

# THE MACHINIST

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## INDIA CAN OUTPACE CHINA'S DOMINANCE WITH MAKE IN INDIA

In an interview, **Sagar Gupta**, Director, **Ekkaa Electronics** reveals that although China remains the largest manufacturer of TVs globally, India can potentially outpace China's dominance by leveraging its large domestic market and government initiatives like Make in India.

**WIRES & CABLES**  
IS INDIA SAFELY WIRED?

**SPECIAL FEATURE (EV)**  
REVVING UP FOR 'EV'OLUTION



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## THE KILLER MOVE?

**E**lectric two-wheelers are driving the EV revolution in India. Take a look: during the year 2022-23, the total sales of EVs in the country crossed the one million milestone for the first time. What's more? The two-wheelers accounted for 60 per cent of all EV sales with an increase of 183 per cent over 2021-22. Importantly, one of the biggest contributors to EV sales growth was subsidies by the government.

However, New Delhi's timing couldn't have been worse, both for India's fledgling electric vehicle (EV) sector and prospective electric bike buyers. Now the government is slashing these subsidies and the makers of electric two-wheelers see it as a regressive step which will drag India's EV revolution, which is led by two-wheelers.

The industry is not happy! The sudden reduction in the subsidies may lead to a major decline in the adoption of EVs. This would impact the entire ecosystem of the EV chain. The government should understand that the Indian market is price-sensitive, and the total cost of the owner is not firmly established in consumers' minds! My question to the government is, the majority of the petrol two-wheelers cost less than Rs 1 lakh, hence, why would the consumer spend Rs 1.5 lakh on EVs?

The share of electric vehicles in total vehicle sales in India is currently around 5 per cent. The government target for EV sales by 2030 is 30 per cent for private cars, 70 per cent for commercial vehicles and 80 per cent for two- and three-wheelers. But with slashing the subsidies, the chances of achieving 30 per cent look grim.

Meanwhile, the slashing of subsidies has received a mixed response. Though the subsidy is being slashed a higher outlay will increase the proliferation of EV two-wheelers as the government would be able to support more vehicles with the funds available. It could lead to a rise in per-unit cost for consumers, but a larger number of buyers would benefit.

Also, several experts feel that there is no need to further subsidise EVs, especially two-wheelers, as already more than a million EVs have been subsidised. Also with most state governments having incentives and with prices of cells below the 2021-22 levels, subsidies need to be tapered down for electric two-wheelers and new categories such as quadricycles, e-cycles, commercial vehicles and private buses need to be added.

More than subsidies, what is now needed is an ecosystem of EVs.

*R Kamat*  
Editor

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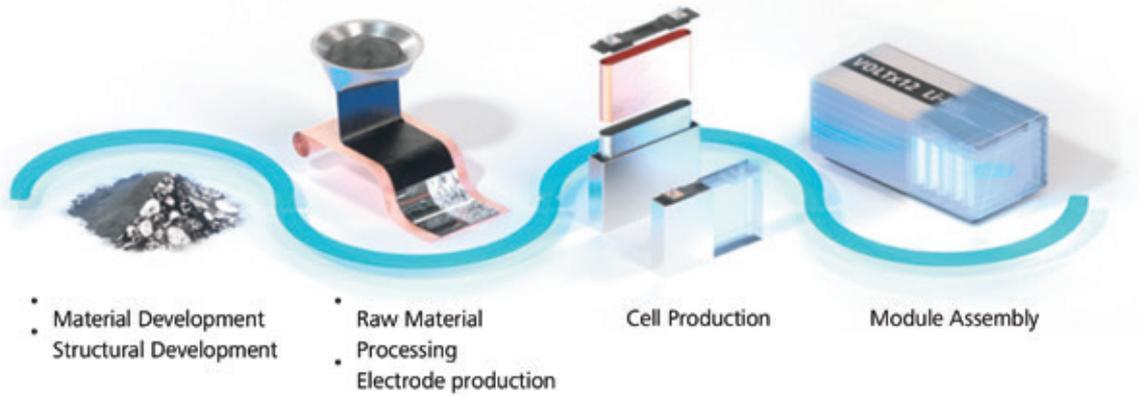
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# Non-Destructive Quality control of Li-ion Cells using CT scan



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## NDT Characterization of Li-ion cell

- Internal Deformation of Jelly roll
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- Deflected or Bent Electrodes
- Tab and Welding integrity
- Electrode Peeling or Delamination
- Cap and Can welding integrity
- Safety vent mechanism



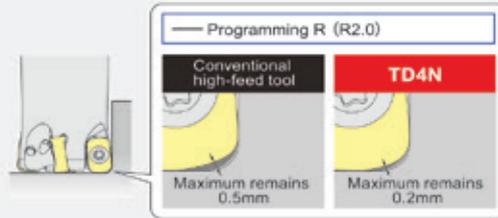
# TD4N

Radius mill TD4N

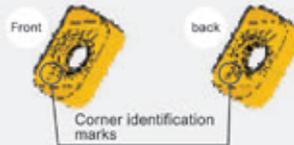


## Reduces uncut remnants on work pieces

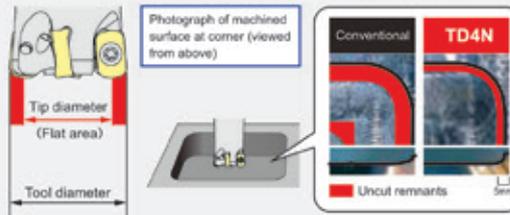
The cutting edge shape was reviewed for TD4N so that uncut remnants are reduced. This enables the load on the next process to be reduced by up to 40% compared to conventional products.



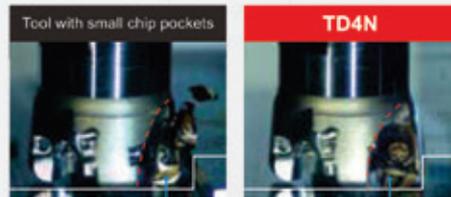
## Economical 4-corner inserts with chip breakers for various applications



## Large tip diameter for excellent handling

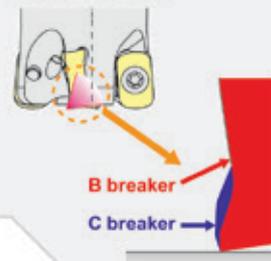


## Excellent chip discharge characteristics



## Magnified view of cutting edge cross section

Positive rake angle



## Comparison of cutting force



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## TVS Motor Company unveils new prices for TVS iQube

**TVS MOTOR COMPANY**, a reputed manufacturer of two-wheelers and three-wheelers, demonstrates its commitment towards sustainable future mobility solutions. Accentuating Government of India's vision to promote electric mobility, TVS Motor endeavours to enable faster adoption of electric mobility and development of the overall electric vehicle ecosystem in the country.

KN Radhakrishnan, Director and CEO, TVS Motor Company, said, "TVS Motor is spearheading the EV transformation narrative in the country. Backed by this electrification journey, TVS iQube recorded a sales milestone of 1,00,000 units for its range of scooters in the last financial year. In May 2023, TVS iQube crossed 20,000 units of retails and continues to have a healthy booking pipeline of over 30,000 units."

He further shared that FAME II



will gradually reduce over the next few quarters, but TVS Motor will continue to deliver product options and value proposition to propel the electrification and green energy penetration in two-wheelers in the country. The company will offer a loyalty benefit programme for the customers of TVS iQube who have made bookings till May 20, 2023, for a limited period to ease the cost burden post the revision in FAME II subsidy. Additionally, new customers can also avail new prices without having to bear the full burden of FAME II revision on booking the vehicle starting June 1, 2023.

"Towards propelling the electrification journey further in a sustainable manner and keeping our

customer at the forefront, after FAME II revision TVS iQube's price increase from June 1, 2023 will be in the range of Rs. 17,000 – Rs. 22,000 depending on the variant. TVS Motor is also extending an additional loyalty benefit to its customers who have pre-booked before May 20, 2023," said, Manu Saxena, Senior Vice President – Electric Vehicles, TVS Motor Company.

Towards this EV journey, TVS iQube has led by three fundamental principles: Giving customers the power of choice for range, connected capabilities, chargers, and colours; Complete peace of mind around vehicle safety by adhering to latest norms and overall purchase experience leading to promise of delivery and the simplicity of operating the TVS iQube which is impactful yet hassle free. Currently, the scooter is available in 140 cities across India.

## FUJIFILM India installs digital printing press Revoria PC 1120 at Megha Enterprises

**FUJIFILM INDIA** has paved the way into the heart of the digital printing space with the installation of its cutting-edge digital printing press Revoria PC 1120 at Megha Enterprises at Okhla region. Megha a renowned digital printing enterprise in the area offers a broad range of sizes with excellent print quality for fine art, media versatility, while optimising costs with its innovative 'toner out' model.

"The Revoria Press PC1120 is an advanced Toner Digital Press known for its unrivalled expressive power and its boundless spectrum of colour possibilities. It features a state-of-the-art 6-colour print engine and maintains its fast-printing speed of 120 ppm, even when using all 6 colours," said Sri Prasad and Anuradha Dayal, Proprietors, Megha Enterprises and added "This machine is best suited for all kinds of commercial jobs including books, photo and commercial. It also gives us the best ROI with its combination of machine life, additional colours and a 'toner out' model. We can see that the market is growing for CMYK + colour jobs, which enables more value to be offered in the market. Some of our existing vendors are very happy with the quality."

Accompanied by an impressive

output resolution of 2400 x 2400 dpi, ensuring crisp and defined prints. With versatility features it supports a wide range of media types, accommodating various paperweights, sizes, and even banner sheets. Noteworthy features include the ability to create metallic effects with gold and silver underlay, access to pre-installed metallic colours, high-opacity white toner for printing on coloured stocks, and AI-based photo quality optimisation. Equipped with a high-performance print server, it supports a variety of paper stocks, providing convenient feeding and finishing options, streamlining the printing process.

Koji Wada, Managing Director, FUJIFILM India, cited the importance of advanced technological integration in digital printing and averred, "FUJIFILM India is always at the forefront of integrating innovation and latest advancements in the digital printing industry. We aim to provide printing machines that translate quality business



to our customers and Revoria PC 1120 is equipped with state of art technology to aid that goal for those who want to excel in the digital printing business."

Ajay Agarwal, CEO, Insight Print Communications, Distributors for FUJIFILM India Graphic Communications Products, commented, "Fujifilm Revoria PC 1120 is the only press that gives a very strong ROI for both the photo segment where the volumes are less, and the requirement is very high quality and in the commercial printing segment where the requirement is high volumes at lower cost per print. It is also unique in its 10-colour option that opens a huge opportunity with media, designs, and applications."

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SCAN FOR PRODUCT CATALOGUE 2023

## Hero Electric prices to remain unchanged post reduction of FAME II subsidy

**HERO ELECTRIC**, India's leading electric two-wheeler company, has announced that it will not increase the prices of its popular e-scooter models. Despite the recent reduction in the FAME II subsidy, the company remains dedicated to promoting the adoption of E2 Wheelers and dispelling misconceptions about their cost of ownership.

The Government of India recently reduced the subsidy for electric two-wheelers under the FAME II scheme, resulting in a significant price hike for electric two-wheelers.

However, Hero Electric aims to support customers during this transitional phase and ensuring that electric mobility remains affordable and accessible. As affordability plays a pivotal role in accelerating the widespread adoption of electric vehicles, maintaining price stability becomes a crucial step toward achieving this goal.

India, being a two-wheeler market, demands affordable and sustainable mobility solutions. By keeping the prices



**HEROelectric**  
The smart move

of its e-scooter line-up unchanged, the company hopes to encourage a larger number of consumers to switch to electric vehicles without incurring additional costs.

Sohinder Gill, CEO, Hero Electric, stated, "The sudden and sharp tapering of subsidies does not bode well with the customer and may lead to the drop in the E2W adoption. While the industry may still clock higher sale than the last year but may not be able to keep the tempo of the exponential growth and may even fall short of the target of 2.3 million units as projected by Niti Aayog. Despite the extreme financial crunch forced upon us due to subsidies stuck with MHI for over 15 months, we will continue to do our bit in offering affordable mobility solutions

to the discerning customers by holding on to our current prices till we can."

Hero Electric offers a diverse range of e-scooters that caters to various segments and customer preferences. The recently launched models, Optima CX 5.0, Optima CX 2.0, and NYX, feature cutting-edge Japanese motor technology for a smoother ride and German ECU technology for unrivalled precision performance. These vehicles are built to withstand diverse Indian weather conditions, even in remote areas, and excel in terms of reliability, performance, and affordability. Additionally, they come with features such as remote maintenance, enhanced battery life protection, and improved charging efficiency.

## IMTMA to organise 4th edition of Delhi Machine Tool Expo

**THE INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION (IMTMA)** is organising the fourth edition of the Delhi Machine Tool Expo (DMTX 2023) at Pragati Maidan, New Delhi from 24th to 27th August 2023. The expo will have pavilions on Metrology Expo (metrology, testing instrument and equipment), Weld Expo (welding, cutting, and joining), and Digital Manufacturing (additive manufacturing and evolving Industry 4.0 concepts).

DMTX 2023 will feature over 250 exhibitors occupying an exhibition space of around 12,000 square metres of gross area showcasing the latest technologies in metal cutting and metal forming. Both Indian and foreign exhibitors are expected to participate and connect with the 15,000+ visitors that are expected to attend the expo.

The machines and accessories on display are expected to serve the needs of industries such as automobiles, auto components, medical equipment,

railways, aerospace, defence, electrical, electronics, textile, construction, general engineering, farm equipment, and more that would be looking to source solutions to their production units.

DMTX 2023 would be an ideal platform for the manufacturing industry to upgrade and improve productivity and quality requirements, while demonstrating solutions to manufacturing industries, especially small and medium-scale enterprises.

The primary focus will be on industrial units located in Himachal Pradesh, Punjab, Haryana, Delhi, Rajasthan, Uttar Pradesh, Uttarakhand, and West Bengal.

Ravi Raghavan, President, IMTMA said, "The previous edition of the show held in Pragati Maidan in 2017 had evoked a good response from the manufacturing industry. Machine tool manufacturers who participated in the show were able to expand their range and I firmly believe that DMTX 2023 would help them to build on to their

earlier success and reach out to many more industries in the northern region of India."

Jibak Dasgupta, Director General and CEO, IMTMA commented, "IMTMA is organising the expo to enable industrial units in the North Indian region to stay in sync with the emerging technologies. DMTX 2023 would play an enabling role to address the numerous requirements of OEMs and component manufacturers in the North India market. The association expects a good turnout, and we believe the expo will continue to grow in future editions as well."

Delhi Machine Tool Expo last held in Pragati Maidan was a success. The show back then attracted 11,279 visitors from 9 countries – China, the Czech Republic, Germany, India, Italy, Japan, Korea, Taiwan, and the USA. DMTX 2023 is an opportunity for machine tool and manufacturing technology exhibitors to tap the rising demand for machine tools and augment their business.



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## DP World Cochin launches new weekly service

**DP WORLD**, a leading global provider of smart end-to-end supply chain, welcomed their newly launched weekly service 'PIC2', at its state-of-the-art International Container Transshipment Terminal (ICTT) in Cochin. With a 2407 TEUs vessel capacity, the new service by Unifeeder Group, will enhance the connectivity of the East Coast to Cochin and ultimately to the Middle East.

'PIC2' service's maiden vessel, M.V. SSL Delhi, was inaugurated at DP World's terminal in Cochin on 17th May 2023. The inaugural call ceremony was attended by Capt. Joseph J. Alapat Deputy Conservator, Malla Srinivasa Rao, Financial Advisor and Chief Accounts Officer of Cochin Port Authority, Praveen



Joseph, CEO, DP World Cochin, and members from Unifeeder Group. The new service will provide seamless connectivity between Chennai, Krishnapatanam, Visakhapatnam, Tuticorin, Kandla, Karachi, and Jebel Ali. With this development, DP World Cochin now provides four direct sailing weekly services for the Middle East region.

