor India launches 4th edition of 'Drive Her Back' initiative

MG MOTOR INDIA, a British automobile brand, has onboarded candidates for the 4th edition of 'Drive Her Back'; an initiative aimed to empower women to re-establish their careers after a break. The first-of-its-kind program offers women equal and inclusive professional opportunities within diverse verticals of the company. Providing a dignified platform for women from differentiated backgrounds and communities to resume their careers, season 4 is also set to benefit the spouses of MG Motor's current employees.

Under this unique initiative, women are provided coaching and internal mentoring to ensure their seamless adaptation to the corporate environment. The program also includes valuable networking opportunities and professional development for all candidates. Season 3 of the 'Drive Her



Back' initiative culminated with over 1,500 applications, empowering over 60 women to kickstart their careers in their respective fields at MG Motor.

Commenting on the 4th season of the Drive Her Back initiative, Yeshwinder Patial, Senior Director Human Resources, MG Motor India said, "As a brand committed to inclusivity, MG Motor believes in creating a diverse and

talented workforce where every employee has access to equal opportunities. The 4th season of the 'Drive Her Back' initiative is a testament to our commitment to empowering women and promoting gender diversity at the company. Through such initiatives, we aim to create a highly skilled pool of women who can contribute meaningfully to our organisation and the industry at large."

Suzuki Motorcycle India registers 23.3 per cent Y-O-Y growth in April 2023

SUZUKI MOTORCYCLE INDIA PVT. LTD. (SMIPL), the two-wheeler subsidiary of Suzuki Motor Corporation registered an overall sales figure of 88,731 units in the month of April 2023. The company sold 67,259 units in the domestic market and exported 21,472 units in April 2023. Overall, the company witnessed a 23.3 per cent year-on-year growth in April 2023 as compared to the same month last year.

Commenting on the sales performance, Kenichi Umeda, Managing Director, Suzuki Motorcycle India Pvt. Ltd. said, "Suzuki Motorcycle India continues to grow at a double-digit rate. We registered a significant year-on-year growth of 23.3 per cent in April 2023. This consistent sales performance is the result of growing demand for Suzuki two-wheelers in India and in the overseas markets. Apart from the sales growth, April 2023 proved to be quite progressive for the company as we successfully achieved the 7 millionth production milestone since the origin of the company in 2006. This month, we also introduced new colours for our third generation Hayabusa."

Godrej & Boyce launches first-ever safety app for material handling operations in India

GODREJ & BOYCE announced that its business Godrej RenTRUST, India's largest warehouse rental equipment player, has launched an innovative safety solution, the 'i-Report' app, to enhance safety in material handling operations in India. The state-of-the-art app was officially launched on the 33rd Safety Foundation Day at Godrej & Boyce on 12th April 2023.

This marks India's first-ever safety application for material handling operations and will help reduce the gap in the industry's safety policies and standards by offering a 360-degree safety solution through remote and real-time incident reporting, audit, training, and consultation to their customers and business partners.

The safety app will be available in over 200 locations across 22 states and will be manned 24 X 7, by 1,000+ trained operators. Now, all sites, crew, and customer representatives can easily log safety hazards, while a team of dedicated safety supervisors will monitor the app. The process will only be closed once the safety officer of Godrej & Boyce confirms that the steps taken to close the hazard are safe and sustainable to prevent any such occurrence in the future.

Anil Lingayat, Executive VP and

Business Head of Godrej Material Handling stated, "With the advent of this innovative application, Godrej RenTRUST is poised to set a new standard for safety initiatives in the Indian material handling industry, and further promote the culture of safety across manufacturing facilities and warehouse premises, suitably enabled with technology."

Godrej RenTRUST has invested heavily in innovation, digitisation, and technology to promote safety at warehouses and manufacturing facilities. The booming warehouse market in India has witnessed a surging demand for well-equipped, modern warehouses that prioritises the safety of the workforce. Injuries incurred in warehouse operations pose grave risks to the well-being of staff, while also disrupting workflow and incurring significant expenses.

Presently, there are no digital record-keeping mechanisms or safety protocols in place in Indian warehouses, leading to preventable accidents. The introduction of the 'i-Report' safety app marks a vital step in bridging this gap, enabling hazard identification and the provision of safety guidelines to mitigate accidents on the shop floor and in warehouses.

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Ekkaa Electronics to invest Rs 1,000 crore in setting up a new facility at Noida

EKKA ELECTRONICS, a leading electronics company, will soon be establishing a new state-of-the-art manufacturing facility at Noida, Uttar Pradesh. This new facility will not only manufacture LED TVs but also other consumer electronics products like washing machines, smartwatches, hearables and TWS. With the establishment of the new facility, Ekkaa will move from assembly to core manufacturing of consumer electronics products.

The company has announced an investment of Rs 1,000 crore in the new manufacturing unit which is expected to be functional before August 15th, 2023. To cater to the burgeoning export demand, Ekkaa will soon launch an export arm as well.

Sagar Gupta, Director, Ekkaa Electronics, said, "Out of the proposed investment of Rs 1,000 crore, 40 per cent has already been aligned for land acquisition, construction, working



capital, manufacturing, and R&D. The remainder of the investment will be spaced out over six months towards R&D, machinery and others. The infusion of funds will be a continuous process as we are not only increasing production capacity, but also expanding our product lines."

The new facility at Noida will have an initial capacity to manufacture 5,00,000 units of LED TVs per month

which will make the plant the largest facility in terms of capacity in the country with potential to ramp it up to 8,00,000 to 9,00,000 units per month in the next three years. To begin with, the new facility will have a workforce of 1,500 employees with plans to ramp it up to 3,000 over three years.

Currently, Ekka caters to the requirements of 150 pan-India and regional brands and exports to neighbouring countries like Nepal, Bangladesh and Bahrain. The new facility and product lines will enable it to export to countries like Africa, the Gulf nations and over a period of time, to Europe and USA as well.

Having built its expertise and reputation in manufacturing LED TVs, Ekkaa has trained its guns on other display products like commercial, interactive, outdoor, education displays, touch panels, gaming monitors, office monitors and the likes which are currently imported.

Tata Elxsi partners with IIT Guwahati to foster EV technologies

TATA ELXSI LTD, a leading global technology services provider for the Automotive and Transportation industry, has signed a Memorandum of Understanding (MoU) with Indian Institute of Technology, Guwahati (IIT-G) to jointly work on developing and commercialising state-of-the-art solutions for the electric mobility market. The MoU was signed between Prof. Parameswar K. Iyer, Officiating Director, IIT Guwahati and Manoj Raghavan, Chief Executive Officer, and Managing Director of Tata Elxsi, in the presence of Prof. Praveen Kumar, Dept. of Electronics and Electrical Engineering, IIT Guwahati, and Anil Radhakrishnan, Director Products, and Atul Kulkarni, Chief Technical Officer, Tata Elxsi.

This collaboration will bring together researchers and experts for advanced research in Material Science, Digital Twins, and Deep Artificial Intelligence and Machine Learning techniques.

Speaking about this partnership, Manoj Raghavan, CEO and MD of Tata Elxsi, stated, "This collaboration will bring together the best minds from Tata Elxsi and IIT Guwahati to envisage and

develop future-looking solutions for the fast-evolving space of electric mobility. The fault analysis solution is an excellent example of how industry-academia collaboration can bring together original thinking and application of the latest digital technologies to solve very specific industry needs from operators, OEMs and system suppliers in the transportation industry."

The collaboration between Tata Elxsi and IIT Guwahati will enable both collaborators to apply their research capabilities to real-world problems, such as advancing state-of-the-art predictive maintenance.

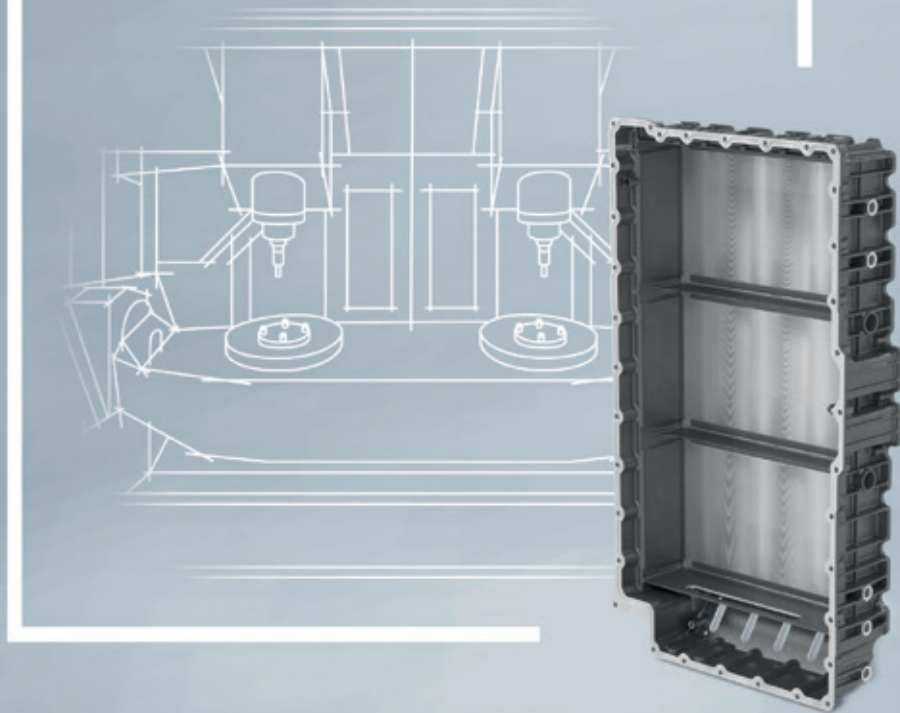
Prof. Parameswar K. Iyer, Officiating Director, IIT Guwahati, said, "Electric vehicles are being increasingly considered the solution to carbon emissions from the transportation sector, and there is an essential need to create more future-ready solutions in the EV automotive and transportation industry. The shared



knowledge between IIT Guwahati researchers and Tata Elxsi team will help in building a research ecosystem in this field, and its commitment to further strengthen the partnership going forward will help in achieving the Government of India's mission of making our country 'Atma Nirbhar'."

