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THE MACHINIST

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AEROSPACE AND DEFENCE

"The draft defence procurement policy is a new wine in a new bottle"

CYBER SECURITY

Cybersecurity is often viewed as an added complexity

"WE HAVE SURPASSED THE 10 MILLIONTH MILESTONE"

As he takes up the lead role in the Global Operations Division in Hyundai headquarters in Seoul, South Korea, **SS Kim, Former MD of Hyundai Motor India Ltd** talks about the company's long-term and short-term strategies for India.

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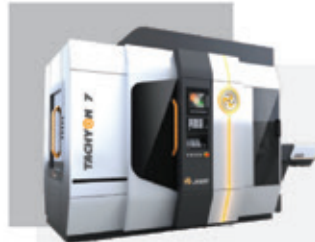


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A NEW YEAR, A NEW BEGINNING

Ciao Readers!

The revival trajectory of the automotive industry was facing turbulence due to prolonged but exacerbated semi-conductor shortage. While the major regulatory challenges such as the transition to BS-VI, higher insurance costs, change in axle load norms and other challenges such as Covid-related disruption, liquidity crisis, general economic slowdown, etc, are under the rearview mirror now, the semiconductor shortage was keeping the industry in commotion. However, the government's new year gift – clearance of Rs 76,000 crore incentives programme for semiconductors and display manufacturing comes as a huge relief for the automotive OEM space in India.

Meanwhile, to overcome such challenges Indian companies should come forward in the future to make chips and auto components. It will be able to further enhance their commitment to making affordable 'EVs for all' a reality for the masses. From the EV-making ecosystem perspective, once this scheme is implemented, it can lead to quicker and more efficient production of EVs in India, without the end-consumer having to pay the burden of vehicle price hikes. I strongly believe that in the long run, this policy move can be a game-changer in terms of building and nurturing a pioneering ecosystem for designing and making semiconductors in India, and over time, it shall strengthen our domestic economy and manufacturing base as well. It is further exciting to note that this incentive scheme will extend its benefits to both big companies and startups alike.

That said, this edition is very special for The Machinist team. Firstly, we are celebrating 17 years of The Machinist's existence in the world of manufacturing and secondly, for the first time, we have none other than Mr SS Kim, from Hyundai on the cover. In an exclusive interview, he talks about Hyundai's 25-year journey in India's competitive automotive industry. Also covered in the issue is an exclusive interaction with Rajinder Bhatia, President & CEO, Kalyani Group. In this freewheeling interview, he talks about Kalyani Group's strategic joint ventures with global players and how the same is helping India's aerospace and defence sector.

The next quarter is going to be very exciting for you all as we are going to put together some brilliant on-ground events for the manufacturing industry. To begin with, don't miss to nominate your company for the Economic Times Polymers Awards 2022 and Best Brands in Plastics and Polymers scheduled in February. We are also envisaging a global conference on the food processing industry in March.

To sum up, this edition covers a range of topics from cybersecurity, digital manufacturing, e-mobility to machine tools. I hope you enjoy reading this edition as much as we enjoyed putting it together. Do share with us your opinions, comments and thoughts at Rahul.kamat@wmm.co.in

R Kamat
Editor



Chief Executive Officer **Deepak Lamba**
Chief Financial Officer **Subramaniam S**
Head Human Resource **Meghna Puthawala**
Publisher, Print & Production Controller **Sunil Wuthoo**
Brand Publisher **Rishi Sutrave**
rishi.sutrave@wmm.co.in
+91 9820580009

Editor **Rahul Kamat**
rahul.kamat@wmm.co.in
+91 9892612075
Assistant Editor **Kruti Bharadva**
kruti.bharadva@wmm.co.in
+91 8591258137
Associate Art Director **Sanjay Dalvi**
sanjay.dalvi@wmm.co.in
Experiential Marketing **Aakash Mishra**
aakash.mishra@wmm.co.in
Executive Delegate Acquisition **Shruti Nair**
shruti.nair@wmm.co.in