Commenting on this new service,

Praveen Joseph, CEO, DP World Cochin said, "With enviable multimodal connectivity and the introduction of the fourth direct service to the Middle East, 'PIC2' service, DP World Cochin positions itself as a gateway for seamless transportation, revolutionising the way goods are transported and fostering greater trade efficiency. With an impressive vessel capacity of 2407 TEUs, DP World Cochin leverages this robust infrastructure to enhance efficiency, reduce transit times, and enable businesses to access global markets with unprecedented ease."

The port terminal has improved its ability to handle post-panamax ships as of February 2023. Since opening in 2011, the 605-metre-long terminal has successfully handled 6 million TEUs, a significant accomplishment.

## Zen Mobility revolutionises last-mile deliveries with its EV Zen Micro Pod

**ZEN MOBILITY**, a rising Indian Electric Vehicle Original Equipment Manufacturer (OEM), has unveiled the Zen Micro Pod, a purpose-built cargo 3-wheeler Light Electric Vehicle (LEV), as part of its mission to introduce inspirational designs and engineering innovations in electric vehicles.

The Zen Micro Pod will offer two variants: the R5x and R10x. With a maximum payload capacity of 150 kilograms, the Zen Micro Pod surpasses the load carrying capacity of conventional 2-wheelers by 2.5 times. This vehicle operates at a minimal running cost, consuming only 4 units of electricity and requiring a charging time of approximately 1.5 to 2 hours.

The lightweight technology used in the Zen Micro Pod necessitates less motor power while maintaining the same output, resulting in reduced battery costs and lower cost-per-delivery. Its compact and ergonomic design ensures comfort and convenience for riders and the vehicle's braking system has been designed with rider safety, ensuring smooth and seamless braking in all situations.

The Zen Micro Pod includes a distinct cargo box that can be customised to meet individual requirements, featuring shelves, refrigerated boxes, open tubs, and more. These storage units are equipped

with a secure locking mechanism to prevent theft or pilferage. Additionally, the Pod's patented drivetrain and vehicle telematics provide fleet companies with efficient fleet management capabilities, including vehicle tracking, state of charge monitoring, geofencing, and remote locking. The Zen Micro Pod presents a cost-effective solution, surpassing even the lower cost per delivery and total cost of ownership when compared to traditional delivery methods such as bikes. Its affordability makes it an appealing option for logistics companies and their operators, providing a win-win situation.

One of the standout features of the Zen Micro Pod is its strong emphasis on safety, reliability, and durability. The vehicle has been meticulously designed to prioritise the well-being of its operators and ensure the secure transportation of goods. With advanced safety features and robust construction, the Zen Micro Pod is built to withstand various operational challenges, making it a long-lasting and dependable solution. It has successfully undergone rigorous testing of 150,000 kilometres across diverse terrains and weather conditions, demonstrating its ability to consistently perform in demanding environments. This durability translates into reduced maintenance costs and a longer lifespan for the vehicle,

providing logistics companies with a reliable and sustainable transportation solution.

Namit Jain, Founder and CEO, Zen Mobility shared, "We have also collaborated with renowned leasing and rental companies, as well as fleet and third-party logistics (3PL) providers to ensure seamless deployment of the Zen Micro Pod, which can be leased or rented monthly, with fees of up to Rs 9,999 determined by factors such as lease type, tenure, and other considerations. As an organisation, we are committed to creating a positive impact on urban mobility by offering responsible mobility solutions that cater to the needs of society and enhance productivity while minimizing carbon footprint and overall cost of ownership."

Zen Mobility primarily serves the B2B market, specifically for last mile deliveries. The customer base includes third party logistics providers, last mile service providers, e-commerce, and grocery delivery companies. The company has received 10,000 orders from several enterprises and has established a production line in Manesar with a capacity of 1,00,000 vehicles annually. Mass production is set to begin in June '23, and the company has a facility to meet higher market demands.

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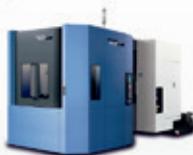
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## “THE INDIAN MACHINE TOOL MARKET LIKELY TO SEE A THREE-FOLD GROWTH IN NEAR FUTURE”

With India gradually evolving as a new hub for the manufacturing, **TK Ramesh**, Managing Director of Ace Designers Limited, is confident that the Indian machine tool market has immense potential to witness exponential growth in the next 3-5 years. He also outlined key trends, new services, and technologies launched by his company recently and the perks of associating with a one-of-its-kind platform - Festival of Manufacturing.



TK Ramesh, Managing Director of Ace Designers Limited

### **What, according to you, are the key trends that are shaping the machine and tools industry?**

In the normal course, concerns related to quality, cost, and delivery (QCD) continue to persist. However, two key factors are significantly influencing these matters.

Firstly, there is a growing demand for equipment, be it machinery or any other equipment, which is smart, and will allow them to connect with other manufacturing facilities from within the customer's premises. Basically, they are looking for machines with

a layer of intelligence.

This means that individuals not only acquire equipment to enhance productivity and generate parts, but they also seek to gain insights into various aspects. They are interested to learn about what parts were made, activities which occurred during specific time frames (e.g., first shift/second shift), and discover trends. Additionally, if the machines were not functioning, they want to understand the reasons behind this production halt. For instance, was it due to

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Today, 'IoT' and 'Industry 4.0' are buzzwords, but we have been engaged in these activities for over 15 years, the only difference is the label; we used terms production monitoring, predictive maintenance etc. Further, anticipating needs and developing capacities involves integrating appropriate technologies. Although we are in the mechanical industry, our technologies include not only manufacturing machines but also computers, information technology, and electronics. This allows us to efficiently control machines dashboards and enhance information output from machines.

a lack of operators or a shortage of materials? Therefore, there is a genuine demand for intelligent equipment; those that can be connected and possess a layer of built-in intelligence.

The second aspect stems from the increasing pressure of better quality and cost-effectiveness which gets further complicated by disruptions in the supply chain. Thus, people are looking for "just enough" machines and equipment, especially for highly cost-sensitive components and parts, as there is no interest in purchasing technology just for the sake of purchasing it. Instead, they want it to be affordable and deliver an impact. Thus, people are in the search for appropriate technology that aligns with this.

These are the two key trends that are shaping the machine tool & equipment industry.

#### **What is ACE Micromatic Group doing differently to meet the growing demand and interests from the industry?**

Over the past decade, our approach has revolved around listening to customers, understanding and anticipating their needs, based on these anticipations, we develop necessary capabilities. Today, 'IoT' and 'Industry 4.0' are buzzwords, but we have been engaged in these activities for over 15 years, the only difference is the label; we used terms such as production monitoring, predictive maintenance etc. Further, anticipating needs and developing capacities involves integrating appropriate technologies. Although we are in the mechanical industry, our technologies include not only manufacturing machines but also computers, information technology, and electronics. This allows us to efficiently control machine dashboards and enhance information output.

Perhaps we were and continue to be at the forefront of machine tool companies in terms of machine capabilities and increasing capacity. To illustrate this, last year itself we delivered over 7,000 machines. If you combine the output of the 2nd and 3rd ranked, it still does not add up to 7,000. This is a testament of our work towards building capacity and anticipating needs.

#### **With rapidly evolving market, where do you envision machine and tools industry in next five years?**

Globally, the size of machine tool market is around 85 billion U.S. Dollars, whereas in India the industry stands at a billion dollars. The expected global increase in compounded annual growth rate (CAGR) is about 10 -11 per cent. With manufacturing shifting towards the east, the China plus one situation and the India story, with a lot of investment and substantial infrastructure requirement, in my vision, within 3-5 years, the Indian machine tool market has the potential to double or triple. The billion-dollar market today will grow to over 3-5 billion in the coming 3 to 5 years.

#### **Give us an insight into the new services and technologies that ACE Micromatic Group has launched recently?**

We are bullish about IoT and the industry 4.0 readiness. This involves equipping all our machines across the range. We believe there are several e-service possibilities as well. We are working on impacting total cost of ownership over the life of our machines and outcome-based services.

Further, we have always been involved in subtractive machining (metal cutting), over the last three years we have delved into additive technology, and 3D printing. We began as a service bureau, and thus are looking forward to expanding our services in the 3D printing domain, understanding the technology, and serving the industry. As machine builders, we have naturally ventured into manufacturing machines for additive technology. This expansion was exhibited at IMTEX, where we were recognised for our innovative product design.

Diversifying as a metal cutting company, we have ventured into forming technology including laser cutting, laser welding and bending machines. We have expanded our general product range, to include both smaller and larger machines. These are the new services and technologies that have been launched over the past two years.



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Globally, the size of machine tool market is around 85 billion U.S. Dollars, whereas in India the industry stands at a billion dollars. The expected global increase in compounded annual growth rate (CAGR) is about 10 -11 per cent. With manufacturing shifting towards the east, the China plus one situation and the India story with a lot of investment and substantial infrastructure requirement, in my vision, within 3-5 years, the Indian machine tool market has the potential to double or triple.

**Tell us about your investment and expansion plans. How are you going to expand your market share in India?**

We have been continuously increasing our market share across India, by focusing on expanding capacities. Over the past 2-3 years, we have made infrastructure investments of over Rs 200 crores along with emphasis to innovation in products and services. We take pride in being the only machine tool company in India, and perhaps one of the few worldwide, with a vast network of over 60 locations. Here, we offer a complete ecosystem with lifecycle services, machines, training, maintenance contracts, and all forms of support such as installation, production, programming, and training.

All these factors have contributed to our growth and led us to number 1 ranking in India and facilitated our entry into the global markets. We will continue these efforts and strive to improve and remain cost-efficient.

**Tell us about the sustainability initiatives adopted by your company.**

It all begins with raising awareness. Over the past few years, we have been creating awareness across our manufacturing plants about the importance of sustainability.

We have also focused on measuring and understanding our environmental footprint, including perspectives such as carbon, wood usage in packaging, and energy efficiency. In fact, our recent buildings are green, we have explored solar energy harnessing to meet a significant portion of our regular energy needs. Additionally, we have been involved in recycling and reuse practices for materials.

We are transitioning away from non-plant-based packaging materials through experimentation. From a customer perspective, we are also collaborating with various entities to ensure eco sustainable disposal of coolants and spent oil from our machines. These services are specifically offered to the small and medium sector which forms a significant part of the manufacturing supply chain across India.

These are our ongoing efforts, and we hope to be

of international repute in reducing carbon footprint in the lifecycle of our machines in the next year and a half to two years.

**Tell us about your experience and the learnings you derived from the Festival of Manufacturing. Do you think it will have any long-term impact on the industry?**

Yes, we strongly believe that the Festival of Manufacturing will have a significant and lasting impact on the industry. We believe in creating value and in this regard, agriculture is the most important, as it is the foundation of food production and relies on nurturing, growing, and caring.

Secondly, efficient manufacturing is important, and to do so, you need to manufacture sustainably. For this, we need talented people coming into this industry. In recent decades, many skilled individuals have gravitated towards the IT and services sectors, which is also crucial but to increase the nation's GDP growth and improve living standards across fields such as transportation, healthcare, and packaging. So, manufacturing plays a vital role next to agriculture.

To attract talented people in manufacturing, there is a need to create a platform where these people are recognised and celebrated, to bring out the best in them. This will automatically foster a sense of wanting to belong, to contribute, to learn and to research. Based on our experience from the Festival of Manufacturing, we believe it is imperative to broaden this platform, increase awareness and let people see manufacturing as a celebration, and there is no better way to do this than celebrating it as a festival.

From a national and government perspective, the Festival of Manufacturing will have a tremendous impact as manufacturing cuts deeper across society. Manufacturing touches lives and creates comfort to a larger section of mankind than services or IT. Particularly, in Tier 2 and 3 cities, manufacturing plays a significant role. By raising awareness about sustainability and the positive impact of manufacturing, the Festival of Manufacturing can contribute greatly to the industry and the nation in the long run. 



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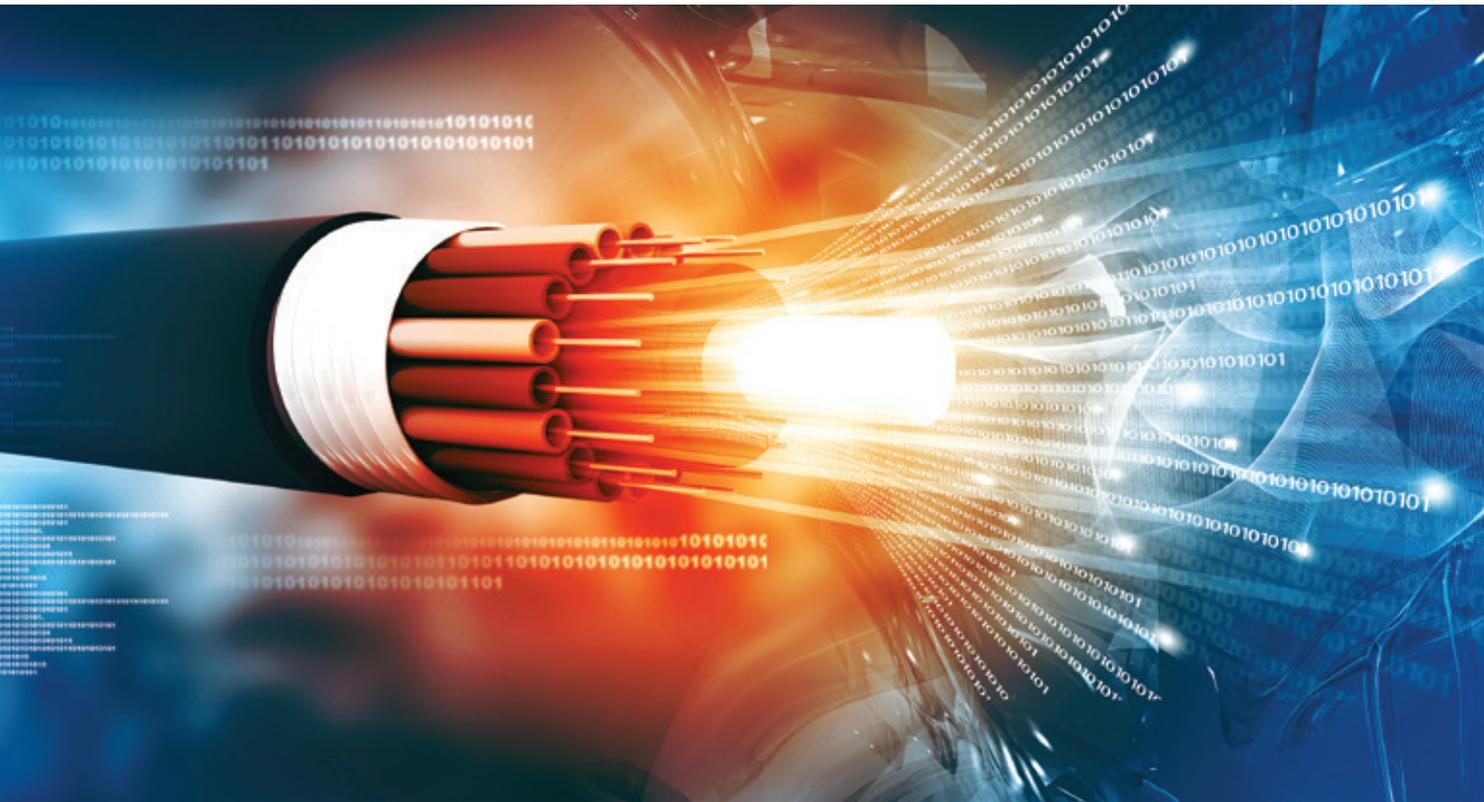
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By Dipika Lalwani



## IS INDIA SAFELY WIRED?

The cable and wire manufacturing industry in India is currently facing a critical challenge concerning safety in its operations. According to NCRB data, almost 1.1 lakh people have died due to electrocution from 2011 to 2020, which translates to nearly 30 fatalities every day. Recognising the gravity of the situation, prominent companies within the industry are actively transforming their systems to prioritise safety across various aspects, including manufacturing processes, consumer safety, and environmental well-being. These efforts aim to establish India as a secure and fire-safe nation.