One key area of work under this collaboration will be the digital analysis of electrical signature data for traction motors which underpins EV mobility across segments, including automotive and rail. The solution will provide deep insights for proactive fault prediction, maintenance schedule formulation, and design and manufacturing defects traceability.

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Ipower Batteries Pvt. Ltd. launches India's first Lithium Magnesium Iron Phosphate batteries

IPOWER BATTERIES PVT. LTD.

has recently announced that it has developed India's first LMFP (Lithium Magnesium Iron Phosphate) batteries for EV industry. These batteries have been named as Rugpro series which is dubbed to revolutionise the EV 2-wheeler industry in India. This groundbreaking battery series has received AIS 156 (Amendment III) Phase 2 approval from the Government of India under the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme. Ipower Batteries is by far the only battery manufacturer in the country to have achieved this.

To ensure they meet the needs of the Indian market, Rugpro (LMFP) batteries have undergone rigorous field testing. The cells used in the battery are 2C rated, allowing them to discharge high amounts of power quickly. Additionally, the combination of Lithium Iron Phosphate (LFP) with Manganese provides a long-life cycle and high energy density. The LMFP batteries are an upgraded version of LFP batteries and makes up for their shortcomings.

The Rugpro batteries are made of aluminium and have a pressure valve to disseminate pressure from building up in batteries. It also comes with an active balancing BMS and inbuilt audio-video system to monitor battery behaviour. These batteries come with SB-75 and



Chogori connectors and have rugged design to weather any conditions they are subjected to.

Ipower's R&D team has worked meticulously to select optimal cells and assemble each component precisely to develop a battery that meets the highest standards of performance, safety, and reliability. The battery also includes Ipower's smart BMS that provides active balancing in the battery packs, which is the most efficient way to improve performance and extend battery life. To ensure optimal performance in Indian climatic conditions, the battery incorporates a special passive thermal management system. Overall, Rugpro series offers exceptional performance and durability, with features tailored to meet the demands of Indian market.

The company is proud to promote 'Made in India' and to contribute to the growth and sustainability of the Indian EV industry. The Rugpro battery series are completely innovated, designed, developed, and manufactured in India.

The Rugpro series is currently offering 8 battery variants which are the most advanced and suitable battery for all Indian conditions. Elated over the announcement, Vikas Aggarwal, Founder & MD of Ipower Batteries, said "We are thrilled to launch India's first LMFP batteries under Rugpro series. This is a significant milestone for Ipower Batteries and the Indian EV industry. We are proud to be at the forefront of innovation and to contribute to the growth of the industry. Our new batteries have received a remarkable welcome from our associated OEM vendors and other partners. Ipower will be delivering the first batch of 5,000 battery packs by May 2023. We thank our clients, EV network for their trust and motivation, which has constantly inspired us to come up with new and innovative solutions for the industry."

The Rugpro series has bagged a strong order of supplying their first batch of 5,000 battery packs by May 2023 to its OEM vendors like Deltic, Jitendra EV, Lohia, Quantum, Gravaton, Sheema Electric to name a few. The batteries are now market ready and available for use.

Mahzooz sponsors Future Rehabilitation Centre in establishing a multi-sensory facility

EWINGS, the Managing Operator of Mahzooz, UAE's leading weekly draw with the biggest and most frequent payout, has sponsored Abu-Dhabi-based Future Rehabilitation Centre's multi-sensory room, a facility that provides sensory assistance to around 145 children of determination who are part of the centre's students.

Future Rehabilitation Centre's multi-sensory room is designed specifically to offer young students with Sensory Processing Disorder (SDP) customised sensory experiences through a variety of equipment. Using this facility will help students of determination benefit from improved coordination and motor development, heightened awareness of their surroundings, and a better

engagement of their senses.

Established in the year 2000, Future Rehabilitation Centre currently caters to an average of 145 multinational young students of determination and offers them special education and therapy-based programmes to address their needs through Individualised Education Plans.

Mahzooz means 'lucky' in Arabic and is UAE's favourite draw that offers participants a life-changing opportunity to win millions every week. For only AED 35, participants can purchase a bottle of Mahzooz water, and enter the weekly draw consisting of the Grand Draw, for a chance to win the new top prize of AED 20,000,000 and the new weekly Raffle Draw, which will grant AED 1,000,000 every week to a



guaranteed millionaire-to-be. To date, it has created 41 millionaires and has given away over AED 410 million in prize money to more than 2,38,000 winners.



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Citroën India launches the new Gen III Puretech 110 Turbo engine with advanced safety features

CITROËN INDIA recently announced the launch of latest Gen III Puretech 110 Turbo engine with 13 new features on the top Shine variant including an Advanced Safety Suite that includes ESP, Hill-Hold, TPMS and Engine Auto Start/Stop. The feature list on the Shine variant includes electrically adjustable ORVM, rear parking camera, day/night IRVM, 15-inch diamond cut alloys, front fog lamps, rear skid plates, rear wiper and washer, rear defogger. The B-hatch will also come equipped with My Citroën Connect app with 35 smart connectivity features as part of the Citroën's Connectivity 1.0 plan.

Saurabh Vatsa, Brand Head, Citroën India added, "We are pleased



to launch the new Gen III Puretech 110 Turbo engine now with advanced safety features, that will delight owners with its practicality and performance for city and highway commutes. The C3 Turbo has been in high demand and delighted customers in the past and now

with this new generation turbo engine compliant with BS6 Phase II, the customers will continue to enjoy the high performance and responsive motor for an exciting driving experience. With the new Shine variant and My Citroën Connect app on board, this hatch with a twist makes for a very appealing and compelling package. We would like to thank the customers who have been waiting for the C3 Turbo and we

would like to assure them that the vehicle deliveries will start from middle of May."

All variants of the Citroën C3 are compliant with BS6 Phase II norms. PURETECH 82: 19.3 (kmpl) & PURETECH 110: 19.3 (kmpl) (*ARAI certified).

Biesse Group donates machines to promote skill development in the manufacturing sector

BIESSE, a pioneer in designing and manufacturing machines, has donated a Rover Gold 1232 CNC Machine & CAD/CAM software for advanced training to Hettich Poddar Woodworking Institute (HPWWi), Faridabad. Biesse had earlier also donated 1 Panel Saw and 2 Through-Feed Edge Banding machines as part of the previous collaboration with the institute.

The machine donation is a part of reinforcement of their commitment with an MoU signing and exchange at DelhiWood 2023 (one of the biggest trade fairs in woodworking machinery and furniture production technologies in India) and their ongoing efforts to promote education and training in the manufacturing industry.

Apart from the machine donation, Biesse, as a Skill Ambassador in the Furniture & Fittings Skill Council (FFSC), is also committed to supporting the skilling ecosystem in India. One of its initiatives is to support the National Skill Training Institute (NSTI), Kolkata, in developing advanced woodworking courses. Biesse also aims to work with Indian Council of Forestry Research and Education (ICFRE)/ and the Institute of Wood Science and Technology



(IWST) to submit project proposals for woodworking technologies in different Forest Development Corporations and Common Facility Centres.

Furthermore, Biesse also provides training programmes for professionals and students in various educational institutes, such as the Advanced Woodworking Training Centre (AWTC) in Bangalore. The company is also involved in a Train the Trainer (ToT) initiative in AWTC/IWST for various ITIs across India. Additionally, Biesse is committed to supporting AWTC/IWST in training technicians and carpenters from Naval DockYard, MEG, IAF, and PSU's. Through these initiatives, Biesse

aims to equip learners with the necessary skills to excel in the manufacturing industry, contributing to the growth of the skilling ecosystem in India.

"India is the 5th largest manufacturer in the world and accounts for roughly 3 per cent of global manufacturing output. However, there is a clear dearth of talent and abilities, with approximately 90 per cent of the workforce in the furniture industry being unemployed. To meet this demand, we as an industry leader are committed to investing in education and skill building to ramp up growth and development in the industry," said Sayeed Ahmed, CEO of Biesse India.

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“WE HAVE SEEN CONSIDERABLE SUCCESS IN SELLING LEATHER-LIKE FABRICS”

With its foray into the Indian market yielding positive results, HTL Group, the leading sofa manufacturer and leather tannery operator, is optimistic about its growth in the country. In an interview, **Phua Yong Tat**, Co-Founder of HTL Group of Companies, shares his outlook on India as a potential market for furniture manufacturing, innovating new fabric ranges, emerging trends, capacity expansion plans and the impact of Industry 4.0 on furniture manufacturing.

Tell us in detail about your journey so far. What kind of response you have received from the market over the years for HTL Group?

From being the largest sofa producer to the top leather upholstery specialist in the world, our journey has been remarkable and rewarding, and one that we will cherish. Beginning from the creation of a single sofa to establishing an entire business dedicated to crafting sofas, we have pursued our passion.

Over the years, we have expanded HTL's footprint to 53 countries and is ambitious to propel further.

The market for sofas and furniture has undergone a tremendous change as individuals have grown increasingly concerned with the interior design of their homes and the use of premium quality furnishings. HTL has built its reputation over the years on its commitment to quality, comfort, affordability, and customer service.

Give us an overview of your business performance and growth in 2022. What is your outlook for 2023?

Our business has been prospering and is highly favourable. HTL has shown a growth of 25 per cent overall in 2022. Looking ahead to 2023, we hold a positive and promising outlook, especially with our entry in the Indian market. The Indian market has shown significant expansion with respect to furniture and sofas. HTL setting up its manufacturing facility and providing services in India will significantly benefit our retail partners and enable us to cater to the Indian audience with the best quality and service.

What are the key trends shaping the furniture manufacturing segment?

The prevailing trend in the industry is tilting towards motion sofas. The market share for motion sofas has



Phua Yong Tat, Co-Founder of HTL Group of Companies

experienced proportional growth, leading customers to divert their attention from conventional furniture. The customer preference is now shifting towards contemporary motion sofa designs and models, as they have created a buzz within the furniture industry.

We are incorporating more advanced technology into our furniture production. The company is also emphasising on the strategy of nearshoring, which entails relocating production sources closer to the market, which subsequently improves the supply chain resilience and risk management.

What sets HTL's manufacturing plants in India apart from the international ones?