ADVERTISING

West & North **Ranjan Haldar**
ranjan.haldar@wmm.co.in
+91 9167267474

South **Mahadev B**
mahadev.b@wmm.co.in
+91 9448483475

Prabhugoud Patil
prabhugoud.patil@wmm.co.in
+91 9980432663

CAREERS

careers@wmm.co.in

SUBSCRIPTIONS

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022 67427209 / 67427206

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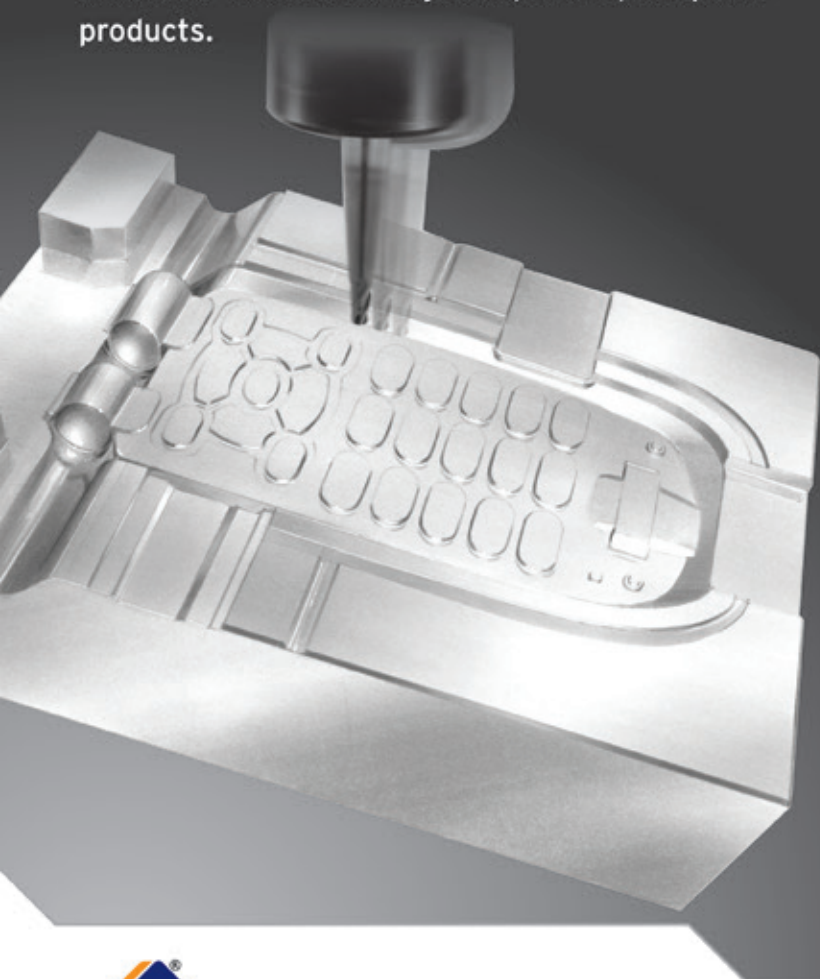


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YOUR GLOBAL CRAFTSMAN STUDIO

APL Apollo ropes in Tiger Shroff as a brand ambassador

APL APOLLO TUBES LTD (APL APOLLO), India's leading branded steel pipes manufacturer has roped in young and dynamic Bollywood actor Tiger Shroff as brand ambassador for its exclusive product line 'Apollo Column'. An accomplished actor Tiger Shroff enjoys a huge fan base and instant recognition among the masses which will surely turn out to be a driving force in the sales of Apollo Column.

India's largest range of square hollow steel sections (HSS), Apollo Column has emerged as a perfect choice for every construction as it offers a faster turnaround time and reduces construction cost at the



same time. While the exclusive Apollo Column product range has already brought in a paradigm shift towards high-performance materials in structural engineering, APL Apollo hopes to further widen its market reach and enhance brand awareness through its association

with Bollywood actor Tiger Shroff.

Apollo Column gives a futuristic edge to the structures of any design and elevation. It offers India's largest range of hollow structural sections ranging up to 300x300 mm in size. Moreover, Apollo Columns are the best suitable building material for infrastructure, commercial as well as residential projects. In a nutshell, Apollo Column is an

irreplaceable member of structural buildings due to its high load-bearing capacity and strength-to-weight ratio. It offers higher radii of gyration about both axes providing superior compression performance and significant weight savings.