### THE RISING CONCERN FOR SAFETY IN INDIA

The concern for safety in India is on the rise due to an alarming increase in electric hazards, such as short circuits and fire accidents, which have resulted in a significant number of fatalities. **Vivek Yadav, Executive Vice President, Havells India**, shared distressing statistics, stating, “Electrocution accidents is one of the top reasons for death occurring commonly in India. As per the National Crime Records Bureau (NCRB) statistics, at least 3,000 people die every year in electric

power-related accidents in the country.”

**Shreegopal Kabra, Managing Director, RR Kabel**, identified the unprecedented surge in electricity demand due to rapid urbanisation, infrastructure development, and industrial growth as one major the reasons behind these accidents. This surge exerts strain on electrical systems, increasing the likelihood of overloads and short circuits. **Bhushan Sawhney, Executive President and Chief Business Officer, Polycab India Ltd.**, highlighted the risks associated with this situation. He explained that inadequate power

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generation leads to unstable power supply and voltage fluctuations, which can cause sudden spikes or drops in voltage. This, in turn, stresses electrical equipment, distribution infrastructure, and escalates the risk of short circuits.

The need to meet the escalating demand for electricity often results in compromised quality and the use of counterfeit or substandard equipment, which are sold at lower prices. In 2019, India recorded 10,915 deaths due to fire accidents, a majority of which arose from electrical short circuits because of the use of substandard wires. **Ramachandran V, Director and COO of V-Guard Industries Ltd.**, emphasised, “Many people in India use low-quality electrical wiring to save money, which can be dangerous and increase the risk of electrical short circuits.”

In addition to financial considerations, Ramachandran also identified lack of awareness and education about electrical safety as a contributing factor. He stated, “Many consumers or electricians are not aware of the best wiring practices and potential risks and dangers of electrical short circuits and do not know how to prevent them.”

#### **MITIGATING RISKS AND SAFEGUARDING EMPLOYEE WELL-BEING**

According to data from the Central Electricity Authority (CEA), nearly 40 per cent of workplace fatalities can be attributed to electrical hazards. Consequently, it is crucial for manufacturers to prioritise the training of their employees, enabling them to recognise and report incidents. Ramachandran, for instance, highlighted the safety measures implemented. He says, “V-Guard employees are trained on safety procedures and how to identify and avoid hazards. Training is conducted on an ongoing basis, and employees are required to demonstrate their knowledge and understanding of safety procedures.” Even Kabra, emphasised RR Kabel's commitment to encouraging employee participation in reporting safety concerns and near-miss incidents. He



**Ramachandran V**  
Director and COO,  
V-Guard Industries Ltd.

**“WE ENSURE THAT OUR CUSTOMERS CAN USE OUR PRODUCTS SAFELY AND WITH UTMOST CONFIDENCE”**

**Is your company currently engaged in any ongoing efforts to improve workplace safety or do you have any future plans in place to enhance safety within the workplace?**

We are firmly committed to providing a safe working environment for all our employees. The company's continuous improvement endeavours and future strategies are specifically designed to contribute towards achieving this objective.

We ensure that all our employees are equipped with the necessary Personal Protective Equipment (PPE) to ensure their safety. This includes items such as safety helmets, safety shoes, goggles, and gloves. Regular inspections are conducted to ensure that the PPE is in optimal condition and fits properly, thereby maximising its protective capabilities.

We encourage employee involvement in safety initiatives. Employees are encouraged to promptly report any near misses, unsafe acts or conditions, potential hazards, and suggest ways to enhance safety within the workplace.

We remain vigilant in seeking out innovative technologies that can bolster workplace safety. Initiatives such as virtual safety training environments, utilising immersive experiences or DOJO, promoting mistake-proofing mechanisms for hazardous areas, and employing sensors to prevent incidents all serve to prioritise safety within the workplace.

**How does your company handle situations involving product recalls or safety concerns that arise after your cable and wire products have been sold?**

At V-Guard, we place a great emphasis on product safety and have implemented a comprehensive procedure for addressing customer complaints. It is worth noting that issues related to customer complaints are typically linked to site-specific circumstances, environmental or application factors, and manufacturing-related issues are exceedingly rare.

If we become aware of a safety issue pertaining to any of our products, we promptly initiate an investigation to ascertain the cause and magnitude of the problem. In cases where it is deemed necessary, we take appropriate measures to replace any affected products.

Ultimately, our aim is to ensure that our customers can use our products safely and with utmost confidence. We firmly believe that our customer complaint redressal procedure plays a vital role in accomplishing this objective while upholding the trust our customers place in us.

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**Bhushan Sawhney,**  
Executive President and  
Chief Business Officer  
(Cables), Polycab India Ltd.

## “WE MANUFACTURE HIGH QUALITY PRODUCTS MEETING NATIONAL AND INTERNATIONAL STANDARDS.”

**How does your company identify and assess potential safety hazards in the manufacturing process? Do you conduct regular inspections or risk assessments to mitigate risks and ensure the well-being of your employees?**

As India's largest, manufacturer of Wires and Cables we implement comprehensive safety management systems to identify and mitigate potential safety hazards. Hazard Identification and Risk Assessment Register, Aspect Impact Register and Risk and Opportunity register help us identify the potential hazards. Risk matrix and Risk priority number helps us in prioritising our actions with control measures. Yes, we do regular inspections to ensure well-being of our employees. At Polycab we have a robust system for conducting internal safety assessments through cross functional audit teams who not only identify opportunities for improvement but also define the path for continual improvement.

**In the event of product recalls or safety concerns that arise after your cable and wire products have been sold, how does your company handle such situations?**

Polycab is India's largest wire and cable manufacturer. We manufacture high quality products meeting national and international standards. Our laboratory is equipped with the latest state-of-the-art testing equipment's and capable of performing routine, sample, and type test on cables of 300 V to 220 kV voltage grade. We have the stringent inspection and testing plan for each product and accordingly tests are being performed. Polycab has an ERP system MES (manufacturing execution system) fully functional in all manufacturing units which provides the traceability of each product from raw material to finished stage. In case any major failure is occurred in the 'supplied product we have product recall procedure document and further actions are taken in line with the guidelines given in procedure.

referred to ongoing training programs, safety drills and workshops, as “investments” for the future.

Moreover, companies commonly employ the Hazard Identification and Risk Assessment (HIRA) approach to identify potential hazards, evaluate their likelihood and severity, and assess the resulting consequences. A team of experts, including engineers, safety professionals, and operators conduct regular HIRA at the workplace. Risk assessments by

considering the likelihood and severity of the hazard, as well as the potential consequences of an accident, help in focussing on the significant areas for safety improvement.

In addition to a proactive management safety review team who approves policies and safety standards, reviews safety performances and the effectiveness of safety procedures, Vivek Yadav described, “100 per cent of Havells workers are covered by occupational health and safety management system. Targeted safety placards, posters and signboards are placed at strategic locations, to raise awareness and to reinforce that safety is everyone's responsibility.”

Acknowledging the inherent dangers posed by substandard products and unsafe working conditions, cable and wire manufacturing companies prioritise rigorous compliance with their certifications. Prominent companies have disclosed their commitment to adhering to ISO 14001 (Environmental Management System) in relation to their environmental impact. Furthermore, they strictly adhere to ISO 45001 (Occupational Health and Safety Management System) to safeguard the health and well-being of their workforce, and ISO 50001 (Energy Management System) to effectively manage energy resources. Additionally, companies uniformly comply with ISO 9001:2015 to ensure efficient quality management practices.

### CUSTOMER SAFETY

Due to a significant lack of awareness in the country, it is essential to establish a robust customer support system that can guide users through proper installations, maintenance, and provide important guidelines. Prominent companies including Polycab India and RR Kabel prioritise customer safety by providing detailed product documentation, user manuals and installation guides, to offer clear instructions on the correct installation, usage, and maintenance of their products.

Moreover, they organise awareness workshops and collaborate with industry partners to train electricians, contractors, and end-users. These initiatives aim to promote safe practices and raise awareness about electrical safety, ultimately contributing to the establishment of stringent norms for electrical fire safety and gearing a collective effort towards building a fire-safe nation.

Ramachandran emphasised V Guard's proactive approach to customer safety sharing, “We provide online resources, such as videos and FAQs, to help customers better understand our products and how to use them safely. Additionally, we have a dedicated customer support team that is available to answer any questions or concerns that customers may have about our products.”

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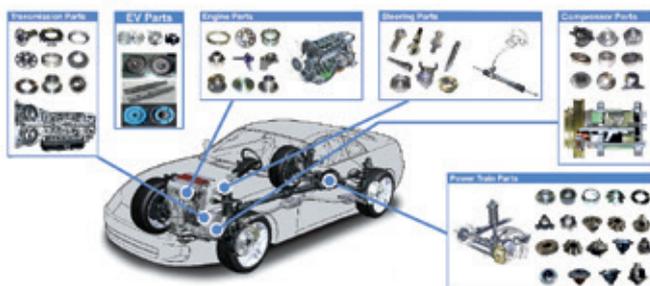
Muratec has been a global leader in supply of Turning machines with advanced automation solutions. It is fully prepared to provide the most appropriate level of automation solution to meet the growing demand in India for single piece flow to medium to high volume global supply market combined with high precision standards.

Our MW/MS Series Twin and Single spindle automated turning machines and MT series Turn - Mill centers have more than 10,000 installations worldwide. We are proud to say that, "MURATEC MOVES YOUR CAR".

MURATEC Machines are available in wide range of chuck sizes: capacities ranging from 6" to 15" chuck size. These advanced, precision turning machines come with highly reliable, integrated, intelligent CNC 3 axis servo controlled gantry loader for smart, fully automated, flexible workpiece load/unload operations. Complete solution includes machine plus peripherals and options to achieve full automation for unmanned operations on 24 x 7 basis, standardized and customized units to JUST-FIT the customer's productivity needs.

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Shreegopal Kabra,  
Managing Director,  
RR Kabel

## “IT IS IMPERATIVE FOR CABLES AND WIRES INDUSTRY IN INDIA TO ADHERE TO INTERNATIONAL STANDARDS”

### How does your company manage the disposal or recycling of waste materials generated during the cable and wire manufacturing process?

RR Kabel is dedicated to implementing responsible waste management and recycling practices for the waste materials produced during our cable and wire manufacturing process. We strictly adhere to environmental regulations and collaborate with authorised waste disposal agencies to ensure proper handling, recycling, and disposal of these materials. Additionally, our products comply with Reach and RoHS directives and we employ various water management techniques such as rainwater harvesting, rechargeable borewells, and the use of special nozzles to reduce water consumption. Moreover, we are actively working towards eliminating single-use plastic packaging. In line with our sustainability efforts, we annually save approximately 45 tonnes of paper consumption, with 0.3 percent of our total energy use derived from renewable sources. Furthermore, we are actively promoting the use of solar energy in our manufacturing facilities.

### What is your vision for the future of the cables and wires industry in India? What trends do you anticipate in terms of safety measures and product innovations?

The cables and wires industry in India is currently experiencing significant progress, specifically in terms of safety measures and product innovations. There is a growing emphasis on prioritising safety, efficiency, and sustainability within the industry. We believe that it will become imperative for cables and wires in India to adhere to international standards and quality, ensuring sustainability for consumers and the environment in the near future. As the industry moves forward, we anticipate a heightened focus on complying with safety standards and obtaining certifications to ensure the quality and reliability of products. This will lead to the elimination of substandard products currently available in the market, as stricter laws and regulations are enforced, resulting in a market dominated solely by organised players. This commitment to meeting safety requirements will significantly enhance consumer confidence in the industry. Furthermore, continuous advancements in materials, design, and manufacturing processes will drive the development of safer and more efficient cables and wires.

### INTELLIGENT CABLES

There are several challenges that arise during the manufacturing process of cables and wires. The integration of Internet of Things (IoT) and other technological advancements has the potential to enhance the reliability of electrical systems, reduce downtime, and mitigate the risk of electrical hazards. Sawhney expressed Polycab's commitment to advancing its operations, “We actively explore the integration of IoT into our products and solutions. These technologies enable us to develop smart cables and wires that can monitor electrical parameters, detect potential hazards such as overheating or power fluctuations, and provide real-time data for preventive maintenance.”

The sector is flourishing as technologies are incorporated into various aspects of manufacturing. Ramachandran V shared one such advancement in the manufacturing process of building wires products, which involves the use of advanced insulation materials with superior insulation resistance, high flame retardancy, and improved heat resistance. These materials can effectively prevent short circuits. The Director emphasised, “We are the pioneer to use triple extrusion insulation, to ensure that our cables and wires are manufactured to the highest standards of quality and safety.”

Fire safety components are essential for all structures, but they are particularly critical for high-rise buildings due to unique concerns related to accessibility, evacuation, and smoke control. This issue becomes even more relevant in India's landscape, which is experiencing rapid urbanisation and infrastructure development. In this context, Kabra highlighted RR Kabel's efforts to address this issue by stating, “Electrical accidents can be avoided by using high-quality fire-resistant wiring and cables. Our cables and wires are manufactured using technologically advanced machinery and each tested wire undergoes stringent tests at our in-house NABL laboratory.”

### SAFE DISPOSAL AND RECYCLING

The discussion of environment safety is not far-fetched when talking about the safety in the cables and wires manufacturing industry. With the growing demand for electrical products, it becomes imperative to address the environmental impact associated with the production process. Companies operating in this industry have taken significant steps to tackle this challenge head-on, implementing robust systems to handle waste materials generated during manufacturing.

Companies like V Guard begin working towards this goal with measures to reduce scrap generation in the first place. The company works towards optimising production processes and using environment-friendly



Vivek Yadav, Executive Vice  
President, Havells India

## “APPROX 20 PER CENT OF ALL ACCIDENTAL FIRES ARE DUE TO SUBSTANDARD WIRING”

**The occurrence of electrical short circuits has witnessed a significant surge in India. In your opinion, what are the primary factors contributing to this increase?**

One of the leading causes of fatalities in India is electrocution accidents. This issue is particularly severe in older buildings that lack built-in or installed residual protection devices. Considering the escalating electrical load and our increasing reliance on electrical and electronic equipment, it is imperative to have a robust electrical infrastructure with integrated residual current protection devices.

Further, Approximately 20 percent of all accidental fires can be attributed to substandard wiring. Ensuring the compatibility of wires with the electrical load is crucial, as these wires serve as the essential lifelines of our homes. They should be of high quality and possess the appropriate rating.

Havells India has consistently championed the cause of electrical safety. We have implemented various measures to emphasise the importance of electrical safety. This includes providing continuous training to electricians, fostering consumer awareness through signed agreements with DISCOMs, and engaging with residential welfare associations (RWAs) and industrial welfare associations (IWAs) to educate individuals about the advantages of utilising high-quality protective equipment. Our goal is to safeguard both their valuable equipment and precious lives.

### **HRFR Insulation with Advanced S3 Technology: The ideal wire**

In the realm of electrical insulation, HRFR (Halogen-free Retardant Flame Retardant) insulation incorporating advanced S3 technology emerges as a highly recommended solution, offering superior current carrying capacity and heat-resistant properties that are well-suited for high-temperature operations. Our unwavering commitment to promoting an environmentally friendly ethos is reflected in the wire's noteworthy features, including RoHS compliance, high insulation resistance, and anti-termite and anti-rodent properties, making it an ideal choice for various applications.

Recently, Indian electrical experts have been advocating the adoption of this new compound to address the shortcomings of PVC insulation. Unlike PVC cables, which emit copious amounts of dense black smoke, toxic fumes, and acidic gases when exposed to fire, HFFR cables produce minimal smoke, low levels of toxic fumes, and no acidic gases. These cables are free of halogens, making them highly suitable for indoor usage, particularly in public areas, as well as in hazardous and poorly ventilated environments such as cars, aircraft, railway carriages, and ships.

materials where feasible.