HTL has acquired German and Italian brands and



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We continuously innovate our fabric range to meet customer needs. This includes introducing resilient fabrics that are easy to maintain, clean and pet friendly. Moreover, we offer eco-friendly fabrics crafted from recycled PET materials, as well as heavy weight cushioned fabrics. For customers who desire the appearance of leather but prefer alternative options based on their lifestyle or personal preferences, we have seen considerable success in selling leather-like fabrics.

aims to take the furniture sector to a notch higher. Fortunately, brands under HTL have received a fabulous response from the Furniture retail fraternity, with many partners adopting the Shop in Shop concept. They share HTL's ideology of prioritising quality, comfort and customer service.

Regardless of the country of operation, we are committed to maintaining consistent and high standards of quality. Our well-maintained manufacturing facilities in India facilitate prompt client service with a vertically integrated manufacturing unit. Additionally, we have begun exporting products manufactured in India, which is in line with our commitment to the "Make in India" initiative.

Apart from leather, what are the other upholstery fabric options offered by HTL?

While it is true that leather remains significant to us, we have also introduced a new line of fabrics that have received an overwhelming response from our retail partners.

As part of our commitment to the environment and future generations, we have incorporated eco-friendly materials into our fabric selection. These materials are manufactured from recycled plastic bottles, with approximately 50 per cent comprising of leather, while the remaining 50 per cent consists of fabric. In the high-end market, leather is still very popular as Nature's fabric.

We continuously innovate our fabric range to meet customer needs. This includes introducing resilient fabrics that are easy to maintain, clean and pet friendly. Moreover, we offer eco-friendly fabrics crafted from recycled PET materials, as well as heavy weight cushioned fabrics. For customers who desire the appearance of leather but prefer alternative options based on their lifestyle or personal preferences, we have seen considerable success in selling leather-like fabrics.

Tell us in detail about your company's sustainability & ESG initiatives? How is it helping in reducing your carbon footprint and achieving NetZero target?

One of our biggest initiatives is reducing shipping costs

by moving our production to India. Further, we are dedicated to sustainable packaging as our packaging consists of 100 per cent recyclable materials and is boxed in cartons. We ensure that the origin of all our leather hides can be linked to farms. Our tanneries feature water treatment plants, which cleans the water before it is released into the environment. These tanneries hold an ISO 4001 accreditation, showing our commitment to environmental management.

What is the capacity of your manufacturing plants in India? Are there any plans for further expansion and growth this year?

Currently, our Chennai and Pune facilities, are the two plants we have in India, with each enclosing a 5-lakh square ft. space. As we continue to expand, we aim to achieve 1,200 containers every month.


How are the new-age technologies being adopted in the manufacturing sector?

Upholstery manufacturing is known for its skilled craftsmanship. To enhance worker productivity and cost efficiency, our primary focus lies on automation. Consequently, our workforce can redirect their efforts towards higher-value tasks such as quality assurance, design, and customer service.

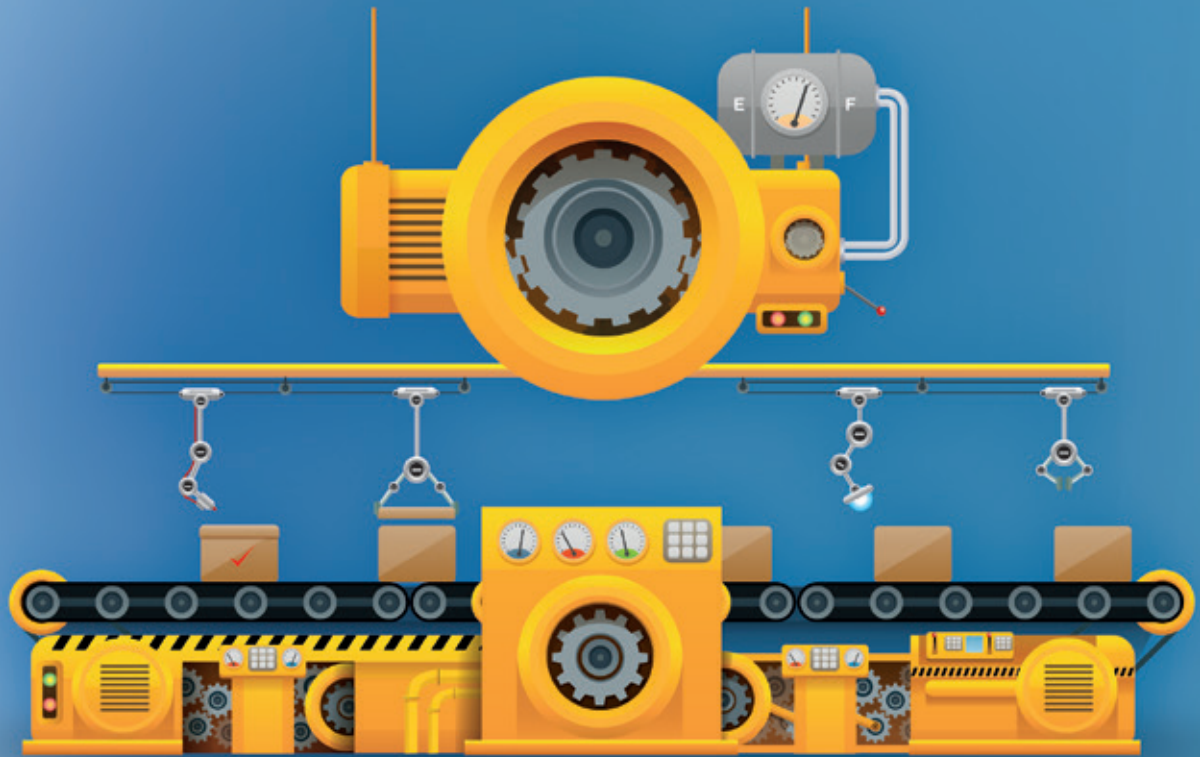
With Industry 4.0 taking over, how drastically it will change manufacturing operations in India?

The only thing that remains constant is change. There have been many changes in the industry, but stability remains a key aspect.

We have concentrated on the intensified use of robotics and automation to optimise our production process. With the integration of new digital technologies, we aim to accelerate the creation of new products and reduce the time to market.

Additionally, the utilisation of data analytics and focused augmented reality plays a pivotal role to optimise supply chain efficiencies and accelerate conversion the process. Overall, it will involve making smarter choices to enhance business models, create greater value, and improve the customer experience. 

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“WE HAVE ALREADY ACHIEVED 95 PER CENT LOCALISATION OF OUR EVS”

Gaurav Kumar, Head of Supply Chain & Manufacturing, Euler Motors, discloses how his company is aggressively working towards end-to-end localisation of their EVs. He also focuses on the requisites for creating a localised quality EV value chain and their industry-first innovations - battery thermal management systems and liquid-cooled battery system in an interview with **Nisha Shukla**.

According to you, what are the requisites for creating a localised quality EV value chain that can outperform ICEs?

Although India already has a well-established mechanical supply chain for parts and components, the EV industry is now investing in a new supply chain network for batteries, drivetrains, and power electronics. The next focus should be on innovative battery assembly, increasing automation and standardisation. This will enable the production of vehicles on a large scale with consistent quality output across all deployments.

Companies should seek vendors willing to join them on their innovation journey. At Euler Motors, we have a vast network of over 300 suppliers who are growing with us in the EV segment.

Considering the constantly changing trends in the global supply chain, companies must also be prepared to optimise and plan for potential contingencies. Building alternative strategies to tackle shortage problems, such as having an alternative vendor base and internal capabilities, can help prevent disruptions to production.

At Euler Motors, we have been working closely





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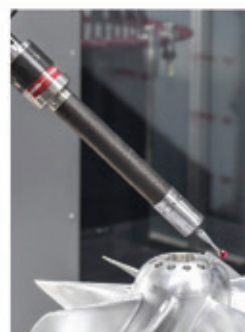
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We have been working closely with suppliers from the R&D stage to localise our components and design EVs specifically for the Indian market. We do not retrofit; instead, we have built our products from the ground up, using a localised component, supply chain, and partnerships.

with suppliers from the R&D stage to localise our components and design EVs specifically for the Indian market. We do not retrofit; instead, we have built our products from the ground up, using a localised component, supply chain, and partnerships. As a result, we have already achieved 95 per cent localisation of our EVs.

Tell us in detail about your manufacturing facility for EVs. Are all the parts and components assembled in this facility or imported?

Our manufacturing plant operating in NCR consists of a semi-automatic state-of-the-art shop floor and a battery line for liquid-cooled battery pack technology. While we manufacture our vehicles here, some parts and components are either sourced or imported.

From a component standpoint, we have achieved 95 per cent localisation for the vehicles and 90 per cent for our battery packs, excluding the cell. These also include many parts and component systems which are 100 per cent localised in India for the first time, where the team innovates and manufactures parts in India.

What amount of investment have you made towards manufacturing EVs? Any plans to increase it further?

We made an investment of Rs 150 crores towards setting up our new manufacturing facility. We have built one of the largest factories, spread over 12 acres of land in the NCR, where we have begun mass production. Currently, we are producing 500 units per month from one of our largest factories and plan to expand up to 1,500 units per month by the end of this year.

What are the new trends you are seeing in EVs and battery production?

One of the new trends in EVs and battery production is the increasing demand, driven by a combination of factors, such as rising environmental concerns, government regulations, technological advancements, and customer awareness. As more people become aware of the benefits of EVs, such as their lower running costs and reduced environmental impact, there has been a growing interest in EVs among consumers.

In addition, government regulations and incentives, advancements in battery technology and charging infrastructure are also generating demand for EVs.

Another trend is the growth of battery production. As the demand for EVs increases, there is a corresponding need for batteries to power them. Startups and legacy OEMs are investing heavily in developing new battery technologies and expanding their manufacturing capabilities to meet this demand.

Besides, a new ecosystem for components and battery tech is emerging. This includes new players entering the market, such as companies focused on developing battery materials and components as well as existing players expanding their offerings to include EV-related products and services. This is creating new opportunities for innovation and collaboration across the industry.

As per the government's Vahan data (as of March 3), sales of electric vehicles (EVs) in India have surpassed the 100,000-units milestone for the fifth consecutive month. What, according to you, are the factors that have contributed to this growth?