Greta Electric Scooters partners with Shriram Automall

GRETA ELECTRIC SCOOTERS, a Gujarat-based start-up engaged in manufacturing electric scooters, announced yet another avenue for people to own and adopt its e-scooters. The company has partnered with Shriram Automall India Limited to auction its pre-owned and refurbished units. This will now enable customers to buy its e-scooters at never before affordable prices on the Shriram Automall auctions. The e-scooters up for auction would



be pre-owned scooters used for test drives and end of life models. All the products on sale have been refurbished at the factory, fitted with fresh new batteries, and will enjoy the company's warranty of one year on the product and

three years on the battery.

"We are very excited to add EV in our products line-up. Electric Mobility is the way forward for the automobile industry. Through our "Phygital" auctions platforms which include 100+ automall network strength spread across India, we aim to create all-inclusive mobility solutions for buyers and sellers in the industry", said **Sameer Malhotra, Director & CEO, SAMIL**.

Raj Mehta, Founder, Greta Electric Scooters and MD, Raj Electromotives Pvt Ltd said, "It gives us one more avenue to bring EV's closer to the consumer. Auctions are where aspirations become a reality. Our offerings with state-of-the-art features become even more accessible to the consumer with this platform."

Electric Mobility gains momentum in 2021: SMEV

2021 has been a defining year for the electric vehicle market, especially the electric two-wheeler (E2W) in India. The total sales of E2W, including high-speed (HS) and low-speed E2W, in the 12 months (Jan-Dec) in 2021 increased by 132 per cent over the corresponding year 2020. The industry registered sales of 233,971 E2W as against 100,736 units sold in 2020.

The low speed has had negative growth in the last two quarters of 2021. The market share of the low-speed segment used to be upwards of 70 per cent in all the previous years, and that has dipped to less than 15 per cent in the last quarter of Oct-Dec 2021. The low-speed E2Ws are not subsidized under the FAME II policy that incentives only high-speed bikes based on their battery capacity @ Rs 15,000 kwh, which has made the entry-level high-speed e2ws cheaper than many of the low-speed ones.

Commenting on the performance of the industry, **Sohinder Gill, Director General, Society of Manufacturers of Electric Vehicles (SMEV)** said, "We haven't seen better days than the last few months in the entire EV journey. In the last 15 years, we collectively sold around 1 million e2w, e-three wheelers, e-cars, and e-buses, and we will most likely sell the same 1 million units in just one year beginning January 22. The recent positive changes in EV policy through FAME II are a game-changer and a decisive move by the government to ensure a cleaner and greener transportation sector, reducing reliance on expensive and contaminated liquid fuel."

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JSW's Rs 15,000 crore capacity expansion plan

HON'BLE UNION STEEL MINISTER, SHRI RAM CHANDRA PRASAD SINGH, laid

the foundation stone for the new 5 MTPA project at JSW Steel Vijayanagar Works integrated steel facility in Ballari, Karnataka. This brown-field expansion project is being undertaken through JSW Vijayanagar Metallics

Ltd, a wholly-owned subsidiary of JSW Steel Ltd. The company has earmarked a capex investment of Rs 15,000 crore for this expansion and is expected to be completed by FY24.

The Environmental Clearance (EC) for the project has already been received from the Ministry of Environment, Forests & Climate Change, Government of India and preliminary clearance



from the 'Single Window High-Level Clearance Committee' (SHLCC), Government of Karnataka has also been secured. As part of the 18 MTPA Roadmap for its Vijayanagar Works Steel Facility, JSW Steel aims to achieve an additional 1 MTPA expansion through upgradation of the current facility to achieve 13 MTPA capacity within the next 12 months.

Godrej & Boyce's MEP business eyes 25% y-o-y growth



GODREJ & BOYCE announced that its business Godrej MEP (Mechanical, Electrical and Public health engineering) is targeting annual revenue growth of 25 per cent in data centres projects by FY24. The business has secured several high-value projects in the cities of Mumbai and Delhi for various data centre clients. Against the backdrop of the Big Data Revolution by the incumbent government, India's data centre industry is estimated to double by 2023.

Fueled by the adoption of cloud technologies, IoT devices, increase in data consumption, and the impending 5G rollout, among others, the data centre industry is already witnessing a major boom as the pandemic has hastened the process. This opportunity has bought about a turnaround in the Indian market and many big tech companies both Do-

mestic and international, have invested in opening data centres in India.