Effective waste management systems within manufacturing facilities encompass proper segregation, storage, and disposal of waste materials. Polycab India takes stringent efforts in this regard and prioritises recycling and reuse of waste materials to minimise environmental impact. The company works alongside authorised recycling partners who specialise in the recycling of specific materials, ensuring their safe and sustainable treatment.

### **WHAT DOES A SAFE FUTURE HOLD?**

The premise of a safe future as Kabra highlights entails, “Cables that are sustainable for both, the consumer and the environment adhering to international standards and quality.”

To achieve this vision, companies including Havells and Polycab are manufacturing cables which are fire-resitant, they are promoting the use of Halogen-free flame retardant (HFFR) insulated wires since they do not emit hazardous gases, and clear smoke. Further, “The low intensity visible white smoke HFFR is more effective during fire outbreaks since it reduces the amount and density of the smoke, which makes exiting a space easier for occupants as well as increases the safety of firefighting operations during any fire accident,” shared Vivek Yadav.

There is an increasing demand for energy-efficient cables that reduce power losses. In addition to this need of increasing efficiency, there is a gathering momentum which propels decreasing carbon impact. Consequently, the future will witness a shift towards wiring solutions that facilitate the efficient transmission and distribution of clean energy. Furthermore, smart cables enabling real-time monitoring, early fault detection, and remote-control capabilities will play a pivotal role in shaping future infrastructure, the Polycab CBO shared.

In lieu of the government's substantial investments in infrastructure development, India is facing an increasing demand for electricity.

As smart homes become increasingly popular in India, they drive the demand for a special variety of cables and wires. Smart homes use a variety of sensors and devices that are connected to the internet, and this requires high-quality cables and wires that can handle high-speed data transfer. Ramachandran V also brought to light the impact that the EV industry will create on this sector. According to him, “Electric vehicles require high-power cables that can carry the high currents required for charging. The electric vehicle market is growing at a good pace in India, and this is driving demand for high-quality cables for charging electric vehicles.” 

By Nisha Shukla

## REVVING UP FOR 'EV'OLUTION

With the adoption of EVs picking up pace in India, manufacturers are facing a myriad of challenges impacting their growth. As they face every new challenge head-on, the manufacturers are constantly devising new strategies to stay buoyant. While these strategies would not be enough, the industry, on the other hand, seeks all-inclusive policy support and a robust indigenous supply chain ecosystem to enable end-to-end localisation of EVs in India.



**I**ndia is currently charging up for an electric revolution, as evidenced by the growing interest and adoption of electric vehicles (EVs). The government is powering this momentum with supportive initiatives aimed at reducing pollution and fossil fuel dependence. Public attitudes are shifting gears too – where once people balked at limited range and a steeper upfront cost, they now show increased confidence in EV technology as it evolves and becomes more accessible.

Recently, Vahan portal released data on EV sales, which also reflected a significant surge in consumer demand. According to the data, India's electric vehicle (EV) industry touched the milestone of one-million-unit sales in the financial year 2023, with the two-

wheeler (E2W) segment securing the top spot in the ranking. Out of the overall electric vehicle sales of 1,152,021 units, the electric two-wheeler segment accounted 63 per cent share, with 7,26,861 high-speed units sold.

Securing the second spot was the three-wheelers segment (E3W) with 3,80,245 units sold (holding 33 per cent share), whereas four-wheelers accounted 4 per cent share with 43,042 units sold, and electric buses stood at 1,873 units or 0.16 per cent.

While the data from Vahan displayed a significant acceleration in demand for both the E2W and E3W segments, the E2W segment fell short of the target set by Niti Aayog, which projected sales of over 1 million units in FY23.



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## "NON-RECEIPT OF SUBSIDIES IN TIME FROM THE GOVT HAS CAUSED WORKING CAPITAL TO DRY UP"

*Sobinder Gill, CEO - Hero Electric and DG - Society of Manufacturers of Electric Vehicles (SMEV), opens about how non-timely payment of subsidies to the OEMs has drastically impacted their working capital and why an all-inclusive policy is need of the hour for quick EV adoption in India.*

### **Government has announced clearing the dues of EV makers by the end of June. How do you look at this development?**

This has been announced only for the OEMs who were ordered to pass on the extra cost of chargers and software back to the customers. Few OEMs who started business recently and sold very few numbers have also been cleared for subsidy. The issue of Rs 1200 crore stuck of 5 incumbents who sold 90 per cent of the total e-bikes in the initial period between 2019-21 is still under discussion.



**Sobinder Gill, CEO - Hero Electric and DG - Society of Manufacturers of Electric Vehicles (SMEV)**

### **Recently, the Ministry of Heavy Industries announced reduction in the subsidy provided under FAME-II (Faster Adoption of Manufacturing of Electric Vehicles in India) scheme applicable on electric two-wheelers. Do you think this will help to further accelerate growth in the E2W?**

Despite the full subsidies available in the FY 23, the volumes sold were only 7.3 lakhs against 1.2 million target proposed by Niti Aayog and others projecting 1 million plus. This was mainly due to sharp fall in the volumes of the incumbents and startups who faced critical working capital shortages due to withholding of subsidy and could not supply sufficient bikes despite huge demand.

### **A few Electric 2-Wheeler manufacturers have announced hiking the prices owing to cut in FAME-II subsidy. What's your take on this.**

Most of the manufacturers have not passed on the entire subsidy reduction to the customers and this has taken a hit on their bottom lines. We'll have to wait and watch how long the companies can sustain to keep the price increase in checks. Despite this, while the volumes in FY24 may be higher than the 7.3 lakhs sold in FY23, they may not touch anywhere near to the projected 2.3 million units by Niti Aayog.

### **India is likely to discontinue the second phase of the FAME II scheme after the next financial year due to the alleged misappropriation of subsidies under the scheme by two-wheeler EV makers. Is this true? If yes, how will it impact the growth of the EV industry?**

Today, the entire EV industry (including some early start-ups and Hero Electric) are facing challenges primarily due to the lack of a robust supply chain. A block on subsidy already passed to the customer to the tune of over Rs 1,100 crore has squeezed the working capital of the

industry (Rs 400 crore amount due to Hero Electric alone). This comes at a time when the industry is finally poised to deliver a 100 per cent localised vehicle to customers starting the next quarter.

It is pertinent to remember that COVID also disrupted and crippled the supply chain, which could have supported early localisation. Hero Electric and other OEMs could partly localise products but kept receiving subsidies as the Ministry of Heavy Industries (MHI) took a pragmatic view of the difficulties and the pandemic crisis at that time (till March 2022). Also, in the last nine months, actions of vested interests have emerged to scuttle the growing EV revolution.

However, we feel encouraged knowing that the process of reviving the sector has begun - the EV industry should be extended support for a few more years to bring down the acquisition cost. We support the Ministry in its efforts to rationalise the policy regime.

We will continue working closely with the government in meeting the ambitious target of 80 per cent electric two-wheelers adoption in 5 years. We aim to create capacity, induct the right technology, spread awareness, provide basic charging infrastructure, and upskill IC bike technicians to offer roadside service.

### **Recently there were reports on the Society of Manufacturers of Electric Vehicles (SMEV) filing a petition to the Parliamentary Standing Committee on Electric & Hybrid Mobility, Energy, and Estimates regarding non-payment of subsidies worth Rs 1,200 crore (\$161 million) and how it is causing severe financial stress for the industry?**

The reports of the committee on industry and estimates both advocated for an extension of the FAME policy to establish the EV sector in the industry. SMEV and its members also echoed a similar viewpoint. Therefore, it only makes sense for the government to pay heed to the need of the stakeholders and the recommendation of Parliamentary Committees. A prolonged crisis puts heightened stress on any industry. In the case of OEMs whose subsidies are yet to be reimbursed by the government, it is crucial to understand that this money has already been passed onto the customers out of the OEMs' pockets. Non-receipt of subsidies in time from the government has caused working capital to dry up. This makes it difficult to carry on operations, especially for start-ups and smaller players in any ecosystem.

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Though the above data reflected a significant rise in demand of EVs, the E2W segment specifically failed to meet its target. **So, the question arises: 'What is hindering the growth of EVs in India?'**

If we closely look, the E2W adoption fell month-on-month (MoM) compared to the targets, resulting in an annual shortfall of more than 25 per cent compared to the minimum target set by Niti Aayog and various research organisations. According to the experts in the domain, it was not the consumer demand but the sudden withholding of subsidies (under the FAME-II scheme) that most original equipment manufacturers (OEMs) have already passed on to the customers which affected the sales of E2Ws.

However, what emerged as a big development was the Ministry of Heavy Industries' (MHI) recent announcement on clearance of subsidy dues. *Dr Hanif Qureshi, Joint Secretary, Ministry of Heavy Industries* informed, **"We have already started the process and have revamped the portal. By June end, all the dues will be cleared."**

**We spoke to a few EV players to understand the impact of policies and subsidies on the growth of the segment and here's what they said:**

According to Kalyan C Korimerla, MD and Co-Promoter of Etrio, the market for EV vehicles in India has seen a stellar shift in the last two years. Even though the initial volume ramp-up took some time to materialise, he affirms that "the electric two-wheeler segment has experienced exponential growth in the most recent fiscal year."

He further stated, "Alike E2W, the market for electric three-wheelers will experience similar growth in the current fiscal year, with other segments following soon after."

When asked about the FAME II subsidy disbursement, the MD and Co-Promoter of Etrio agreed that "it is proving financially burdensome for most innovative EV OEM start-ups to sustain long reimbursement times." However, "with advanced technology, the cost of battery cells will drastically reduce, which, in turn, will have a significant impact on lowering the total cost of ownership of EVs, making them more attractive than their ICE counterparts," he added.

Korimerla further noted that advanced technology will only benefit certain segments of the EV market, however "most of the upcoming segments such as LCVs, M/HCVs, and others would need (financial) support for the foreseeable future."

He also emphasised that despite aggressive targets set by the Honourable Prime Minister for EVs, "support for commercial EV financing from public

sector banks and other lending institutions has been lagging." However, Korimerla maintained that "the government should draft policies to foster a robust financing environment for EVs."

While the industry is seeking more financial support, the Union Government's recent announcement on the discontinuation of the Faster Adoption and Manufacturing of Hybrid & Electric Vehicles (FAME) subsidy scheme beyond March 2024 has raised concerns.

### THE FAME II SCHEME PROVIDES INCENTIVES FOR THE PURCHASE OF EVS AND HELPS TO BUILD THE NECESSARY INFRASTRUCTURE FOR EVS.

When asked about the discontinuation of the FAME II scheme, Sohinder Gill, CEO, Hero Electric, said that the move will bring a fresh set of challenges for EV players in India. "Being at an early stage of growth, the EV industry needs support and incentives to create a pool of consumers that will continue to fuel further growth," he added.

"Without incentives and infrastructure," said Gill, "the cost of owning an EV may become prohibitive, discouraging people from buying EVs and thereby stalling the industry's growth." However, he suggests that there are numerous ways to fortify the policy, such as "strengthening the monitoring and evaluation mechanisms, encouraging the participation of third-party auditors to oversee the scheme's implementation." Additionally, "the government can launch public awareness campaigns to educate people about the benefits of EVs and the incentives provided under the FAME II scheme," he added.

According to Kunal Chandra, Co-founder of Astro Motors, the FAME II scheme has served as a catalyst for EV adoption in India through its incentives and subsidies. However, he feels that "if the scheme is discontinued prematurely, it could potentially stymie the growth of the EV industry. It's crucial that supportive policies and incentives remain consistent to attract investments, motivate manufacturers, and bolster consumer confidence."

Talking about fund misappropriation, Chandra stated, "While there have been unfortunate instances, implementing stringent verification processes can ensure subsidies reach only deserving manufacturers and vehicles." He also emphasised carrying out regular audits, diligent monitoring of subsidy disbursements, and imposing stern penalties for non-compliance to discourage fraudulent activities and reinforce transparency in the system.

## “WE WILL ONLY HAVE ZERO EMISSION VEHICLES SOLD IN 2040”

*Kamal Bali, President & MD, Volvo Group India shares insights on how his company is taking long-term steps to accelerate Zero Emission solutions in Heavy Duty Commercial Vehicles.*

### How is the market evolving for heavy duty commercial EV vehicles?

We can see that the market in the 2W and 3W segments is clearly on the rise with a large part of the 1 million EVs sold accounted by these segments. The number of players, the government incentives till now, low cost of operations and public experience seems to be finding a threshold. Keeping in mind the size of the market that India is, one would expect all aspects of the eco-system – charging stations, local supply chain, policies - to fall in place to drive these segments towards the envisaged 2030 ambitions stated by Niti Aayog.

One would also expect a rise in the city bus market, where STUs backed by government ambitions towards Net Zero, will drive the adoption of E-buses. There are likely 3,000 odd e-buses already operating, which while being good is still a small share of the total bus market. However, the national plans of tenders worth 50,000 buses in the coming years will surely help the city bus segment increase its share of electric vehicles.

However, when it comes to the other key segments we are engaged in, primarily heavy-duty applications in the trucks and construction equipment industry - electromobility is still in the early stage in the country.

In our view, when it comes to heavy duty and long-haul applications, there is no silver bullet. A mix of three technologies will help decarbonise our industry – Battery Electric Vehicles, Hydrogen Fuel Cells Electric as well as ICE on renewable fuels. This is very much India's approach too.

However, even as we take that leap, in our HD truck long-haul segment, we could also opt for solutions such as LNG. Liquefied Biogas (LBG) can be even better as it has potential to remove 100 per cent CO<sub>2</sub>. We have a Volvo LNG tractor-trailer currently doing pilot run in India.

While we consider all future options, recently the first Volvo Electric Compact Excavator EC55 was introduced in India, along with SDLG Electric 5.5tonne Wheel loader.

### What kind of demand are you witnessing for heavy duty commercial EV vehicles?

When it comes to freight transport and long-haul transport, the current demand for zero emission transport is still in a nascent stage. However, all large organisations with large distribution transport networks are committing to a Net Zero future. And this implies that they are all on the drawing table to see how they can make their logistics net zero too. We also see large mining, retail and core sector corporate who have clearly articulated their Net Zero



Kamal Bali, President & MD,  
Volvo Group India

ambitions and are actively discussing means to make their logistics (which includes transport) zero emissions.

It's a matter of time that we see greater traction in the heavier duty segment too, though the answer would lie across a range of options – Alternative fuels on ICE engines, Battery Electric or Hydrogen/Hydrogen Fuel Cells.

As mentioned earlier, the demand for city buses is already triggered through the national initiatives through STUs. Here, the performance of the e-buses on road currently – in terms of operating economy, battery life and resale, range etc - will help set the pace for the future, especially the large bus tenders planned in the coming years.

### Do you think 40 per cent of bus sales would be electric by the end of this decade.

When it comes to city buses, the ambitions in having 40 per cent of the buses sold as electric by 2030 is achievable. However, here our view is that the bus segment must approach the transformation to electromobility within the overall framework of sustainable mobility. Cities are critical engines of growth and will determine the quality of life of almost half of India's population in the coming decade. So, the aim should be not merely inducting Electric buses, but to making sure that public transport is the number 1 choice for citizens. Else we will be merely congesting cities with electric buses, instead of diesel and that does not imply 'sustainable mobility.' Today, the ratio of number of buses to people in India is far lower than typical countries.

Hence, even with electric as the base, the key focus must be to increase bus capacities in our cities and make the bus and the bus based public transport system attractive enough to motivate citizens to leave behind their personal vehicles and move to public transport instead.

When it comes to trucks, the draft report from Niti Aayog indicates an ambition towards 9 out of 10 trucks in India by 2050. This is possible if we get the eco-system in place. At Volvo Group, globally, we already have the trucks in place where we are now commercially offering up to 44-ton battery electric trucks for city onto regional transportation.

However, when it comes to long-haul transport and heavy demanding application one would expect to see Hydrogen Fuel Cell trucks.

The Volvo Group has committed to the most ambitious commitment level provided by SBTi, the Business Ambition for 1.5 °C. In addition, Volvo Group is targeting to be net-zero in 2040 to reach a rolling fleet net-zero

*continued...*

value chain emissions by 2050. So, our aim is that we will have only zero emission vehicles sold in 2040. Already by 2030, we aim to bring down our GHG emissions from our trucks and buses by 40 per cent.