This trend is driven by the increasing emphasis on the lower total cost of ownership, better economics, and operational benefits among the key drivers across the EV two and three-wheeler industry, prompting significant investments in EVs by these players to ensure that their operations are both cost-effective and sustainable. Commercial EVs are leading the way as they are ideal for last-mile delivery due to their high manoeuvrability and small carbon footprint, making them an attractive option for many delivery companies. E-commerce and 3PL players were the first to adopt EVs, and now the retail segment too is going electric.

Tell us in detail about the new products and innovations you will be launching soon.

We recently launched the advanced version of HiLoad EV 2023 – with the highest battery pack and range in the 3W cargo segment. The new HiLoad EV 2023 comes with the industry's highest 13 (12.96) kWh battery pack, 170 km ARAI certified range (Real Range™ 100-120 km), and a 30 per cent higher payload capacity (688 kg) and 30 per cent earnings than any other 3W cargo in India.

We aim to become one of the dominant players in the commercial EV market; hence are focussing on this category for now. However, we are not restricting

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The demand for EVs is increasing, especially in the commercial sector, and is expected to continue to grow in India. However, customer adaptability is linked to awareness and availability of powerful vehicle options, with high upfront costs often being a barrier. Competitive pricing and product differentiation can help overcome this challenge

ourselves to any one product. Every time we come up with a product, we want it to be different, not just better, than any other product in the market. We will share when we are ready to go out.

We have heard that Euler Motors have designed and manufactured their own battery packs to support Indian roads and extreme temperatures with active liquid cooling technology – a first in the commercial vehicle segment. Kindly shed light on it.

We have built a custom 12.96 kWh IP67 Lithium-ion battery pack boasting industry-first innovations such as battery thermal management systems and liquid cooling.

Our liquid-cooled battery system is designed to meet the demands of commercial fleet operators, who need vehicles that are: reliable, efficient, and cost-effective. This technology enables the battery pack and motor to operate within an optimal temperature range, enhancing the vehicle's performance and increasing its range. The performance of our vehicles is seamless in all weather conditions making it highly suitable for the Indian market. Additionally, it prolongs the lifespan of the battery and motor, making our vehicles dependable, economical, and efficient.

What are the challenges that are still hindering the growth of the EV in India?

The demand for EVs is increasing, especially in the commercial sector, and is expected to continue to grow in India. However, customer adaptability is linked to awareness and availability of powerful vehicle options, with high upfront costs often being a barrier. Competitive pricing and product differentiation can help overcome this challenge. Limited awareness of the total cost of ownership (TCO) and the long-term benefits of owning an EV too hinder adoption. In addition, the lack of charging infrastructure and financing options are obstacles to widespread EV

adoption, despite competitive TCOs. Solving these challenges is crucial for the EV industry's growth in India.

EVs are seeing increased demand from non-metros or precisely from Tier 2 and 3 cities. What are the key factors contributing to this trend?

EV demand is rising in India's Tier 2 and 3 cities due to growing awareness of environmental issues, cost benefits, and reduced financing obstacles. Infrastructure concerns have decreased due to increased charging infrastructure investment, and government incentives have also contributed to the trend. This increased demand in Tier 2 and 3 cities are generating new business opportunities and supporting economic development, and overall, the EV ecosystem is better developed, and acceptance is increasing.

An innovation or technology that has helped you to reduce BOM cost and overall component localisation?


VA-VE (Value Addition, Value Engineering) is a process we use to reduce the BOM cost and overall component localisation. The process involves several steps, including component sizing, alternate sourcing, order volume, cell chemistry selection and analysis, simulation, and testing and validation for weight reduction.

Cell chemistry selection is a crucial aspect of VA-VE as it can significantly impact the cost and performance of the battery. By selecting the right cell chemistry, we ensure that our batteries are cost-effective and have high energy density.

Recycling EV battery is another challenge, given it has toxic materials. How can we resolve this issue?

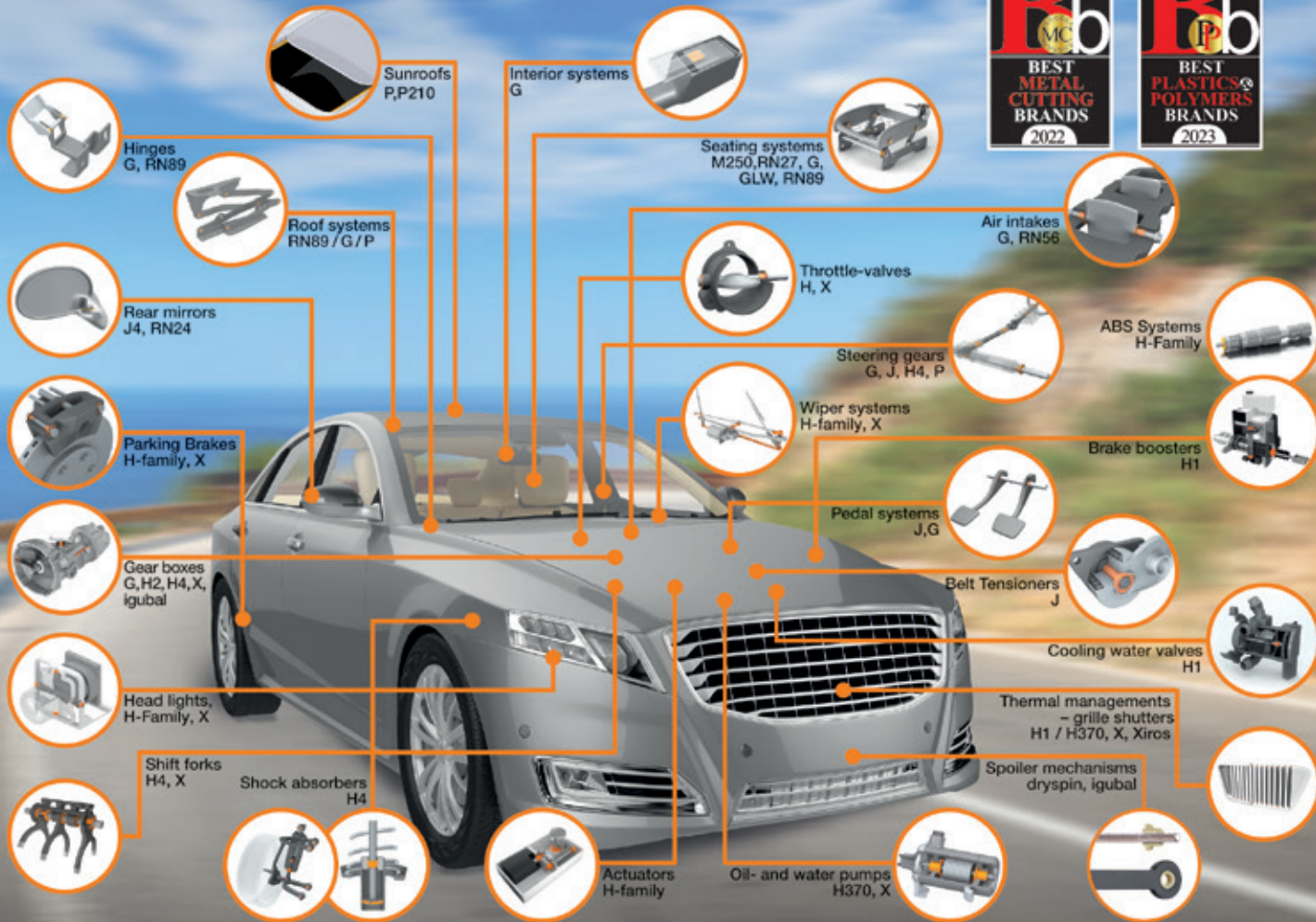
As the EV industry grows, the issue of battery waste and toxicity becomes increasingly crucial. However, there is a potential solution that can reduce the impact of discarded battery packs: the second life of battery packs.

Typically, the first life of an automotive battery pack is between 25-40 per cent Depth of Discharge (DoD) usage, after which the battery pack can still hold a significant amount of energy. Instead of simply discarding these packs, we can repurpose them for non-automotive applications, such as cell towers, where the residual values of the batteries can still provide value.

By exploring the second life of battery packs, we can reduce the overall environmental impact of the electric vehicle industry and find new ways to use these valuable resources. Companies need to consider the lifecycle of their products and find innovative solutions like this to minimise waste and maximise sustainability. 

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“WE ARE AIMING TO ACCELERATE GROWTH IN THE NON-AGRICULTURAL SEGMENT”

Ajit Venkataraman, CEO of Finolex Industries Limited, discusses how his pipes and fittings business delivered the most profitable Q3 and the factors contributing to this growth. He also touched upon the new market segments the company is aiming to tap and how they are dealing with volatility in the prices of PVC pipes in an interview with **Nisha Shukla**.

How is the market shaping for agriculture and non-agriculture pipes and fittings businesses?

The pipes and fittings industry experienced a phenomenal Q3, particularly Finolex, which achieved a high record and was the best Q3 ever. The strong performance was primarily driven by high demand in the agriculture sector, with a lot of pent-up demand in the market resulting in us doing more than 90,000 metric tons in Q3 of FY23.

Looking at the five-year compounded annual growth rates (CAGRs), both the agricultural and non-agricultural markets have performed well. The agriculture market has grown at a rate of 8-10 per cent CAGR over the last five years, and the non-agriculture market has grown upwards at a rate of 15 per cent.

Looking forward to the next five years, we expect the overall market will grow anywhere between 10-15 per cent, with the plumbing and sanitation segment growing faster than the agricultural segment.

Which other key segment will be of prime focus to you apart from agriculture?

We are a 40+ year-old brand and have a long-standing reputation in the agricultural segment. Our products are well-known for their quality and durability, with pipes purchased by farmers over 40 years ago still functioning well.

We are well known in the market for our quality; even the farmers ask for Finolex pipes. So that is the strength of our brand. Over the past five years, we are gradually transitioning into the plumbing and sanitation segment, with a split of 35 per cent for non-agriculture and about 65 per cent for agriculture. As we move forward, we aim to grow the non-agriculture or the plumbing and sanitation segment and achieve an even split within the next 2-3 years.

What is your business outlook for 2023 and for the

next 5 years?

2023, so far has been a positive year and this is the year when we have surpassed the pre-COVID levels, which is quite encouraging. We expected it to take three years, but it only took two years for us to achieve it. This growth is primarily due to pent-up demand and the construction industry's success in India, particularly in housing and infrastructure, which has reflected



Ajit Venkataraman, CEO of Finolex Industries Limited



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positively in our plumbing and sanitation segment, allowing us to grow faster than the market. However, it is important to note that the market volume is highly dependent on PVC prices, which have been volatile in recent years due to COVID.

Over the last decade, PVC prices were steady, but during the pandemic, they rose significantly. The PVC price went up to 80 per metric tonne and then fell to almost \$750 per metric tonne. So, this is a huge fluctuation, and the market is efficient, which means that the price is passed on to the market as quickly as possible. It has a significant impact on market demand, with retail networks willing to stock up in inventory when prices rise, but keeping lean inventories when prices fall. The volume of business is therefore affected by this.

Moving into FY '24, the outlook depends on the stability of PVC prices, and it is difficult to predict their future based on the past two years. We need to keep a close eye on this to make predictions for the future.

How are you planning to increase your market and revenue share in the upcoming quarters?

The pipe and fitting industry experienced its strongest quarters in Q1 and Q4, while Q2 typically proved to be weak due to the monsoon season. It is especially in this season the volume drops, particularly in the agricultural sector. However, efforts are being made to maintain and grow our business in the agricultural segment, with brand strength and network being key

factors driving growth. While we are a strong brand, most of our growth is seen in Tier 2, Tier 3, and Tier 4 cities, where we have a stronghold in the agriculture segment. We are leveraging this growth for our plumbing and sanitation segment as well. The goal is to accelerate growth in the non-agricultural (Plumbing & Sanitation) segment while continuing to expand the agricultural segment.

What kind of growth/ demand you are expecting from your target markets (Both Agriculture and Housing Segment)? Are there any plans to diversify into other markets and cities?

Our goal is to achieve steady growth in both the rural and urban markets. When we talk about agriculture, it is much more in the rural markets and when you talk about the plumbing and sanitation it is much more in the urban markets. So, we are focusing on having deeper penetration in the urban area and are going about it in a targeted way.

The selling process for agriculture and plumbing and sanitation is very different. Agriculture is much more of a demand-pull, while non-agriculture, i.e. plumbing and sanitation focuses on push marketing. When farmers have the money, they seek Finolex pipes as they want to invest in quality products. In contrast, the non-agriculture segment is more competitive and requires push marketing. Branding plays a crucial role in this segment, and we have to spend heavily on brand building. There is also a need for retail presence,

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The current trend is moving towards solution sales rather than just product sales. As far as the products and their ranges are concerned, most manufacturers offer similar products, making it a commodity business. Differentiation can be achieved through the quality of the products, brand, brand pull and distribution network.

in terms of advertising, promotion and meeting the influencers such as plumbers, architects, and builders. So promotional activities are essential to stay ahead of the competition. So, the approach is very different for these two segments, and our efforts are targeted towards ensuring growth in both areas.

What are the new trends you are seeing in the plumbing, sanitation pipes and fittings business?

The current trend is moving towards solution sales rather than just product sales. As far as the products and their ranges are concerned, most manufacturers offer similar products, making it a commodity business. Differentiation can be achieved through the quality of the products, brand, brand pull and distribution network. So, all these things contribute to how well you sell. The way you can service the market is what sets companies apart and that is where we are focusing our efforts.

The prices of PVC pipes have been quite volatile for some time. How are you dealing with it?

Finolex is the sole manufacturer of pipes and fittings which is integrated downwards. We produce our own PVC and raw materials. We consume all our raw materials. This provides us with a reasonable edge against price fluctuations. It is important to note that the market is highly efficient, and any changes in the price of PVC are immediately reflected in the market. Consequently, our profit margins are linked to the PVC cycle. It is during the rising market; we can make more money than during downward trends.

Kindly shed details on your plans for capex.

In March, we invested over Rs 100 crores by setting up a new fittings plant in and around Pune. This is a state-of-the-art facility and we have augmented our fitting capacity by almost 25 per cent. We are continuously assessing new investment opportunities. Currently, we have a pipe production capacity of 3,70,000 metric tonnes, which is adequate for the next few years. However, we acknowledge the need to prepare for future growth and are continuously evaluating potential investment prospects.


Are there any plans to further expand your workforce?

At Finolex, we are in the process of transitioning from a traditional manufacturing company to one that is digitising its systems, processes, and operations. This requires us to constantly add new capabilities in data, data warehousing, and analytics. We are also adding new capabilities in sales and marketing, as we shift our focus from being an agriculture-focused company to a plumbing and sanitation company. Also, the way we sell will also be very different. To support this transition, we are bringing in people from various industries, such as building and construction, who have expertise in the adjacencies, that are ahead of the pipes and fittings industry. These are the new things that we are adding to the dominant sections of our business.

What kind of new marketing strategies and campaigns you will be implementing in future? What kind of investments you have chalked out for these campaigns?

The company recognises that developing closer relationships with customers is a critical part of its operations. This involves providing better service, ensuring that products are available in remote areas, and making our product available when the customer demands it.

The company's recent expansion into the plumbing and sanitation sector has necessitated a need to have a substantial reach to the customer base, which is very different. As a result, we have invested heavily in building relationships with industry influencers such as plumbers, engineers, architects, and builders. Although these efforts may not be visible, all of this is happening behind the scenes. However, we have evidently taken a significant leap in our retail network reach and the branding associated with it.

In addition to marketing, the company has also invested heavily in IT to ensure end-to-end transparency and efficiency. This includes implementing systems to track sales and customer purchases, as well as leveraging analytics to better understand customer behaviour and preferences. The company recognises the importance of IT infrastructure for both primary and secondary sales and is committed to ongoing investment in this area to support its growth strategy. 



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FOR DETAILS





“OUR TRACTORS ARE MADE BY THE FARMER, FOR THE FARMER”

Over the years, Swaraj, as a brand, has developed some distinct characteristics. Being a part of the agricultural ecosystem in Punjab, the company has cultivated a close bond with farmers and is aware of their needs. In an exclusive interaction, Harish Chavan, CEO - Swaraj Division, Mahindra & Mahindra Ltd reveals that the engineers working with Swaraj hail from areas which share a dependence on farming, and thus are well-versed with farmers' grievances. “If the engineer belongs to a metropolitan city like Mumbai, he would be unaware of their needs,” he says, and this ability to build tractors according to the need has given Swaraj tractors the much-cherished brand value. Edited excerpts:

By Rahul Kamat

If we consider the figures that you published for FY'23, we can observe a significant increase in the sales of Swaraj tractors. What are the factors that have contributed to this growth?

The industry is buoyant, and growth is being driven by various enabling factors in the rural economy. However, our growth has been notably higher due to our customer's loyalty to our brand. Additionally, we have made significant product interventions in terms of our customer offerings. Unlike launching a completely new model, the changing agricultural practices and cropping patterns mean that Indian farmers require a tractor that is more suitable for their evolving needs. Therefore, even if we introduce a new variant from the same brand, it becomes a new offering for the farmer. In summary, our growth has been driven by our customer-centric efforts, our product introductions, and the agility of our sales force in capturing customers.

In the tractor business, particularly in Punjab, there are many

local players. How does Swaraj differ from them, given that local brands could be preferred due to their cheaper pricing?

A farmer is an intelligent individual, and a tractor is a livelihood machine for them - it is not just a mode of convenience. Therefore, farmers make prudent decisions when it comes to purchasing tractors. Our broad positioning is focused on power, long life, and reliability. Despite the availability of cheaper options from local players, farmers see the value of our product, and how Swaraj tractors meet their needs in terms of power and reliability. This is why there is a loyalty factor towards Swaraj. We believe that Swaraj is a brand of generations, and we stand by this equation. We achieve this first by offering quality products, and secondly, by bringing customers to our factories, so they can witness how the tractor is manufactured. Even though farmers may pay a premium for our product compared to local players, we enjoy a healthy market share and hold the number one position (considering M&M and Swaraj together), especially when many players are offering products at competitive prices.



When it comes to segment-wise, need-based mechanisation for the farming sector, how is Swaraj addressing this gap through its products and solutions?

The agriculture sector in India is constantly evolving, and the need for mechanisation is increasing due to the challenge of labour availability. Additionally, farmers aspire to achieve better productivity and crop quality, which can be achieved through better farming practices and increased efficiency. Swaraj is helping to address these needs by providing different attachments and mechanisation aids to enable better farming practices. We are developing products that can suitably accommodate attachments, thereby allowing farmers to carry out farming more efficiently and in different ways, while also reducing their dependence on manual labour.

Furthermore, we are bringing in products at better price points, ensuring that even smaller farmers can afford tractors that can easily attach and incorporate any necessary features. We also cater to farmers who require machines other than tractors, such as those in horticultural farming, which is growing in numbers, year-after-year. Tractors cannot move on such (horticulture) narrow-space farms, and thus farmers require lightweight machines that can move into such spaces without damaging the roots of the crop.

Last year, we introduced a horticultural machine called CODE by Swaraj to provide farmers with a mechanisation solution that did not exist before. This machine is ideal for someone upgrading from a power-tiller but who does not require a tractor, reducing labour and making them more self-sufficient. In this way, we are changing farming practices and enabling farmers to be more productive and efficient.

When we talk about region-based demands of Swaraj tractors, which regions provide a good business opportunity?

We have a uniform market share across all five zones throughout India. Although some people may

believe that Swaraj is only popular in North India, we are equally sought after by farmers in regions such as Telangana, Andhra Pradesh, and Maharashtra. Therefore, our brand has expanded from being considered a North India brand to an all-India brand with an equal market share across all regions.

You mentioned the technological advancements that have been made in the tractor sector. Do you offer any programs to educate farmers about these advancements? Additionally, do you provide any training to farmers?

At Swaraj, we understand that a new product cannot be successful unless farmers are aware of it. Therefore, we aim to establish a long-lasting relationship with our customers and build a brand that will last for generations. To achieve this, we have developed a unique program called 'Swaraj Satkar.' This program was highly successful until the onset of the Covid pandemic. However, we are currently in the process of re-establishing it.