### What steps are you taking to accelerate Zero Emission solutions in Heavy Vehicles?

It is about implementation now. For the larger understanding that the eco-system needs to be transformed is clear.

Every new option involves large investment into energy production, infrastructure, product development as well as manufacturing. The direction and roadmap in this regard is key. This is key for industry players to judge the market demand and develop a business case for the investments required. We see that most players have already stated their intentions in considering all options.

India's focus on electromobility, hydrogen mission, PLIs, current and future demand and supply interventions will all go a long way in building the grounds for successful transformation. Additionally, steps will need to be taken to promote local technology development and innovation. A key role will be played by financial institutions and financial instruments that support manufacturers and fleet operators in their shift to electric or alternative fuels.

Also, to ensure full decarbonisation requires updated energy grids and sufficient renewable energy. However, as we have seen globally, a key means to accelerate the future will lie in partnerships. At Volvo Group, our pathway

to zero emission transport solutions involves a range of partnerships: across batteries, fuel cells, building both charging and hydrogen retail network as well as a supply chain with zero emissions. The future will require a new eco-system and that means partnership across – Industry, authorities, academia, research, and the entire value chain. In Europe, Volvo Group, Daimler Truck, Traton are collaborating to set up 1,700 high performance green energy charge points, on and close to highways as well as logistics hubs. This partnership in building infrastructure is also a call to industry, governments, and policy makers to work together for rapid expansion of the necessary charging networks.

Finally, a key enabler in helping the freight transport sector to shift towards electromobility lies in higher logistics' efficiencies. Clearly, low efficiency levels in logistics are a barrier to investment. Because low efficiencies do not allow optimum utilisation of the Asset (truck for instance) and hence the fleet operator mindset is to play safe and keep costs low and not to invest big. However, a shift to zero emission vehicles would probably mean higher initial costs and is in a way an investment even if operating costs of alternative vehicles are low. Higher logistics efficiencies, which implies higher vehicle utilisation and greater revenues, thus is a key for fleet operators to shift to alternative energy solutions. Here, India's ambitions under the National Logistics Policy along a focus to building world-class infrastructure and roads, will play a crucial role.

While the government policies and subsidies are crucial for sustaining growth of EVs in India, we also looked at other factors that are hindering its adoption and how the industry is striving to overcome these challenges

### OTHER CHALLENGES:

The EV industry in India has substantial market potential, but manufacturers face several unique obstacles, such as limited availability of raw materials, a lack of skilled labour, battery standardisation, charging infrastructure, simple and quick loan approvals, range anxiety, and high cost of ownership, to name a few. Additionally, the industry is also facing several bottlenecks in developing a robust supply chain for EV components, including batteries, motors, and power electronics.

When asked about the **full localisation of EVs in India**, Kunal Chandra termed it a complex challenge, requiring multiple factors to align. However, he emphasised that “the government has a key role in fostering a resilient domestic ecosystem for EVs and their component production, which includes batteries, motors, power electronics, and more.”

According to Chandra, predicting the timeline for achieving full EV localisation is difficult. However, he believes that significant investments, technological advancements, and the cultivation of a skilled workforce

are pivotal. He further added “The timeline will largely depend on the velocity of these factors and industry collaborations, alongside constant policy evaluations and adjustments to accelerate the localisation journey.”

### SUPPLY CHAIN ISSUES

Managing the EV supply chain in India's developing landscape is a significant challenge. Supply Chain is one of the factors that directly impacts EV player's ability to control delivery timelines and component quality.

Sharing Hero Electric's approach, Sohinder Gill revealed that the company has adopted a proactive approach to resolving the supply chain issues. “Through local sourcing, partnerships, vertical integration, and collaboration with other industry players, we are working to ensure a steady supply of components required to manufacture EVs in India and to promote the growth of the EV industry,” he added.

Talking about Astro Motor's strategy to surmount the supply chain challenges, Chandra says that “Indigenisation is the key – right from designing the product to sourcing all components from local Tier 1 vendor.” However, “the only exception in the entire process is the battery cell, which the company usually imports but with rigorous inspection during the battery pack manufacturing to ensure adherence to strict SOPs and high-quality sourcing.”

## “SUSTAINABLE MOBILITY IS THE NEED OF THE HOUR”

*Girish Wagh, Executive Director of Tata Motors shares insights on their electrification journey and how the government EV policies are helping them to garner demand.*

### Tell us in detail about Tata Motors' commercial vehicle electrification journey?

In electrification, we have forayed into the e-cargo-mobility with the launch of Ace EV in the last-mile delivery segment which marked a big step forward in the journey towards zero-emission cargo mobility in India. The holistic solution co-created with our partners effectively caters to a variety of intra-city distribution needs and delivers a superior value proposition to all stakeholders. The vehicle is suitable for e-commerce intra-city deliveries, waste management, FMCG and parcel & courier applications.

For e-buses, the demand incentives, standardisation and aggregation of demand through CESL and pull from state and local authorities is building strong demand. Government initiatives have significantly sought to spur growth in this sector. The unveiling of the National Electric Mobility Mission Plan 2020 has significantly helped expedite the adoption of electric vehicles, and considerable steps have been taken to accelerate the growth of electric and hybrid components in the automotive sector. Under the FAME I and FAME II initiative, Tata Motors has supplied e-buses to multiple STUs. Over 730 e-buses are plying on Indian roads with a cumulative running of ~70 million kilometres. The company has also won a definitive order of over 2,600 e-buses including 1,500 units from Delhi Transport Corporation, 921 units from Bengaluru Metropolitan Transport Corporation and 200 units from Jammu & Kashmir Road Transport Corporation. Tata Motors also actively sets up necessary charging, maintenance and supporting infrastructure. We are the first e-bus manufacturer in India to supply to a retail customer – Endress+Hauser Flowtec (India) Pvt. Ltd.



Girish Wagh, Executive Director of Tata Motors

### What is the future roadmap for electrification of Commercial Vehicles in India?

Sustainable mobility is the need of the hour. For commercial vehicles, we expect the shift towards electrification to be through alternate fuels (Natural Gas, Biofuel etc). As a result, the industry will continue to provide a variety of fuel choices to meet specific application needs while eventually switching entirely to EVs. However, electrification is a significant transition, initially in intra-city cargo and passenger transportation. Tata Motors is working to identify such applications and understand the customer requirements related to electrification.

### Kindly elaborate on 'One Tata' initiative

The unique 'One Tata' initiative helps leverage the core proficiencies of various Tata Group companies to offer the best comfort, performance, and low cost of operations. Tata Motors, in association with Tata Power, also provides end-to-end charging infrastructure at the bus depots.

### With your expertise in developing electric commercial vehicles, how are you making your mobility solutions relevant to your customers?

We are geared up to follow this growth trajectory through our continuous engagement with customers to understand their evolving needs. We will continue to build our product and service offerings to align with customer's requirements while leveraging our enhanced network, engineering prowess, and a valuable after-sales offering encapsulated in Sampoorana Seva 2.0 – Tata Motors' – commitment to commercial vehicle driver welfare, uptime guarantee, on-site service, customised annual maintenance, and fleet management solutions.

### RANGE ANXIETY:

As the world transitions towards a more sustainable future, EVs are gaining popularity. However, one of the greatest concerns of EV owners is range anxiety, or the dread of running out of charge.

Given the challenge, Hero Electric has come with an entire range which includes high-quality li-ion portable batteries that can be charged via a 3-pin domestic socket. This means you can charge the battery anywhere, anytime via a regular plug point that is found anywhere.

To cater to the issues of range anxiety, Astro Motors has pioneered the world's first 'Manual Geared Electric Vehicle' in the L5 segment, resulting in more efficient current draw and better battery charge conservation, enhancing the range.

### SKILL DEVELOPMENT

According to the National Skills Development estimates, EV

Industry will create 10 million direct jobs and 50 million indirect jobs by 2030. Given the opportunity, "the industry needs to create an enabling ecosystem for the training and development of the workforce across all key roles and strengthen the talent pipeline," said Kalyan C Korimerla.

In fact, Universities and Engineering institutions have initiated several programs and courses for EV Engineering. "Due to the world-wide sustainability and Net-Zero push, several students are getting engaged with EV industry. This will create the talent pool that is necessary for meeting the needs of EV industry," he added.

"Creating a skilled workforce is indeed a challenge for a burgeoning industry like ours," states Kunal Chandra. However, he asserts that as interest grows in the EV space, so will job demand. "The government can aid this by facilitating skill development programs, vocational training, and educational



initiatives in battery technology, EV assembly, and maintenance,” he added.

“Collaboration between academia and the industry can significantly bridge this skill gap” Chandra opined. He also suggested introducing specialised EV technology courses, including certificate programs, diploma courses, and degree programs. Besides, “International collaborations with experts, research organisations, and technology providers can facilitate knowledge exchange, training programs, and joint research projects to enhance the skillsets of Indian professionals,” added Chandra.

#### **CHARGING INFRASTRUCTURE:**

Tackling the issue of limited charging infrastructure requires strategic collaborations. To meet the burgeoning demand – Hero Electric have partnered with ElectricPe to install charging stations across India for their consumers. This charging station will be in residential complexes, offices, shopping centres, and other establishments, thereby addressing the issue of range anxiety.

Besides, Astro Motors has partnered with various companies to deploy charging points nationwide, at locations like commercial areas, highways, petrol pumps, parking lots, and residential complexes. Beyond that, they are considering innovative solutions such as coupling charging infrastructure with renewable energy sources for further sustainability and introducing smart grid solutions for efficient infrastructure management and load balancing.

#### **MAKING EV AFFORDABLE**

In a bid to offer easy and smart financing for EVs, Hero Electric have partnered with finance providers such as Cholamandalam Investment and Finance Company Limited (Chola). “These collaborations aim to make

scooters more affordable for discerning and price-conscious buyers with attractive financing solutions. Also, with this partnership, we can cater the new markets with a widespread presence,” said Gill.

#### **ACHIEVING 2030 TARGET**

The central government has set an ambitious target for electric mobility adoption in India, pegging electric vehicle (EV) sales penetration in India at 70 per cent for commercial cars, 30 per cent for private cars, 40 per cent for buses, and 80 per cent for two- and three-wheelers by 2030.

On achieving the 2030 target, Kunal Chandra, Co-founder of Astro Motors, said, “India’s road to electrification, as charted by NITI Aayog, is indeed a steep one, but not unattainable.” He further stated that, India should innovate and significantly invest on battery technology, expand charging infrastructure, and work on making EVs more affordable.

According to Kamal Bali, President & MD, Volvo Group India, the ambitions of having 40 per cent of the buses sold as electric by 2030 is achievable. However, he believes that the bus segment must approach the transformation to electromobility within the overall framework of sustainable mobility.

Cities are critical engines of growth and will determine the quality of life of almost half of India’s population in the coming decade. “The aim should be not merely inducting electric buses, but making sure that public transport is the number 1 choice for citizens. Else it will merely congest cities with electric buses, instead of diesel and that does not imply ‘sustainable mobility,’” added Bali.

When it comes to trucks, the draft report from Niti Aayog indicates an ambition towards 9 out of 10 trucks in India by 2050. According to Kamal Bali, “this is possible if the eco-system is in place.” 

## INDIGENISATION OF BATTERY MANUFACTURING IS THE NEED OF THE HOUR: BATTERY MANUFACTURERS

Battery manufacturers are voicing the need for developing a robust cell manufacturing ecosystem, new cell chemistries, and technologies to accelerate EV adoption in India.



**T**he rising adoption of EVs, increasing renewable energy installations, and the need for energy storage solutions have significantly contributed to the creation of a vast market for batteries in India. According to a study the EV battery demand in India is expected to reach 15 GWh by 2025 and 60 GWh by 2030.

However, meeting this demand will be no less than a challenge, given India is largely dependent on foreign countries such as China for raw materials and EV components. With the growing demand for EVs in the country, it is the need of the hour to look into domestic manufacturing of batteries including li-ion and other

chemistries.

If we closely look, in EVs, “the battery serves as the most significant and costly component, accounting nearly 40 per cent price of the vehicle. This is primarily because India imports cells from China and the expenditure with respect to their logistics is high. In the long term, if China further increases the price of cells or if the country faces an issue with respect to its logistics, there is not much we can do to combat the situation then,” said Vikas Aggarwal, MD iPower Batteries. “If we aim to achieve quicker EV adoption, this dependence needs to be eliminated, and India needs to manufacture cells indigenously,” he added.

## “THERE IS A MUCH NEED FOR ECO-FRIENDLY, SUSTAINABLE RECYCLING TECHNOLOGIES”

### How Is the market evolving for Battery recycling in India?

The battery recycling market in India has started to pick up pace now, just as the electric mobility space has over the past few years. There is a clear shift of focus to fight climate change, especially with the electrification of mobility and transitioning to renewable energy sources, which requires energy storage solutions at a large scale. As these markets expand, the lithium-ion batteries at the end of their life cycles will eventually be required to be recycled, slated to be a massive \$30 billion market by the end of the decade.

### What kind of demand are you receiving for Battery Swapping & Recycling?

Although many OEMs are looking at second-life applications of their lithium-ion batteries, like mobility to stationary storage, the usage is yet to prove its unit economics at scale. As a result, several companies are on the lookout for strategic partnerships with recycling companies, such as Metastable, to ensure that the waste batteries do not end up in dump yards but instead be recycled to establish the recycled metals as an alternative source of sustainable raw materials.

### Where does India stand on the battery recycling front?

The lithium-ion battery recycling industry in India is at a very nascent stage today. As a country, we have taken notice of the global market potential and the urgent need to act for a greener future. However, India's total end-to-end recycling capacity is not even close to the amount of waste batteries generated each day. The recycling industry has just started preparing itself for the oncoming wave of lithium-ion batteries reaching the end of their lifecycle from the first generation of the electric vehicles that have been in the market for a few years. This volume of waste is in addition to the already 70-100 metric tonnes of waste batteries from consumer electronic devices generated daily in India.



Saurav Goyal,  
Co-Founder and COO,  
Metastable Materials

### What kind of infrastructure do we have now here in India in terms of Battery recycling?

The total installed capacity of recycling lithium-ion batteries and its associated waste is nowhere close to what is required today and soon. The industry is over-saturated with companies processing waste batteries to separate black mass from the rest of the battery materials, which contains the most valuable metals of a Li-ion battery, namely lithium, nickel, and cobalt. Much of the value is lost here because this black mass is shipped to other countries for further refining. As a result, India is losing out on securing the supply of critical metals to achieve its goal of Net Zero by 2070. Therefore, there is a much need for eco-friendly, sustainable recycling technologies, such as Metastable's Integrated Carbothermal Reduction™ that can scale in tandem with the rising demand for lithium-ion battery applications like green mobility solutions, stationary energy storage and consumer electronics.

### What kind of infrastructure is needed to recycle EV batteries in a greener way, and how can India emerge as the global hub for EV battery manufacturing and recycling?

The most prevalent recycling technologies of today are plagued with issues of scale and high operational expenditures. Both issues are primarily a result of highly chemical-intensive processes. That is why there is a need to find alternative solutions for extracting materials out of waste which is low on capital and operational expenditures while generating minimal waste during the process. One such technology, developed indigenously, is Metastable's Integrated Carbothermal Reduction™ (ICR). ICR is specifically designed to extract critical metals like lithium, cobalt, nickel, copper and aluminium out of waste batteries without any chemicals at costs that are practically a fraction of the current industry standards. The process design, along with low-cost structures, enables the ICR to be highly scalable and globally deployable to put India at the forefront of the sustainable battery manufacturing and recycling ecosystem.

Agreeing with Aggarwal's point of view, Pankaj Sharma, Co-Founder and Director at Log9 Materials too emphasised on establishing indigenous supply chain within the EV sector. He says, "Localisation of EV supply chain will reduce our dependency on the neighbouring countries and take us closer towards our

ambition of energy independence. It will also eventually lower the costs of EVs, thus boosting mass adoption of electric vehicles across all segments (2Ws, 3Ws, 4Ws)."