As part of the program, we invite customers from various regions to visit our plant to learn about the manufacturing process of Swaraj tractors. We showcase our facilities and use this opportunity to understand their needs and gain early feedback before introducing any new product. We also take customers to our R&D centre to demonstrate new advancements in technology. In addition to providing training, we strive to connect with our customers and gain insight into their needs and requirements.

Have you received any feedback from a farmer who said he wants a particular type of machine and then you went about making it?

All of our product development is driven by farmer feedback. Tractors made for farmers in Punjab are significantly different from those made for farmers in the South. This variation is due to differences in crops and soil types. For example, rice fields are unique to the South, and without engaging with farmers and gaining a deeper understanding of their needs, we cannot improve our products. Farmer feedback is invaluable, and we also look to learn from other countries where mechanisation is more common than in India. The technology advancements in Europe, for instance, tend to flow to the US, and then to Eastern Europe, before eventually making their way to India. We have our company in Turkey and Brazil, and this allows us to

See how Swaraj upgraded India's cleanest foundry from scratch

Swaraj Tractors, a prominent manufacturer of agricultural equipment in India, has recently taken a strategic measure to enhance its future readiness by upgrading its existing foundry unit to a state-of-the-art casting unit. As the Indian farm equipment sector is experiencing rapid growth, Swaraj Tractors is positioning itself to meet the growing demand for tractors ranging from 15 HP to 65 HP in India.

The recently upgraded casting unit of Swaraj Tractors incorporates a range of cutting-edge practices that are firsts in the industry, including advanced automated systems, state-of-the-art technology, and lean manufacturing principles. This gives Swaraj Tractors a significant advantage over its competitors in the field of farm equipment manufacturing.

The entire upgrade process took approximately two-to-two-and-a-half years to complete. After the upgrade, it took just two months to reach full capacity, thanks to the efforts of a dedicated workforce who were able to transition from an old manual system to a high-end automated one.

Advanced Automation and Lean Manufacturing Increase Efficiency

The Swaraj Foundry's state-of-the-art casting production unit is equipped with cutting-edge technology, including automated systems for mold, core making, and metal pouring practices. This reduces reliance on human skills and significantly increases the efficiency and accuracy of the production process. The incorporation of advanced equipment such as the latest induction furnaces, automatic pouring systems, and integrated quality control systems has also helped to optimise the process, increase productivity, and reduce costs.

The implementation of lean manufacturing methodologies has led to improved operational performance, shorter lead times, and increased efficiency, resulting in substantial cost savings for the manufacturers. It's worth noting that the Swaraj Division Foundry is the only captive foundry-of-its-kind established by a tractor manufacturing company. The unit produces critical castings such as differential housing, gearbox housing, crankcases, and cylinder blocks.

Increased Capacity and Productivity

A world-class facility that has significantly increased Swaraj's casting delivery capacity from 120 metric

tonnes a day to 200 metric tonnes a day, the Swaraj Division Foundry has set its sights on producing substantial quantity of tractors. The incorporation of advanced equipment, automated systems, and lean manufacturing methodologies, coupled with an integrated quality control system, has significantly increased productivity and efficiency, making Swaraj Tractors a leader in the farm equipment sector, both in India and beyond.

That said, the state-of-the-art foundry sets a benchmark for best-in-class foundries in India and abroad. The technical evaluation of these facilities has enabled the Swaraj Division Foundry to improvise and innovate to the extent that it has established new yardsticks and unmatched manufacturing standards in the industry.

Ultramodern Equipment Improves Working Conditions for Employees

The foundry has made significant improvements to its working conditions by replacing the traditional manual liquid metal pouring process with a state-of-the-art Automatic Metal Dispensing Press Pour Unit. This modern technology is coupled with VISIPOUR, an advanced predictive system that enhances the performance of the pouring process. The implementation of automation has significantly reduced dependence on manual operations, further improving working conditions and reducing fatigue for employees.

Improved Working Environment and Safety Standards

The foundry has successfully tackled the challenges of traditional manufacturing setups by implementing a new, streamlined process that minimises manual intervention at all stages of the casting manufacturing process. The result is a more efficient and streamlined working environment that reduces the physical strain of manual labour for our employees. The enclosed shakeouts, along with dust and smoke extraction systems, will significantly enhance the working environment in the plant by providing clean air and a safer workplace.

The new shop is fully compliant with European safety standards and features multiple interlocks that ensure a completely safe working environment. Additionally, safety fences that are interlocked with machines provide added protection for employees.



pre-empt technological advancements and apply them to our products. We actively seek feedback from our customers, and we use that feedback to create products that are suitable for local needs. We also aim to create awareness among our customers about potential future needs and pain points, and we develop new products based on those insights. For example, we developed the CODE product based on identified pain points rather than specific customer requests.

Could you elaborate on the sustainable manufacturing processes that you employ?

As a group, we have set ambitious and bold goals for energy usage, water positivity, and zero waste to landfill. We take these goals very seriously and have made significant progress in these areas. We employ sustainable sources for energy production, such as solar power, and our upcoming third assembly plant will be designed to be even more energy-efficient than our current plant. We also work closely with our vendors to create a sustainable supply chain.

Our brownfield foundry in which we have made significant investment is the most challenging area to handle from an environmental perspective. To ensure sustainability, we have implemented technology solutions such as high-efficiency machines, mostly imported from Europe and automated handling to reduce waste and emissions. We have partnered with global players who have expertise in delivering high-energy productivity solutions for their customers.

We are continuously learning from the advancements made by our European counterparts, who have introduced carbon credits to increase stringency. Sustainability is a key factor for us, and we prioritise adopting better technologies and machines to improve energy production while minimising our environmental impact. This is especially important

since we have several village settlements around us.

Do you have any intentions to expand your (foundry) business by supplying your products to external parties apart from providing them in-house?

Our current objective is to utilise our foundry capacities within the Mahindra Group. We are solely manufacturers and not suppliers. While we may offer our foundry capacity to Mahindra if required, generating income by selling our products globally is not our priority.

Give us a sense of your growth strategy and investment plans going forward. Additionally, what is the expected annual output from your manufacturing plants?

Whilst automobiles may contribute to environmental pollution, agriculture has the opposite effect and is inherently environmentally friendly. We are dedicated to improving the environment. For instance, producing one kilogram of rice can require up to 13,000 litres of water. This can be remedied through sustainable agriculture practices that use less water whilst increasing crop yields and profitability.

Thus, we believe it is our responsibility to create machines that promote crop diversification and help farmers earn better livelihoods. For instance, horticulture is contributing tremendously to the agriculture GDP due to increased food consciousness.

However, we recognise that producing horticultural crops can be very expensive for farmers. Therefore, our product strategy focuses not only on promoting agricultural mechanisation but also on sustainable agricultural mechanisation. Through this approach, we invest in product technology that will aid in our growth. Presently, we are in the process of setting up a manufacturing facility in Humaynpur, Mohali with

an investment of Rs 400 crore. Spanning over 40 acres, the tractor maker plans to produce 30,000 tractors per annum at the unit initially, which may be expanded further.

The upcoming state-of-the-art facility will cater to the ever-increasing demand for Swaraj products. The new plant will be designed to set new benchmarks in terms of style, comfort and convenience of the product offerings for our customers. It will also benefit local communities in and around its vicinity as it will create employment and growth opportunities. In the upcoming facility, we plan to produce a wide range of tractors and farm implements starting from land preparation to post-harvest operations.

This new investment will address our needs for the next three years and the continual updating of our machine shops with greener and higher-tech machines will deliver better cost and profitability.

Overall, we aspire to grow higher than the expected long-term market growth of 6 per cent to 8 per cent and our track record over the last two decades demonstrates this.

When discussing sustainability in agricultural mechanisation, what are Swaraj's plans for introducing electric tractors?

There is a significant disparity between electric vehicles (EVs) in automobiles and those in tractors. Automobiles require batteries to operate continuously on roads, whereas tractors must provide power for various purposes, and the battery should fit in the tractor while having the capacity to work 7-8 hours on the field in remote locations. This kind of battery technology is yet to be developed. We are closely monitoring advancements in this area and anticipate seeing better-powered innovations in smaller-sized tractors, although it is unlikely to occur in heavy agriculture applications. We are mindful of these requirements and are working on them. Several start-ups are working in this field, but overall, it will take time to evolve.

How do you view the impact of data on your business?

Data is critical for any business in this generation, and it can be viewed as the new oil. Our business heavily relies on data, and we are planning to introduce telematics on our tractors to gather customer data and understand how customers work with our machines. This data will help us predict demand and identify areas where (demand) it is high. We plan to use this data to remain connected with our customers through social media and our Swaraj App, which aims to increase customer engagement. Data is a universal requirement for any company to function, and we generate vast amounts

of data in our plants, which are fed into maintenance and efficiency modules. We have developed technology that triggers a data analytical system when a machine is about to break down, alerting us that maintenance is needed.


In what way are the data points assisting the R&D team in enhancing the product?

For all the new products that we test, we perform extensive testing across various regions. We meticulously collect all the data that we obtain. To achieve this, we establish service camps where the sales representatives are responsible for entering the customer's profile and intended purchase into the tablet. This information is then stored in our software, which in turn assists us in generating demand.



The entire Industry 4.0 is revolutionising the manufacturing sector, specifically for agriculture mechanisation, how is it helping the growth of the industry?

Our approach in this area is unequivocal. Our goal with Industry 4.0 is to enable lean manufacturing. Lean manufacturing involves five fundamental aspects: Productivity, Quality, Cost, Delivery, Safety, and Morale, which are always at the forefront of our minds. Any automation or industrial development that we implement must impact these areas positively. We do not invest in Industry 4.0 technologies simply for the sake of showcasing our technological prowess. Our investment decisions in this area are purely based on the potential benefits for our customers. This is how we define Industry 4.0 at Swaraj.

In addition, we have our foundry in Turkey, and we have asked them what they would do differently if they had to build their foundry again. We incorporate their ideas into our business model, which guides us in coming up with new concepts. 

“THERE IS A NEED FOR SIGNIFICANT INVESTMENTS IN CHARGING INFRASTRUCTURE TO SUPPORT THE GROWTH OF EVS”

Niranjan Nayak, MD, Delta Electronics India talks about the challenges and requisites to create a robust EV charging infrastructure in India

Do we have enough charging infrastructure for EVs to grow in India? What are the challenges?