Sharma also highlighted about the impact of domestic manufacturing on economic development. According to him "reduced dependency for imports

will drastically lower trade deficits, thereby improving the country's economy. It will also reduce geopolitical tension, minimise supply chain disruptions and improve trade agreements."

While developing a robust supply chain ecosystem is the need of the hour for EVs in India, battery manufacturers, on the other hand, highlighted the requisites and efforts they are taking to strengthen domestic cell manufacturing.

### **BATTERY RECYCLING**

As India's battery market continues to grow, the scope for battery recycling is expected to expand significantly. By embracing battery recycling and investing in infrastructure, technology, and public awareness can effectively manage battery waste, reduce pollution, and recover valuable resources.

In India, several companies are actively engaged in exploring the second life of lithium batteries. "The recycled lithium batteries are anticipated to find utility in stand-alone energy storage solutions or will be used in EVs with limited range, especially in Tier-2 and Tier-3 cities and towns where price is a significant constraint in the adoption of EVs," claims Aggarwal.

### **IMPROVING ENERGY DENSITY OF BATTERIES**

Improving the energy density of electric vehicles (EVs) in India is crucial for enhancing their range and performance.

Log9 Materials is moving towards advanced Titanate-based anode technologies with 2x charge capacity which would provide better rate and higher energy density than the LTO. Shedding more details about this technology, Sharma, informed "The team is working on LFP cell chemistry with cooling management systems that will support fast charging. Log9 is further working on materials that will help improve the energy density with a no-cobalt chemistry, thus increasing the average cell voltage of system anodes. We have developed a product strategy that focuses on materials study to improve the energy density with no-cobalt concepts that minimises the use critical raw materials."

In terms of improving energy density, iPower Batteries has launched LMFP batteries. "These batteries offer a high energy density comparable to NMC batteries while maintaining the safety characteristics of LFP batteries," notifies Aggarwal.

### **INNOVATING NEW CELL CHEMISTRIES**

In EVs, advanced cell chemistries serve as most critical component. While Lithium-ion batteries is the most preferred choice for EVs, Lithium Nickel Manganese Oxide (NMC) is the most predominant cathode

chemistry. However, according to experts, Lithium Iron Phosphate (LFP) will gain prominence in future, owing to its higher thermal stability and lower production cost.

Though several other chemistries are in development process, Indian nanotechnology company, Log9 Materials is working extensively on Lithium Titanate Oxide (LTO) cell chemistry for developing fastest charging and longest lasting EV batteries for 2Ws, 3Ws, and 4Ws. "We are the first ones to use LTO chemistry in India and are also introducing our new product range based on Lithium Ferrous Phosphate (LFP) cell chemistry with cooling management systems and thermal management systems in place for mid mile logistics sector," said Co-Founder and Director of Log9.

Besides, iPower Batteries recently introduced the RugPro battery series, utilising LMFP chemistry. "This combines the advantages of both NMC and LFP technologies. Like NMC, it offers a high energy density, while also possessing the high thermal stability characteristic of LFP. We believe that this new chemistry will play an important role in the Indian EV market," asserts Aggarwal.

### **MAKING CELL PRODUCTION GREENER**

Cell production remains the largest greenhouse gas (GHG)-emitting step in battery production. When asked about how manufacturers can make cell production greener, to which Sharma said, "our cell production process involves aqueous processing of cell electrodes by eliminating the use of toxic solvents which in turn minimises energy utilisation and harmful gas emissions." Further, he noted that the company works on a no-Cobalt chemistry that reduces the carbon emissions by 50 per cent. Also, for faster and efficient production of cells with optimised energy consumption, Log9 is using tabless technology for developing large cylindrical format cells.

### **BATTERY SWAPPING**

With limited charging infrastructure in India, battery swapping is seen as a viable alternative to it. One of the primary advantages of battery swapping is the significantly reduced recharge time compared to conventional charging methods. While charging an EV can take hours, battery swapping can be completed in a matter of minutes. This quick turnaround time allows drivers to get back on the road faster, making it a viable option for those who require frequent and efficient recharging.

For Pankaj Sharma, battery swapping is not a promising route for keeping the vehicles on road. Specially not in rural areas where the density of the vehicles is significantly lower than urban centres. "Swapping requires very high density of vehicles of same

## “BATTERY SWAPPING WITH V2G TECHNOLOGY IS REVOLUTIONARY”

*Ankit Mittal, CO-Founder and CEO of energy software company, Sheru talks about how the integration of V2G technology with battery swapping is revolutionising the EV industry and how this intuitive platform is helping in improving battery performance.*

**Sheru is first in the world to integrate V2G technology with battery swapping. How will these integration revolutionise EVs, improve its range and its overall performance?**

Battery swapping as a technology reduces the cost of an EV and brings it on par with vehicles running on petrol or diesel as owners of EVs do not need to buy the battery. This helps in increasing the uptake of the technology quickly as the cost of the vehicle is drastically reduced. It also reduces the range anxiety of users as they do not have to worry about finding a charging location or wait for a few hours to charge the vehicle and can swap the battery instantly.

Combining this with V2G technology is revolutionary as it allows the battery to be utilised for several other functions. It enables the creation of an aggregated energy network which can be used by the energy industry for storing variable renewable energy. This allows the battery technology to remove two fossil fuels from use at the same time – coal from electricity and oil from mobility. It thus helps two industries reduce their carbon footprint at the same time. And this is also advantageous for EV owners as it reduces the payback period of EVs by giving them an additional revenue stream.

**Elaborate on the role of battery software. Given batteries are essential for both energy and mobility, how important is the software's role in battery performance?**



Ankit Mittal, CO-Founder and CEO of energy software company, Sheru

Software is critical to battery performance as it provides insights into the functioning of the battery and helps avoid issues, while increasing the life of the asset. For both mobility and energy industries, this is of immense value and Sheru's solutions are helping users in both areas. It helps scaling up manufacturing by getting data for creating better batteries and in tracking the asset better.

**What is your approach to improving the energy density of your batteries?**

Batteries used in swapping applications need not have the same energy density as that of a fixed-battery EV as they are swapped when out of charge. This allows us to focus on optimising the life of the battery.

**Elaborate on the unique concept of cloud storage of energy. How is this innovation proving beneficial to India in a bid to achieve decarbonisation, meet energy storage concerns and climate change targets, etc.**

India needs to meet a renewable power installation target of 500 GW by 2030. To achieve this, there needs to be a substantial amount of energy storage to support it. However, energy storage is both expensive and has long payback periods. With cloud storage of energy, utilities do not have to install their own storage facilities and instead access storage on a pay-per-use basis, thus making it a much cheaper way to store energy. This helps in meeting our decarbonisation goals and climate change targets.

type using same batteries for it to be viable, it's not even possible in urban centres forget rural India," he added.

Sharma feels that Battery swapping is an operational solution to today's cell and battery level technological constraints. "While it aids faster adoption of EVs, swapping does very little to solve the inherent technological challenge of finding the right energy and power density mix for an economically viable and scalable solution," he highlighted.

"From the high CAPEX that it entails to operational complexities arising out of different battery models, to concerns around safety given swappable packs must be light enough for consumers to carry and space efficient, leaving little room for active cooling - battery swapping comes with more risks and challenges than a benefit to the customer," Sharma noted further.

### SKILL DEVELOPMENT

The scope of skill development in battery manufacturing is substantial, given the growing demand for batteries across various industries. Battery manufacturing requires a deep understanding of battery chemistry, materials, and production processes.

While there is a huge gap in terms of employing skilled workers, to bridge this gap, iPower Batteries have initiated a comprehensive skill upscaling program aimed at offering battery analysis and repair training to people. Upon completion of this training program, participants will be equipped with the necessary knowledge and practical skills to either establish iPower battery service centres or pursue employment opportunities within the electric vehicle (EV) and battery industry. 

## CHARGING UP AGAINST ALL ODDS

As the adoption of electric vehicles (EVs) accelerates, the demand for a robust and widespread EV charging infrastructure grows. Despite several challenges that are causing roadblock to its seamless implementation, the charge point operators are finding innovative ways to tackle these hurdles. Besides, they suggest implementation of smart charging solutions to optimise the use of renewable energy sources.



**I**n India, the charging infrastructure for EVs is still in its nascent stage, and there is a need for significant investments to establish a robust network. Creating a localised quality EV charging infrastructure requires several requisites such as adequate power supply, proximity to streets where EVs operate especially in commercial areas and highways, standardising charging equipment for convenience of EV users through agreements with the government bodies along with smart charging solutions to optimise the use of renewable energy sources.

With the growing rate of EV adoption in the country, we have seen an increase in the number of charging stations in the country. According to the data revealed by Vahan dashboard, as of January 23, 2023,

India had 5,254 public electric vehicle (EV) charging stations, to cater to a total of 20.65 lakh EVs. Another study by Counterpoint Research showed that India is expected to have 10,000 public charging stations by end of 2025.

However, these numbers are not enough to meet the growing demand of EVs. To fulfil the growing demand for EVs, India would need 20.5 lakh charging stations by 2030.

There is a significant gap in the demand and supply of charging infrastructure in India. The most common challenges faced by public and private players in this segment include limited availability of installation space, lack of charging infrastructure and high installation costs, among others for setting up charging stations.

## “THE SPEED OF EV CHARGING INFRASTRUCTURE ROLLOUT IS CRUCIAL TO THE SUCCESS OF E-MOBILITY”

**The installation cost for both fast and slow charging networks is quite high. Kindly discuss how these costs are driving up the price of charging for electric vehicle owners, and how this could be addressed.**

NHEV is the first-ever pilot that is adopting the Battery-as-a-subscription model which allows the battery and the vehicle to be sold separately. The subscription model leads to a massive reduction of about 30 - 40 per cent in the price of EVs and incentivises the fleet operators to buy electric the next time.

We all are familiar with Dhirubhai Ambani's model of Reliance when they gave cell phones in the hands of common people for just Rs 500. That model was based on CDMA technology which enforced a contract for the user to use only Reliance's network. Every month a post-paid bill was flashed to the user with usage expenses and a premium cost added for the phone which was not paid at the time of buying.

Similarly, the Battery-as-a-subscription (BaaS) model is the first of its kind that is tested under the NHEV Pilot. The battery and the vehicle are sold separately which reduces the Capex for fleet operators and owners by 30-40 per cent. Like Dhirubhai's model, every month a post-paid bill is flashed to the fleet operator with expense components.

### The components of the monthly bill are:

- **Chargers' Utilisation:** This includes the cost of charging infrastructure used by the EV over that period.
- **Roadside Assistance (RSA):** This includes the cost of providing the Roadside Assistance (RSA) facility to the EV over that period.
- **The premium amount:** This is a small premium amount added to the monthly bill. This amount is charged against the initial unpaid Capex for the battery at the time of purchase of the EV.

### There is a huge gap in the availability of charger stations in India as compared to other countries. What could be an immediate solution to this problem?

Before NHEV, no one ever stepped in for EV infrastructure financing for highways, thus it came up with Annuity Hybrid E-Mobility (AHEM) inspired by Hybrid Annuity Model (HAM) holding the capability to change any 300 km highway or expressway into an E-highway within 90 days with charging stations, EV car fleets and buses, along with swift Roadside Assistance (RSA) and less priced EVs for nonstop running on the stretch to



**Abhijeet Sinha, National Program Director, Ease of Doing Business and Project Director- NHEV, Technocrat**

secure their repayment.

Under AHEM, procurement is done from on-boarded partners and suppliers, selected based on their performance and capabilities unlike traditional lowest bid wins criteria, for Capex in a fixed amount and deliverables for a considerable period of 12 months (Annuity) to earn OpEx for breakeven in 36 months. This model offers great flexibility and liquidity to the project partners.

NHEV has made e-mobility profitable for the first time and is planning to expand by bringing the charging station in direct competition with the petrol pumps technically, financially, and commercially.

### The four noteworthy features of the National Highway for Electric Vehicles (NHEV) include:

1. **Electric Mobility as a Service:** Till now, most of the population viewed E-mobility as a product. However now with NHEV, electric mobility is transmuting into a service for the people. This is a culture-shattering step which promotes renting/booking an EV rather than buying it.
2. **New financing model for EVs:** For the first time, a new financing model for E-mobility in highways is introduced. NHEV has created a funding model called Annuity Hybrid E-Mobility (AHEM).
3. **E-Mobility turned profitable:** With two complete charging stations and many more to be constructed, NHEV has turned E-Mobility profitable. This brings charging stations in direct competition with fuel pump stations technically, financially, and commercially.
4. **World's Longest E-highway Tech Trial:** NHEV has completed the world's longest technical trial, TTR1 between Delhi and Agra to achieve success over four pain areas of the industry:

- NHEV offers backup under 30 minutes during vehicle breakdown,
- 30 per cent lesser EV prices for the fleet operators,
- More than 30 per cent utilisation of charging stations and
- Lastly the project reaches breakeven within 36-40 months.

**Currently, there are multiple types of charging connectors used, making it difficult for EV start-ups to develop a universal charging solution that works across all EVs. Elaborate on how this lack of standardi-**

continued...

**sation is making it difficult for charging infrastructure providers to scale up their operations.**

Among prominent obstacles, we point out that early automakers have made significant investments in creating charging solutions to later create intellectual property (IP) on charging technologies for a distinct competitive advantage.

Second, automakers created their charging system in a way that emphasises brand distinction. To extend the life of the batteries, special charging parameters, such as voltage and current, are set for each charging port according to the battery chemistry. Third, the automotive sectors constantly view new charging methods such as speedy fast charging and inductive charging solutions as market-attracting factors.

Both present charging solutions do not seem to be capable of achieving the standardisation of the EV charging ecosystem. Nevertheless, with the assistance

and collaboration of the e-mobility sector, particularly at the national level, some degree of standardisation can be accomplished. The successful collaboration of numerous parties, including automakers, utility providers, and policy makers, is a critical factor in the efficient implementation of EV charging infrastructures. NHEV ecosystem is bringing together the charge point operators and the third generation charging stations are planned to be standardised in every manner across 5500 kilometres, solving this critical hindrance in the EV ecosystem.

The speed of EV charging infrastructure rollout is crucial to the success of e-mobility, and national efforts to standardise could assist lower barriers to EV charging and hasten EV adoption. The greater standardisation of charging protocols and devices will significantly draw new companies to the development of the charging infrastructure and enhance the charging network, perhaps boosting customer confidence in their decision to buy EVs.

**We spoke to a few players in the domain about the challenges and the efforts they are taking to fulfil the gap in the Charging Infrastructure.**

**INSTALLATION COST**

The cost of setting up both fast and slow charging networks is a major factor increasing the price of charging for electric vehicle owners. According to **Niranjan Nayak, MD, Delta Electronics India**, 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."

He further adds, "though high installation costs are a significant barrier to charging infrastructure deployment, subsidies and financial incentives can make EVs and charging more accessible and affordable. Besides, private players such as automakers and charging station operators can also provide financial support to make charging more affordable."

For **Kartikey Hariyani, Founder and CEO, Charge+Zone**, "This surge in the cost is due to the infrastructure cost which includes significant investment in land, equipment, and electrical systems." He highlights that the charging stations must comply with local regulations, which can increase costs due to the need for permits and approvals. Apart from that electrical upgrades are necessary to accommodate the high-power demands of charging stations, which again adds to the overall cost.

**Hariyani** also mentioned about several financial

support measures which have been proposed, including subsidies, tax credits, and grants to address this issue. In addition to financial support measures, "regulatory frameworks can also play a role in reducing the cost of charging infrastructure. Governments can streamline the permitting process and reduce regulatory barriers, making it easier and more affordable for private entities to install charging infrastructure," he added.

**Ashish Deswal, Founder EarthtronEV** stressed that charging network operators need to achieve financial sustainability to continue operating and expanding their infrastructure. He further highlighted that to cover the costs and generate profits, "pricing structures may include various components, such as charging session fees, membership plans, access fees, or pricing based on the charging speed, which might create a financial burden for the EV owners."

However, Deswal noted that as the EV market grows and economies of scale come into play, the installation cost of charging networks may decrease. Additionally, "government incentives, partnerships, and advancements in charging technology can help reduce costs and make charging infrastructure more accessible and affordable for EV owners."

He also highlighted that efforts are underway to address these challenges, including public-private collaborations, government incentives, and regulations to promote competitive pricing and encourage investment in charging infrastructure. Deswal believes that "as the EV market expands and charging infrastructure develops further, the cost dynamics are expected to evolve, leading to increased affordability and more competitive charging options for EV owners."



### AUGMENTING THE NUMBER OF CHARGING STATIONS

There is a huge gap in availability of charging stations in India as compared to other countries. As per a whitepaper release, there is one charger per 135 EVs in India, compared to 6 in China.

According to Niranjan Nayak, the lack of charging infrastructure is one of the biggest challenges in adoption of electric vehicles in India. “While there are several potential solutions to address this issue, there is no one immediate fix,” he adds. However, he believes that a combination of short and long-term strategies can help improve the availability of charging stations in the country.

As a short-term plan, Nayak suggests “the government could provide incentives for private companies investing in charging infrastructure and establish public-private partnerships to set up charging stations at strategic locations. This could include offering tax benefits, subsidies, or low-interest loans to encourage private companies to invest in charging infrastructure.”

Another short-term solution could involve “standardising charging infrastructure to ensure compatibility and interoperability between different chargers and EVs,” said Nayak. By doing so, “more companies may be willing to invest in charging infrastructure, knowing that their equipment will be widely adopted,” he added.

As a long-term approach, Nayak suggests that “the government should focus on promoting community charging stations and fast-charging technology. Community charging stations could be set up in local

communities and apartment complexes, providing a low-cost and convenient charging option.”

Deswal shared a very different perspective on lack of availability of charging stations in India. According to him, collaboration between the government and private sector can expedite the deployment of charging infrastructure. “The government can provide land or infrastructure support, while private entities can invest in and operate the charging stations. PPP models have proven successful in accelerating infrastructure development in various countries.”

While Kartikey Hariyani agrees that there is inadequate charging facility in India, his tech-driven EV charging networks company is focussing on striking partnerships to address this issue. “As part of our partnerships with private players such as Marriott International, Mahindra, Blue Orchid, Snap-E, we have deployed and installed charging stations at various touch points across the country. We have also been working closely with the Government for the National Highway Electrification Program and have so far electrified 1000 kms of state and national highways across the country,” he revealed.

### LACK OF UNIVERSAL CHARGING STATIONS

Currently, there are multiple types of charging connectors used, making it difficult for EV startups to develop a universal charging solution that works across all EVs. This has led to a fragmented market, with each EV manufacturer developing its own charging infrastructure.

According to Hariyani, the immediate solution to the problem, is standardisation of EV charging

connectors. “By adopting common standards for charging connectors, charging infrastructure providers can scale up their operations more efficiently and provide a more seamless charging experience for EV owners,” he added.

“Several countries have already adopted standardisation for EV charging connectors, such as the CCS (Combined Charging System) and CHAdeMO (Charge De Move) standards in Europe, which has helped to create a more streamlined and efficient charging ecosystem,” cited Hariyani. In India, “the government has proposed a common AC charging standard (Type 2) and a DC charging standard (CCS) to promote interoperability and compatibility between different types of charging stations,” he added.

Talking about two wheelers (E2W) segment, Niranjan Nayak informed that the lack of standardisation in EV charging connectors, especially E2W, is a significant challenge for charging infrastructure providers in India. According to him, one of the biggest challenges that charging infrastructure providers face in India is the lack of interoperability. “The different types of charging connectors used by EV manufacturers make it difficult to create a universal charging solution that works across all EVs. This creates confusion for EV drivers and makes it difficult for charging infrastructure providers to attract and retain customers,” states Nayak.

Lack of standardisation of E2W is another problem which is creating technical challenges for charging infrastructure providers in India. Elaborating on the challenge Nayak said, “Different charging connectors have different power ratings and charging speeds, making it challenging to design and deploy charging stations that are compatible with all E2W. This increases the complexity and cost of designing and manufacturing charging infrastructure and reduces its scalability.”

To overcome these challenges, Nayak suggests that “India needs a national standard for EV charging connectors that is adopted by all EV manufacturers of the electric 2 wheelers. This would create interoperability and technical compatibility, reduce regulatory challenges, and create a more unified market for charging infrastructure providers in India. The government of India has taken steps, and it is hoped that a national standard will be adopted soon.”

#### TACKLING POWER GRID CONSTRAINTS

Integrating many EVs charging simultaneously can strain the power grid, especially in areas with existing high electricity demand. Insufficient grid capacity and stability can result in voltage fluctuations, power outages, and other reliability issues, affecting the performance and availability of charging stations. The



**The government could provide incentives for private companies investing in charging infrastructure and establish public-private partnerships to set up charging stations at strategic locations.**

charging of EVs during peak demand periods can further stress the power grid.

Without appropriate management strategies, concentrated charging during peak hours can lead to increased strain on the grid and may require expensive grid upgrades to accommodate the additional load.

To address the grid-related challenges, Deswal suggests that a coordinated approach involving collaboration between government agencies, power utilities, and charging infrastructure providers is crucial. “Measures such as grid infrastructure upgrades, demand management strategies, incentivising off-peak charging, and integrating renewable energy can help mitigate the impact of power grid constraints and ensure a smooth and sustainable rollout of EV charging infrastructure in India,” he added.

Kartikey Hariyani recommends implementing smart charging solutions that can help to manage the load on the power grid. “Smart charging solutions use advanced software and hardware to manage the charging process and optimise the use of available power. For example, these solutions can prioritise charging during off-peak hours when there is less demand for electricity, which can help to reduce the strain on the power grid.”

Hariyani also suggested deploying renewable energy sources such as solar and wind power to generate electricity for EV charging infrastructure. “This can provide a reliable and sustainable source of electricity for EV charging, which can help to reduce the strain on the power grid,” he added.

Apart from using renewable energy sources, Niranjan Nayak recommends that the government of India and private players need to work together to upgrade and modernise the power grid infrastructure. “This would involve investments in power generation and transmission infrastructure, as well as the adoption of smart grid technologies that can better manage power supply and demand.”

He also recommended the deployment of energy storage solutions such as batteries, which can help mitigate the impact of power grid constraints on EV charging infrastructure. “Energy storage can help to balance the power supply and demand by storing excess energy during low demand periods and releasing it during peak demand periods,” Nayak concluded. 

# “INDIA CAN OUTPACE CHINA’S DOMINANCE WITH MAKE IN INDIA”

The experience of being in the semiconductor trading business came in handy for Ekkaa Electronics. But what excites **Sagar Gupta**, Director, is the fact that the company is building a base for manufacturing TVs, a sector where China is a major player, as of now in India. In an interview with **Nisha Shukla**, the young entrepreneur talks about how a family-run distributor of electronic components determined its journey to becoming an ODM for LED televisions. The junior Gupta believes that the manufacturing industry offers exciting opportunities for developing cutting-edge technologies and contributes to the Make in India initiative, the vision of the Hon’ble PM Modi.

**According to Grand View Research, the India smart TV market size was valued at \$1.42 billion in 2020 and is expected to expand at a CAGR of 16.8 per cent from 2021 to 2028. How is Ekkaa aiming to capitalise on this growth?**

As per the projected growth in the Indian smart TV market, Ekkaa Electronics aims to capitalise on this opportunity through various strategies. We are committed to investing in research and development to introduce innovative products that align with market trends and consumer demands. By continuously improving our manufacturing capabilities, optimising our supply chain, and leveraging our expertise in the industry, we aim to capture a significant market share and contribute to the growth of the smart TV market in India.

To enhance the overall consumer experience and capitalise on the growing demand for smart LED TVs, Ekkaa Electronics is continuously working on integrating new features and app integrations. We prioritise user-friendly interfaces, seamless connectivity options, and access to popular streaming services. Additionally, we focus on developing smart TV functionalities

“We have invested Rs 1,000 crore in our new manufacturing unit in Noida which demonstrates the company’s commitment to manufacturing excellence and job creation.”

that align with emerging technologies, such as voice assistants, smart home integration, and personalised content recommendations. By staying at the forefront of technological advancements, we aim to offer cutting-edge products that meet the evolving needs of consumers and drive additional revenue streams.

**As an ODM for TVs, kindly enlighten us on your monthly production capacity and your yearly sales figures. Are there any plans to further scale it?**

As an Original Design Manufacturer (ODM) for TVs, Ekkaa Electronics possesses robust production capabilities. With a monthly production capacity and yearly sales figures that reflect its market presence, the company is actively considering plans





to scale up production further. Rs 1,000 crore investment in a new facility is a step toward it.

By investing in advanced manufacturing technologies, streamlining processes, and expanding facilities, Ekkaa Electronics aims to meet the increasing demand for its products and continue serving its diverse customer base

**Ekkaa Electronics is setting up a new manufacturing unit in Noida with an investment. How different is this manufacturing as compared to others?**

We have invested Rs 1,000 crore in our new manufacturing unit in Noida which demonstrates the company's commitment to manufacturing excellence and job creation. This manufacturing unit differentiates itself through various factors. The manufacturing unit will create a substantial number of job opportunities, contributing to economic growth and development in the region. The company's investment includes the purchase of land and the development of modern infrastructure to support efficient and sustainable manufacturing operations. What's more? The manufacturing unit will focus on producing a wide range of electronic products, including smart LED TVs, with a substantial production capacity to meet growing market demand. That said, the unit's design and infrastructure will allow for future expansion and scaling of operations to accommodate market growth and changing consumer needs.

**How has backward integration helped your company in improving manufacturing capabilities and capacity?**

Backward integration has played a vital role in improving Ekkaa's manufacturing capabilities and

capacity. By integrating back into the supply chain, the company has gained better control over the sourcing of raw materials and components. This has enabled the company to ensure the quality and timely availability of critical inputs, streamline production processes, reduce dependence on external suppliers, and optimise costs. Overall, backward integration has enhanced our manufacturing efficiency, product quality, and ability to meet customer demands effectively.

**The company commenced its journey with an initial investment of Rs 800 crore. How did a family-run distributor of electronic components determine its journey to becoming a manufacturer of LED TVs?**

Ekkaa Electronics, initially a distributor of electronic components, took a strategic decision to become a manufacturer of LED TVs. This shift was driven by market trends, growing demand for TVs, and the vision of capitalising on the evolving industry landscape. By leveraging their expertise and investing in research and development, Ekkaa Electronics successfully transitioned into TV manufacturing, catering to the needs of diverse consumer segments.

**Your company clocked a turnover of Rs 600 crore as of FY 22-23. How did you achieve this ambitious target?**

The experience of being in the semiconductor trading business came in handy for us. But what excites us is the fact that we are building a base for manufacturing TVs, a sector where China is a major player, as of now in India. Through meticulous planning, strategic partnerships, and a focus on customer satisfaction, Ekkaa Electronics achieved a remarkable turnover of Rs 600 crore in FY 22-23. The company's commitment to delivering high-quality products, efficient production processes, and continuous improvement played a pivotal role in surpassing its ambitious targets. Although, it was certainly not an easy task to achieve this milestone, expanding the customer base, entering new markets, and focusing on improving operational efficiency, cost optimisation, and effective marketing along with sales strategies to drive revenue growth brought us to the goal.

**China remains to be the largest manufacturer of TVs in the world. How can India outpace China's dominance in this segment? How do you look at this opportunity?**

Although China remains the largest manufacturer of TVs globally, India can potentially outpace China's dominance by leveraging factors such as a large domestic

"The company is currently focused on leveraging its manufacturing, design, and innovation expertise to create high-quality products under the Ekkaa brand."

market, government initiatives like Make in India, attracting foreign investments, fostering innovation and technology development, improving infrastructure and logistics, and ensuring a favourable business environment. Additionally, focusing on quality, cost competitiveness, innovation, building strong partnerships, and meeting international standards can help Indian manufacturers gain a competitive edge.

**Ekkaa Electronics designs and manufactures smart LCD TVs, LED TV, 4K 2K TVs, and other TV products. Amongst all, which category is emerging as the highest selling and most profitable?**

Among Ekkaa Electronics' product range, the smart LED TV category comprises a significant percentage of the company's overall sales, contributing to its financial success and market positioning. This category comprises approximately 60 per cent of the company's sales. The growing demand for smart TVs and the increasing adoption of connected technologies have contributed to the success and profitability of this

segment. These TVs offer advanced features, superior picture quality, and seamless connectivity, appealing to tech-savvy consumers.

**Apart from smart TVs, which other categories are gaining popularity among the masses and why? How is the market shaping for Commercial Display Division offering Digital Signage and plastic injection moulding segment?**

In addition to LED TVs, our Commercial Display Division, offering Digital Signage solutions, and the plastic injection moulding segment have also been profitable. The market for Commercial Display Division is shaping positively as businesses increasingly recognise the importance of digital advertising and signage. As for plastic injection moulding, it enables us to manufacture high-quality components for our products in-house, ensuring better control over the production process.

As a prominent player in the electronic manufacturing industry, Ekkaa Electronics keeps a close eye on market dynamics. While the Commercial Display Division offering Digital Signage and plastic injection molding segment hold promise, the company is exploring diversification opportunities into newer segments to tap into evolving customer demands and technological advancements. This strategic approach ensures sustained growth and adaptability in a competitive marketplace.



**“In the highly competitive electronic ODM market, securing new clients and standing out is a constant challenge.”**

**Cost optimisation along with high-quality components is crucial for electronic ODM manufacturers to remain competitive. How do you strike a perfect balance between both?**

Cost optimisation is a critical factor for success in the electronic ODM manufacturing industry. Ekkaa Electronics navigates this challenge by maintaining stringent quality standards and establishing strategic supplier partnerships. Through proactive management of raw material prices, an efficient supply chain along with regular market analysis, the company determines competitive price points that align with customer expectations and market dynamics.

**The electronic ODM market in India is highly competitive, with numerous players offering similar services. Securing new clients and standing out in the market can be quite challenging. How do you stay ahead of the competition?**

In the highly competitive electronic ODM market, securing new clients and standing out is a constant challenge. To stay ahead, we focus on continuous innovation, delivering superior product quality, and providing exceptional customer service. By emphasising our expertise, reliability, and commitment to client satisfaction, we differentiate ourselves from competitors.

**What according to you are the factors that are bolstering the growth of the smart TV market in India?**

Several factors are driving the growth of the smart TV market in India. The increasing disposable income, growing urbanisation, desire for enhanced entertainment experiences, rising internet penetration, and the availability of affordable data plans have fueled the demand for smart TVs. Additionally, the integration of advanced features, such as app-based content streaming, voice control, and smart home compatibility, has enhanced the overall consumer experience and further stimulated market growth.

**The demand for smart LED TVs has seen exponential growth. What are the new features or app integrations Ekkaa will be adding to its smart LED TVs, which will enhance the overall consumer experience and add to your revenue streams?**

To stay ahead of the competition in the highly competitive electronic ODM market, Ekkaa Electronics focuses on innovation, product differentiation, and maintaining strong customer relationships. The company invests in research and development, constantly explores new technologies, and emphasises customer-centricity to differentiate itself from competitors.

In line with enhancing the consumer experience and revenue streams, Ekkaa Electronics plans to introduce new features and app integrations in its smart LED TVs. These include improved user interfaces, voice assistants, and seamless connectivity with smartphones and other devices.

**Finding and retaining skilled labour with expertise in electronic manufacturing can be a challenge. Have you launched any skilling programs to train your workforce?**

We recognise the importance of skilled labour in electronic manufacturing and have launched skilling programs to train its workforce. These initiatives aim to bridge the skill gap, provide specialised training in electronic manufacturing, and enhance the expertise of employees. Additionally, Ekkaa is actively expanding its workforce and hiring professionals with relevant skills and expertise to support the company's growth and the establishment of its new manufacturing unit.