Creating a localised quality EV charging infrastructure requires a comprehensive approach that considers various factors such as the availability of charging stations, the types of charging solutions, the cost of installation and maintenance, the accessibility and

convenience of charging facilities, and wherever feasible, the integration with renewable energy sources.

In India, there is a need for significant investments in charging infrastructure to support the growth of EVs. Currently, the number of charging stations is limited, and most are in urban areas, making it challenging for

EV owners in rural or remote areas to access charging facilities. Furthermore, the cost of installing charging stations and the lack of standardised charging solutions can be significant barriers to the expansion of charging infrastructure.

To address these challenges, there needs to be a collaborative effort among policymakers, industry players, and stakeholders to develop a comprehensive roadmap for building a robust charging infrastructure network. This could involve incentivising private players to invest in charging infrastructure, developing standardised charging solutions, and integrating renewable energy sources such as solar and wind power to reduce the carbon footprint of charging stations.

The installation cost for both fast and slow charging networks is quite high. How this could be addressed.

The cost of setting up both fast and slow charging networks is a major factor increasing the price of charging for electric vehicle owners. The installation cost of charging infrastructure is influenced by various factors such as charging station type, location, power supply, and maintenance costs. Fast charging networks are more expensive to install than slow charging



networks because they require more costly equipment and installation due to higher voltage and current requirements.

In response to this challenge, many countries, including India, are providing subsidies and financial incentives to encourage EV adoption and support the deployment of charging infrastructure. The Indian government's FAME scheme provides subsidies to EV manufacturers and charging station operators to reduce the upfront cost of purchasing an EV or setting up a charging station. State governments in India have also announced incentives such as waiving land costs, electricity connection charges, and local taxes. Private players such as automakers and charging station operators can also provide financial support to make charging more affordable. Although high installation costs are a significant barrier to EV adoption and charging infrastructure deployment, subsidies and financial incentives can make EVs and charging more accessible and affordable.

What lessons can be learned from other countries that have successfully developed EV charging infrastructure, and how might these lessons be applied in the Indian context?

One of the key lessons that can be drawn from countries that have successfully developed EV charging infrastructure is the importance of a collaborative approach. EV charging infrastructure development requires the involvement of multiple stakeholders, including government agencies, private sector entities, and community organisations. For instance, in Norway, the national government partnered with municipalities and private companies to create a comprehensive network of EV charging stations. In India, a similar approach can be taken by creating partnerships between the national and state governments, private sector players, and community organisations to develop a collaborative approach to EV charging infrastructure development.

Another lesson that India can learn from other countries is the importance of integrated planning. Developing EV charging infrastructure requires an integrated approach that considers the needs of different regions and sectors. Countries like Norway and the Netherlands have successfully developed EV charging infrastructure by implementing national strategies that focus on integrating EVs with renewable energy, land use, and transportation planning. In India, an integrated planning approach can be adopted that involves collaboration between government agencies responsible for transportation, energy, and urban planning to develop a national strategy for EV charging infrastructure development.

Incentivisation is another key lesson that can be drawn from other countries. Government incentives, such as subsidies, tax breaks, and rebates, can play a significant role in accelerating the adoption of EVs and the development of charging infrastructure.

Private sector participation is also critical to the success of EV charging infrastructure development. Private sector entities, such as utility companies, are key players in developing EV charging infrastructure.

Standardisation of EV charging infrastructure is another critical aspect. Countries like Japan have implemented a uniform standard for EV charging infrastructure, resulting in increased interoperability and ease of use for consumers.

How do you ensure technical safety at EV charging stations?

Ensuring technical safety at EV charging stations is crucial in India, given the rapid growth of the electric vehicle market and the need for a safe charging infrastructure.

Here are some measures that can be taken to ensure technical safety at EV charging stations in India:


Compliance with relevant safety standards and regulations: In India, the Bureau of Indian Standards (BIS) has specified the safety standards for EV charging infrastructure, and all charging stations must comply with these standards.

Proper electrical safety measures: Charging stations must be designed and installed by certified professionals who have experience in electrical installations. Proper grounding, fault protection, and overcurrent protection must be installed to prevent electrical hazards.

Fire safety measures should be in place to prevent fire hazards that can occur due to overheating or overcharging of the battery. Fire alarms, fire extinguishers, and emergency shutdown systems should be installed to mitigate any potential hazards.

Regular monitoring and maintenance of the charging infrastructure: It is necessary to ensure proper functioning, prevent technical faults, and detect any potential hazards. Trained professionals should be employed to inspect and maintain the charging stations regularly.

Prioritising user safety: Charging stations must be designed with user safety in mind. The charging cables should be sturdy and clearly marked with voltage and current ratings. Adequate signage and safety instructions should be posted to guide users.

Cybersecurity measures should be implemented to protect against cyber threats. Data privacy, encryption, and authentication protocols should be in place to ensure secure communication between the charging station and the electric vehicle. 

By Anil Kumar, Director, Inovance Technology India

“OUR VISION IS TO BECOME A TIER-1 PROVIDER OF E-POWERTRAIN SOLUTIONS AND POWER SUPPLY SYSTEMS”

A look at how Inovance Technology India is bringing its EV experience and engineering know-how to India as the country moves towards wider digitisation and greater environmental sustainability.

As the electric vehicle (EV) industry continues to boom in India, Inovance is bringing its expertise to the market. The company is already a huge supplier to the overseas EV industry and has built a strong brand in India as a leading supplier to the industrial automation and elevator industries. We are bringing our EV experience and engineering know-how to India as the country moves towards wider digitisation and greater environmental sustainability.

INDIAN EV INDUSTRY DEMONSTRATES EXPONENTIAL GROWTH

India has one of the fastest-growing economies and the third-largest population in the world. The automotive industry is a major contributor to India's economy, accounting for 7.1 per cent of its GDP and providing significant employment. The electric vehicle industry in India has demonstrated exponential growth in the past two years, and manufacturers



Anil Kumar, Director, Inovance Technology India

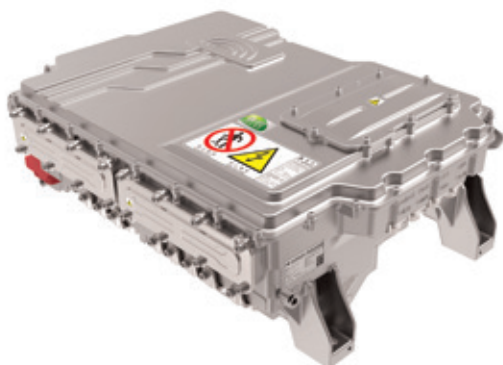


The electric vehicle industry in India has demonstrated exponential growth in the past two years, and manufacturers and policymakers are investing more in greener transportation.

and policymakers are investing more in greener transportation. Electric vehicles offer a range of benefits, including reducing carbon dioxide emissions, noise, and air pollution.

IMMENSE OPPORTUNITIES

Inovance is choosing to invest and expand its operations in the EV segment as part of our commitment to





reduce carbon emissions and achieve environmental sustainability in response to both, government EV initiatives and rapidly increasing demand. At Inovance, we are excited about the enthusiasm shown in India for the electric vehicle revolution, including the rapid expansion of public charging stations and the number of big companies investing in the development of new EV technologies. As the overall efficiency of EVs improves and more energy is generated from renewable sources in India to power them, our vision is to become a Tier-1 provider of e-powertrain solutions and power supply systems.

Our strong team force and product range in India has helped us focus more specifically on the EV industry. Our product portfolio includes many solutions for two major EV applications; passenger vehicles and commercial vehicles. Among our products for the EV industry, we offer a 5-in-1 Inverter for battery electric vehicles (BEVs), which is specially designed for the electric bus industry (in particular electric buses from 6-18 metres); a 3-in-1 auxiliary power unit controller specially designed for commercial EVs (with an integrated electric power steering controller); and a robust direct-drive motor for electric buses, which can also be used as a power source for commercial electric vehicles and has high-power density, long lifecycle, and better safety and efficiency than comparable products. We have also developed an air compressor controller and a 24V DC/DC battery charger that is compact, robust, easy to install, and has a long operating life.

At Inovance, we have a vast range of products in the automation segment for EV manufacturing and aim to become a leading name in the field. The benefits of using our products include optimal efficiency and flexibility, high equipment utilisation rates and robust production flexibility due to modular design, automatic processing, automatic optical inspection, and 100 per cent test coverage.




We offer a 5-in-1 Inverter for battery electric vehicles (BEVs), which is specially designed for the electric bus industry (in particular electric buses from 6-18 metres); a 3-in-1 auxiliary power unit controller specially designed for commercial EVs (with an integrated electric power steering controller); and a robust direct-drive motor for electric buses, which can also be used as a power source for commercial electric vehicles

GOVERNMENT SUPPORT

The Government of India has demonstrated continuous support for transforming the country as a global leader in the EV sector and is playing a vital role in increasing the demand and supply of electric vehicles. The 2021 budget saw the unveiling of several schemes which served as the starting point for the evolution of EVs in India, including investments in road infrastructure which motivated manufacturers to invest in EV R&D and related infrastructure.

In the 2023 Budget, the government allocated Rs 1.18 lakhs crore for the Ministry of Roadways, Transport and Highways, which will be crucial in generating employment opportunities in rural areas and greater demand for commercial vehicles. The Union government is also providing incentives such as purchase incentives, road tax exemption, registration fee exemption, income tax benefits, scrapping incentives, and others to increase the adoption of electric vehicles over petroleum vehicles.

In a nutshell, Inovance is committed to providing the R&D and product innovations needed to help ensure the future success of the Indian EV industry. 

IGUS EXPANDS ITS IGUBAL FC SERIES WITH A NEW DOUBLE JOINT

In the food industry, machine components have to meet very high hygiene requirements so as not to pose a safety risk. Since 2019, the motion plastics specialist igus has been offering igubal Food Contact (FC), a special spherical bearing system made from high-performance polymers that comply with FDA and EU 10/2011 for direct contact with food. The company

is now expanding this product range with a new double joint. Interested parties who would like to see the advantages and quality of the igubal FC series for themselves in advance can now order a new free sample box.