**Investing in research and development, staying updated with emerging technologies, and maintaining a competitive edge is crucial for long-term success. What are the new technological innovations you have introduced lately?**

Investing in research and development, staying updated with emerging technologies, and maintaining a competitive edge is crucial for long-term success. In terms of technological innovations, Ekkaa's research and development (R&D) team is continuously exploring emerging technologies to maintain a competitive edge. Recent technological innovations introduced by Ekkaa include:

**Advanced display technologies:** Ekkaa has introduced advanced display technologies such as Quantum Dot (QLED) and Mini-LED, offering enhanced colour reproduction, contrast, and brightness levels.

**Remote manufacturing expertise:** Ekkaa specialises in remote manufacturing, which allows the company to maintain control over the production process while ensuring cost-effectiveness and timely delivery, even for manufacturing done outside of India.

**Where is your company heading towards advanced Android TV manufacturing?**

We are heading towards advanced Android TV

manufacturing by leveraging the latest Android TV platforms and collaborating with Google to deliver seamless user experiences. By incorporating advanced hardware and software technologies, we aim to provide consumers with cutting-edge Android TV devices that offer a wide range of entertainment options, smart home integration, and an intuitive user interface.

**Today, Ekkaa holds expertise in manufacturing, design, and innovation and is significantly contributing to the Make In India campaign. Are you planning to expand your ambit from Made in India to Made for the World?**

While we have significantly contributed to the Make in India campaign, the company also aspires to expand its ambit from “Made in India” to “Made for the World.” By focusing on innovation, quality, and customer satisfaction, Ekkaa aims to position itself as a global brand, exporting its products to international markets and catering to the evolving needs of consumers worldwide.

**Are there any plans to expand your product portfolio?**

Ekkaa is continuously exploring opportunities to expand its product portfolio. In addition to smart LED TVs, the company may consider diversifying into related product categories such as audio devices, home automation systems, and wearable technology. By expanding our product offerings, we aim to provide a comprehensive ecosystem of connected devices

that enhance the overall consumer experience and strengthen its market position.

The company is currently focused on leveraging its manufacturing, design, and innovation expertise to create high-quality products under the Ekkaa brand. By continuously improving and innovating its products, Ekkaa aims to build a strong brand reputation and customer loyalty.

**What kind of initiatives your company is taking on the sustainability front?**

On the sustainability front, Ekkaa is committed to various initiatives, including:

**Energy-efficient products:** Ekkaa designs and manufactures energy-efficient smart LED TVs that meet international standards for energy conservation.

**Environmentally conscious manufacturing:** Ekkaa implements sustainable manufacturing practices, including waste reduction, recycling, and responsible disposal of electronic waste.

**Green supply chain management:** Ekkaa collaborates with suppliers who adhere to environmental standards and promote sustainable practices.

**Social responsibility:** Ekkaa actively participates in community development programs, supports education initiatives, and promotes social welfare activities to contribute positively to society.

By integrating sustainability practices into its operations, Ekkaa aims to minimise its environmental impact, promote responsible consumption, and contribute to a more sustainable future. 



## S&P GLOBAL INDIA MANUFACTURING PMI® RECORDS HIGHEST PURCHASE QUANTITY IN 12 YEARS

Demand conditions have strengthened as factory orders rise at an unprecedented rate. This surge has resulted in increases in production, employment, and quantities of purchases.



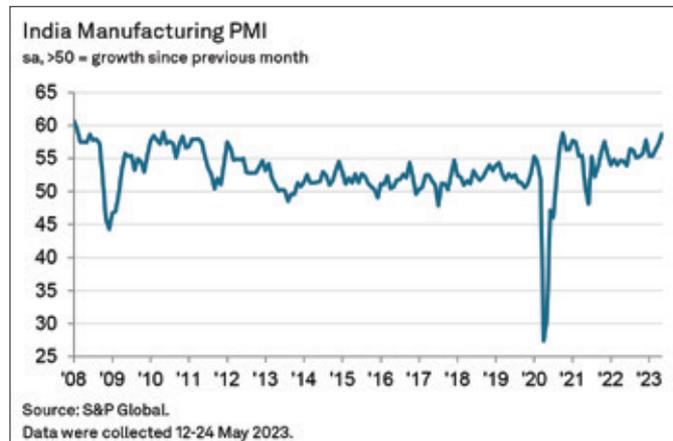
stocks of purchases showed notable vigour, increasing at an unparalleled pace in May. Monitored companies indicated that better supply-chain conditions and sustained increases in input purchasing boosted inventory growth.

May data indicated a sharp and accelerated increase in quantities of purchases, with the rate of expansion quickening to the strongest in over 12 years. According to survey members, ongoing increases in new business and efforts to replenish stocks underpinned growth of buying levels. Not only did factory

India's manufacturing PMI® has painted a notably positive picture for the sector this May. Demand conditions have strengthened with factory orders rising at the fastest pace since January 2021. This surge in sales paved the way for stronger increase in production, employment, and quantities of purchases. With supply chain-conditions improving further, companies noted a record accumulation in input inventories. Meanwhile, cost pressures remained historically mild, but demand strength facilitated a solid and quicker increase in output charges.

The seasonally adjusted S&P Global India Manufacturing Purchasing Managers' Index® rose from 57.2 in April to 58.7 in May, indicating the strongest improvement in the health of the sector since October 2020. Out of the five PMI sub-components,

orders increase for the twenty-third month running in May, but also to the greatest extent since January 2021. Firms generally associated the upturn with advertising, demand strength and favourable economic climate.

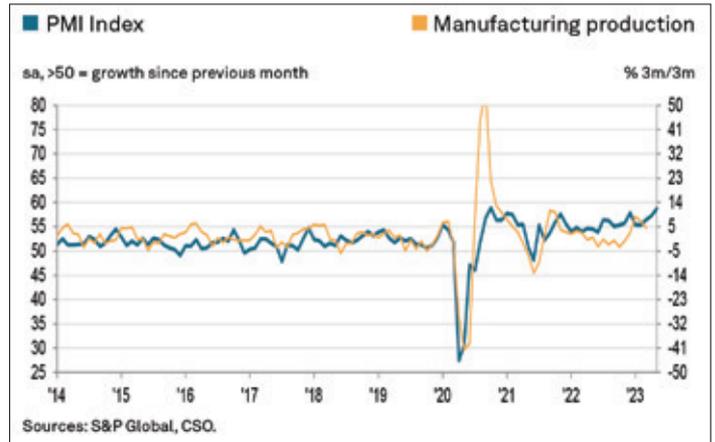


Exports gave impetus to total new orders in May. Companies registered the quickest expansion in international sales for six months. Indian manufacturers scaled up production volumes because of growing new orders and favourable market conditions. The latest increase in output was sharp and the fastest in 28 months. Rising inflows of new business exerted pressure on the capacity of goods producers, as seen by another uptick in outstanding business. The rate of backlog accumulation was slight, but the quickest in seven months.

In turn, capacity pressures supported job creation midway through the first fiscal quarter. Moreover, the rate of employment growth improved to a six-month high. As has been the case since March, good producers signalled an improvement in vendor performance during May. Average lead times on inputs shortened to the greatest extent in eight-and-a-half years. Smoother logistics aided a softer increase in input prices during May. Average cost burdens rose at a moderate rate that was well below its long-run average.

In contrast to the trend for input costs, selling prices rose at a solid and quicker rate in May. The rate of inflation accelerated to a one-year high. According to panellists, sustained increases in input costs and a supportive demand environment led them to lift their charges. Elsewhere, post-production inventories fell further, amid reports of orders being fulfilled from stocks. The pace of depletion was moderate and equal to April. Business confidence towards growth prospects improved to a five-month high in May. Publicity and demand resilience were among the reasons cited for upbeat forecasts.

Pollyanna De Lima, Economics Associate Director,



S&P Global Market Intelligence, said, "The PMI's spotlight on soaring sales showcases robust demand for Indian-made products both domestically and internationally. While the upturn in domestic orders strengthens the foundations of the economy, rising external business foster international partnerships and boost India's position in the global market. Combined, they also generated more employment opportunities in May."

"The record increase in input stocks shows a better preparedness of manufacturers in managing supply chains. This should allow firms to mitigate potential disruptions, maintain a steady flow of production and demonstrate the industry's resilience in the face of challenges."

"While improvements in supply chains and generally subdued global demand for inputs helped curb input price inflation in May, heightened demand and previously absorbed cost burdens translated into a stronger upward revision to selling charges. Demand-driven inflation is not inherently negative, but could erode purchasing power, create challenges for the economy and open the door for more interest rate hikes." 

## INOVANCE REPORTS 28 PER CENT YOY REVENUE GROWTH

Global industrial automation company Inovance has announced 2022 earnings of over 3.4 billion dollars. This represents growth in annual revenues of 28 per cent year-on-year (YoY), and it comes as the company has engaged in a major overseas expansion program across both Europe and Asia. The strong annual earnings were led by the company's general industrial automation business, which includes its comprehensive range of servo systems, AC drives and PLCs. Continued growth in its core business saw Inovance's industrial automation sales reach 1.7 billion dollars over the year.

In addition to robust sales in its core industrial

automation division, smaller market segments performed strongly for Inovance last year, such as electric vehicles; where the company provides a range of E-powertrain and power supply systems, including inverters and motors. Electric vehicles generated earnings of 753 million dollars for the company in 2022, while industrial robotics, another fast-growing segment for Inovance, realised sales of 83 million dollars. With a continuing strong focus on R&D and a team of expert development engineers, Inovance spent 330 million dollars on innovation during 2022, representing almost 10 per cent of its revenues.

## IGUS TO INVEST RS 100 CRORE TO STRENGTHEN OPERATIONS IN INDIA

igus, a world leader in motion plastics, announced the setup of a new facility at Bengaluru, India. With this, igus aims to further strengthen and grow its successful operations in the country for over two decades, since it established as a subsidiary in 2000. igus India, a wholly owned subsidiary of the German motion plastics company igus GmbH, announced at a press conference held in Bengaluru on 5th June, 2023, about investing Rs 100 crore to enlarge the availability of items and establish value adding processes at its new plant.

igus India has taken up a new four-acre facility near Budigere in Bengaluru. igus' new facility will be spread over 84,000 sq feet with world-class equipment and infrastructure in motion plastic production. igus has already invested around Rs 15 crore in the first phase of construction of the facility, which is expected to be operational in the coming months.

Currently, igus India is the 6th largest among 38 subsidiaries, and the company's growth plans in the country have gained further momentum after doubling its growth in the market in the last two years. Igus India revenues have grown from Rs 118 crores in 2020-21 (during the pandemic) to Rs 199 crores in 2021-22 and to Rs 284 crores in 2022-23. Igus India forecasts to sustain and further accelerate growth with the additional investments to strengthen its operations.

igus India's growth plans is coupled with a continued quest for innovation within the space that Igus is globally recognised for. The company launched 190 new products in 2023 for the India market and several digital services and solutions under its global program, "Enjoyneering", advocating fun with innovation in Engineering. "Enjoyneering" aims to an engineer's job fun, helping them unleash their engineering power with innovation for better productivity and success at work.



Elaborating on the growth plans for India, Deepak Paul, Managing Director, igus (India) said, "Our continued investments in our manufacturing capabilities in India reiterate our commitment to deliver cutting-edge products and solutions to customers here and globally. igus has a global focus on cost-sensitive and sustainable solutions, designed to meet customer demands, in line with our motto 'Tech up, cost down', which is also the Indian approach to technology and innovation, a key factor that has led to our significant growth in the country. With the economy looking buoyant and with our continued commitment to invest in growth, we are looking to further double our current

revenues in a shorter span of the next 3-4 years."

Santhosh Jacob, Country Manager and Director, igus India added, "Technology and innovation have always been igus's cornerstone and prime focus. Along with the 190 new innovations, we have launched the iguverse, an igus metaverse and an efficient user-friendly platform that empowers sales and engineering with virtual reality. This enables companies to save time, money, and resources in product development, optimisation, and maintenance and virtually simplifies engineering. The digital twin in iguverse can also be used for training. Our aim is to develop new solutions for smaller companies with limited budgets and easy applications."

## JYOTI CNC UNVEILS TACHYON SERIES

Tachyon is a unique concept column moving fast machine, which is suitable for fast drilling and tapping operation where continuous production line requires precision component output in mass. Tachyon series machines are specially designed to suit the applications where high dynamic machining solution is desired.

The concept of base and column structure is designed in such a way that the entire moving axis mass

remains on the column which results in achieving very high dynamics while maintaining high machining accuracy. Due to this design, the Tachyon series machines offer rapid traverse of 60 m/min in all three axis and Z-axis can achieve high acceleration of 15 m/sec<sup>2</sup> to suit

the specific requirement of automobile, surgical and telecommunication sectors. Compact and stable design with Y-axis up to 400 mm allows greater machining to envelop and sustain high cutting loads.

Tachyon series offers higher z-axis stroke of 450 mm, which

is highest among the global competitors. This has been achieved by placing the Automatic Tool Changer (ATC) outside the machine area, which made a unique design among drill-tap centres. Direct-coupled BT-30 taper & 10000 rpm spindle is a standard feature of the machine and available with High Torque and High Spindle Speed (up to 24,000 rpm) are in available options.



Electro-mechanical work piece changer with load capacity of 300 kg is another special feature of the

machine to improve productivity that designed to operate without

hydraulic or pneumatic system makes it trouble free work piece indexer. Machine with fixed Table is also available as a variant.

To achieve faster tool changing, ATC of the machines are designed with special mechanism for tool de-clamping and shorter tool change arm offers faster tool changing time of just 1.3 sec. ATC are available with 16 tool and 24 tool options.

Compact footprint, efficient chip evacuation with flush coolant system, ergonomically designed 90° tilting operating panel and TPM friendly features of Tachyon series machines makes it an exclusive solution among the segments.

## HONEYWELL LAUNCHES TAILORED OT CYBERSECURITY SOLUTION CYBER INSIGHTS

**H**oneywell has announced the release of its operational technology (OT) cybersecurity solution, Honeywell Forge Cybersecurity+ | Cyber Insights, to improve the availability, reliability and safety of industrial control systems and operations.

Cyber Insights is designed to integrate information from multiple OT data sources to provide a customer with actionable insights into their facility's cybersecurity vulnerabilities and threats, allowing the customer to manage their compliance strategy, thereby helping reduce their overall cybersecurity risks.

Companies with OT systems face challenges in obtaining the necessary information to reduce the likelihood and impact of cyber-attacks and to stay compliant with standards and regulations that may be applicable to them. These challenges are compounded by the shortage of available cybersecurity skills in operational technology, with a cybersecurity workforce gap of more than 3.4 million people. Despite attempts to implement various solutions, success is difficult to achieve due to the complexity of the tools, the overwhelming volume of security data generated, and the lack of solutions specifically designed for OT.

"Organisations should leverage technology to address worker shortages, while at the same time gaining clear visibility into their OT facilities' cybersecurity posture to help them make faster decisions and reduce cyber risk," said Michael Ruiz, Vice President and General Manager, Honeywell OT Cybersecurity Innovation.

Cyber Insights brings a tailored approach by providing a purpose-built cybersecurity solution and is designed to offer a site-level view of a facility's cybersecurity posture and provide insights into security events,



vulnerabilities, active threats and to manage compliance. Cyber Insights is designed to help organisations strengthen their cyber resilience and to respond faster to incidents through access to critical information at the right time.

Cyber Insights is pre-configured for OT use, with customisation options to address needs specific to different industrial environments, while being vendor agnostic so it can be deployed on Honeywell control systems and other systems as well. It is also deployed, supported, and maintained by Honeywell Cyber Care services during

the applicable subscription license term, to help customers maintain continuous tuning and optimisation as required for any system to run in peak form.

"Honeywell has successfully positioned itself as a 'one-stop shop' system integrator and solution provider across different spectrums of operational technology (OT) cybersecurity for over 20 years," said Avimanyu Basu, Senior Lead Analyst at ISG. "Being vendor-agnostic, Honeywell is well-equipped to work on almost any device and provide the necessary services for assessment and remediation."

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