Food manufacturers are faced with the challenge of constantly improving the reliability of their systems. Detecting the smallest impurities is a particularly decisive safety factor for guaranteeing the purity of the products. By integrating detectable and at the same time food-compliant additives into its high-performance plastics, the motion plastics specialist igus has managed to develop a spherical plain bearing series especially for direct food contact: igubal Food Contact (FC). By using FC, it is possible to significantly minimise the risk of a costly recall as detectors recognise even the smallest parts of the components, which makes the work for quality assurance easier. Furthermore, the materials are also coloured blue to improve optical detectability.

More design freedom with the new double joint

“To give users even more design freedom in such a hygiene-sensitive area, we are now adding another component to our proven igubal FC series. In addition to pillow block and fixed flange bearings, rod ends and clevis joints, the product range now also includes a



double joint,” explains Dennis Steffen, Product Manager for igubal Spherical Bearings at igus. Like all igubal FC products, it contains an optically and magnetically detectable housing made of the FDA-compliant igumid FC material. Thanks to the high-performance polymers used, the new spherical bearing is also lubrication-free and maintenance-free, vibration-dampening, corrosion-free and, in combination with a spherical ball, suitable for compensating for misalignments. “When selecting the right spherical ball, customers can choose between several materials, depending on their needs,” says Steffen. “The insert made of the material iglidur A181 can be used to comply with the strict FDA guidelines. The material iglidur FC180 guarantees 100 per cent

detectability. Both also meet the EU 10/2011 standard for direct food contact. If a higher tightening torque is required due to the spherical ball, customers can also choose a stainless-steel version.” As with all igus products, they work without external lubricants, which rules out contamination. In addition, cleaning processes can be carried out regardless of the bearings.

Try it yourself: new Food Contact sample box

To convince oneself of the materials' quality and advantages - such as magnetic detectability - customers can now order a free sample box. The new box contains samples from all product areas: pillow block bearings, fixed flange bearings, rod ends, clevis joints and double joints. The entire spherical bearing system is characterised by a long service life and chemical resistance. This was proven by numerous tests in igus' test laboratory. The igubal FC also beats the conventional spherical plain bearings made of stainless steel in terms of costs. A cost advantage of up to 85 per cent can be achieved compared to stainless-steel solutions. The igus product also requires less maintenance due to the self-lubricating specifications of the bearing material.

LVD INTRODUCES D-CELL

LVD has introduced D-Cell, its most competitively priced robotic bending cell yet. D-Cell makes robotic bending an easy choice for sheet metalworking businesses of all sizes and capacities. The system combines a 50-ton hydraulic press brake with Kuka industrial robot and LVD's unique programming software.

Easy-to-justify automation: With D-Cell, LVD makes bending automation an investment that's easily justified. As manufacturers look to balance costs, quality, throughput and agility, D-Cell offers the flexibility to handle production of a wide range of parts with fast throughput, in varying lot sizes, and at a minimised cost.

Versatile Bending: At the heart of D-Cell is the versatile PPEd press brake. A simple, cost-efficient design makes PPEd practical and easy to use for a variety of bending jobs. Its rigid construction welded one-piece frame and servo-controlled hydraulic system ensure consistent bending results. It delivers 50 tons of pressing force, has a 2000 mm working length,

four-axis backgauge, and handles part sizes from 35 x 100 mm up to 400 x 600 mm with a part weight of up to 4 kg.

Automatic Programming software:

D-Cell features the same powerful automatic programming software as LVD's Dyna-Cell and Ulti-Form robotic bending systems. Using CADMAN® software, D-Cell accelerates “art to part”

production in 20 minutes or less. It generates the bending and robot program automatically in 10 minutes and then takes just 10 minutes for set-up and first part production. No robot teaching is needed, making D-Cell easy to program no matter the user's experience level. Also simplifying its operation: The system uses one interface, one controller for both press brake and robot.

Universal Robot Gripper: A universal gripper designed by LVD effortlessly handles different part sizes, bends up to three flanges without regripping and easily moves between tool stations. Its universal application saves investment in custom grippers, reduces changeover time, and



keeps production continuous. **Compact & Multi-use:** D-Cell is a compact unit, requiring only 5000 mm x 5200 mm of floor space. The cell provides four input pallets with inclined plane for different part formats, a centre station and output pallets or boxes. With a high input of raw material and a high output capacity, long production runs are possible.

D-Cell offers the versatility to operate in manual mode with backgauge fingers configured for both robotic and manual bending.

GROYYO ACHIEVES RS 1,600 CRORE REVENUE RUN RATE

Groyyo, Asia's leading B2B Manufacturing and Supply Chain technology platform, has announced that it closed 2023 with an annualised revenue run rate of Rs 1,600 crore. The company has also achieved profitability on an EBITDA basis, indicating its strong unit economics achieved through a relentless focus on profitability from its very early days.

The company has experienced remarkable 7x growth over the past year, which has enabled it to expand its operations to London and the US by forming strategic partnerships and hiring key senior personnel in those regions. Groyyo had also recently announced a partnership with Dubai Royal Family's Private Office to transform the B2B manufacturing and sourcing landscape across the Middle East. Additionally, Groyyo has strengthened its supply chain across Asia by setting up on-ground teams and opening offices in key cities, including Tiruppur, Dhaka, Surat, and Istanbul, to build a stronger and more diversified supply chain.

Over the last 12 months, Groyyo has acquired over 100 new buyers from across the world, which has enabled it to become supply chain partner to large enterprise brands such as Inditex, Next, and Carrefour. The company has also partnered with over 250 new suppliers from India, Bangladesh, and Turkey and collaborated with 50+ mills across the region to build control over the entire textile supply chain. These achievements have enabled the company to employ over 170 people across India, the US, the UK, Bangladesh, and Turkey.

According to Groyyo's Co-founder & CEO Subin Mitra, "Despite troubling macroeconomic conditions our focus on building multiple in-house core capabilities combined with a relentless outlook towards frugality has enabled us to build and scale in this segment. That being said, we still consider



ourselves very small fish in a very large global market and will continue to aggressively grow our volumes and profitability in the coming financial year."

Since its establishment, Groyyo has witnessed close to 2x growth QoQ and is expecting to grow by more than 2x in the coming financial year too. The company has emerged as a market leader in the tech-enabled B2B Lifestyle space and will continue to cement its position by expanding into new demand and supply hubs and build further strength in this segment.

Groyyo was founded in 2021 by Subin Mitra & Pratik Tiwari, with the aim to empower and upgrade manufacturing and automation services with technologies like artificial intelligence, innovation, standardisation, and industry guidance.

WIDMA™ INTRODUCES DEEP HOLE DRILLING MACHINE

The die and mold industry in India has been experiencing significant and consistent growth over the years. As indicated by researchandmarkets.com, the Indian market alone is expected to grow by more than \$1 billion from 2021 to 2025, progressing at a compounded annual growth rate of 9 per cent. The driving force of this expansion is not only pent-up demand in the automotive sector but also substantial growth in sunrise sectors, including healthcare, electronics and electricals, and plastics. With respect to India, the adoption of aluminum metal injection molding and automation in die casting, increasing construction activities and the push to 'Make in India' are expected to contribute to the growth of this industry.

Within the automotive market, original equipment manufacturers (OEMs) encounter the challenge of inflation and productivity. There is a growing demand for large-scale machines capable of handling sizable and complex die and mold. The evolving die and mold requirements are more complex, and necessitate higher levels of machining accuracy.

WIDMA™, a machine tool building division of Kennametal®, based in Bengaluru, India, is assisting OEMs to optimise their production by facilitating them with deep-hole drilling technologies that adhere to industry's increasing standards of accuracy, reliability, and performance.



The WIDMA UGC Series Deep Hole Drilling (DHD) machine is designed for high-accuracy machining, multi-axis positioning, and deep-hole drilling in a single setup. During the design phase of the UGC Series, consideration was given not only the variation in materials to machine but also the size and complexity of the component. The UGC Series can be configured with up to seven axes including a CNC rotary table and spindle tilting feature. This combination allows customers to drill complex angles and structures in a single clamping setup.

Providing customers with the opportunity to optimise machining time and resources, UGC Series machines also have the flexibility to perform milling, tapping, and boring in addition to deep hole drilling, with minimal set-up changes. Along with options to customise, the UGC Series offers drilling depths up to 2000mm and 40mm diameter, with the capability to support up to 30 tons of weight.

"At WIDMA, our priority entails anticipating our customer's needs and helping them in overcoming manufacturing challenges. Our team is dedicated to design high-performance machines that not only offer efficiency and productivity but are operator-friendly and require low maintenance. In addition to linear glass scales and wireless probes, WIDMA machines also feature adaptive machining technology that defines values of torque to maintain operating levels and standards for accuracy," said Mathews John, Sales Manager of WIDMA™.

FIRST C295 FOR INDIA COMPLETES ITS FIRST MAIDEN FLIGHT

The first C295 for India successfully completed its maiden flight as it took off from Seville, Spain, on the 5th of May at 11:45 am local time (GMT+1) and landed at 14:45 pm. The three-hour flight marked a significant milestone towards its delivery by the second half of 2023.

The C295 Final Assembly Line being built in Gujarat is the first concrete, large-scale 'Make-in-India' defence programme in the private sector that will unlock the industrial value chain of design, manufacturing, assembly, testing, delivery, and maintenance of

the complete lifecycle of the aircraft. This programme will significantly contribute towards developing the indigenous capabilities of Indian companies for an 'Aatma Nirbhar Bharat'.

"This first flight represents a significant accomplishment for the first 'Make in India' aerospace programme. With the Indian Air Force set to become the largest operator of the C295 in the world, this programme exemplifies our commitment to improve the Indian Air Force (IAF) operational capabilities," said Jean-Brice Dumont, Head of Military Air Systems, Airbus Defence and Space.

India acquired the 56 C295 aircraft in September 2021 to replace the (IAF) legacy AVRO fleet. The first 16 aircrafts will be assembled in Seville, Spain, and delivered to the customer in 'fly-away' condition. The following 40 aircrafts will be manufactured and assembled by the Tata Advanced Systems (TASL) in India as part of an industrial partnership between the two companies.

The global C295 programme comprises a total of 280 orders from 39 operators, making it an unmatched aircraft in its weight and mission class.



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