The Ministry of Electronics & Information Technology announced a policy that the government would provide 'infrastructure status' for the data centre sector, thus bringing it on par with crucial industries such as railways, roadways, and power. The government is also working on a scheme for a hyper-scale data centre to incentivize investments. In congruence with the same, Godrej MEP has also witnessed an uptick in inquiries for critical services such as electrical, HVAC, firefighting & public health engineering, from several global and local data centre players. They plan on investing Rs 25 crore in the next two years. So far, they have undertaken projects spanning close to 20 MW and further plans to cover another 35-40 MW by FY24.

Axiscades appoints Shashidhar SK as CFO

AXISCADDES TECHNOLOGIES LTD,

a leading end-to-end engineering and technology solutions company appointed Shashidhar SK as the Chief Financial Officer. Shashidhar joins Axiscades from StoveKraft Ltd, where he played a pivotal role in the turnaround of the Company. He spearheaded and successfully concluded its IPO in February 2021.

Shashidhar's appointment comes at a time when Axiscades is investing in the digital space to fully leverage the massive growth opportunities and expand its offerings and research capabilities to further drive profitability.

Jindal Aluminium acquires Indo Alusys Bhiwadi Plant for Rs 100 crore

JINDAL ALUMINIUM LTD has acquired Rs 100 crore assets of Indo Alusys Industries Ltd (IAL) and announced successful commencement of production at the revived Bhiwadi plant.

The acquisition of IAL's assets covers its manufacturing unit located in the industrial area of Bhiwadi, Rajasthan. About 70-km from the national capital, the location offers strategic access of the northern market to Jindal Aluminium and brings a potential capacity of 14,000 MTPA (Metric Tonnes Per Annum) extrusions.



Once fully operational, Jindal Aluminium's extrusion capacity is expected to increase from 1.25 lakh MTPA to 1.39 lakh MTPA. The IAL acquisition besides enabling Jindal Aluminium to add capacity also helps revive the local economy, benefits the community and other stakeholders.

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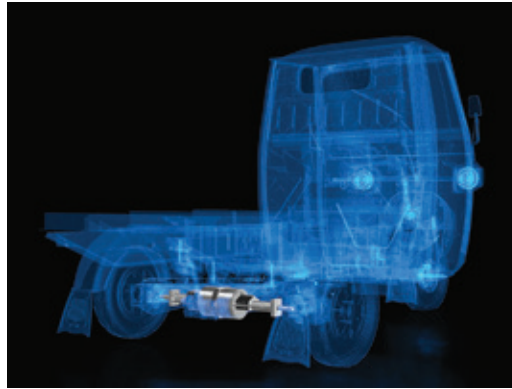
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Omega Seiki Mobility signs MoU with Korea's Jae Sung Tech

OMEGA SEIKI MOBILITY (OSM) AND JAE SUNG TECH CO., LTD, a leading Korean EV powertrain maker, today announced a strategic partnership to manufacture electric powertrains in India. As a part of this partnership, the two companies will be forming a new Joint Venture - OSM JAE Sung Tech Co., Ltd. The all-electric Ra314 powertrain will be the first product and will find its home in the OSM Rage+ in Q1 FY23.

The new Ra314 will be manufactured by OSM at its facility in Faridabad and in Pune at its group company, Omega Bright Steel and Components' facility. Jae Sung will be bringing in its years of experience with the technical know-how while OSM will be bringing in its manufacturing prowess to localise the powertrain. OSM will also



be testing and calibrating the Ra314 for typical Indian driving conditions.

The Ra314 stands out with its 3S build – Silent Drive, Simple Architecture, and Superior Durability. Besides, the new powertrain is IP-67 rated and will not skip a beat even if submerged in water for 30 minutes. Based on internal

testing conducted by OSM and Jae Sung, the new powertrain is 30 per cent more efficient and 20 per cent lighter than existing power units doing duty in the electric three-wheelers at the moment. This has been made possible with an integrated motor, gearbox design. This leads to significant weight savings as well as improved vehicle efficiency.

Using an integrated architecture has also helped in reducing the number of moving parts leading to a lesser amount of wear and tear. This will percolate to longer service intervals and reduce overall service costs for the end customer. The state-of-the-art modular architecture will also allow OSM to develop the Ra314 for four-wheeler Small Commercial Vehicles (SCV).

Vedanta Aluminium and GEAR India to deploy Lithium-Ion Forklift Fleets



VEDANTA ALUMINIUM BUSINESS, India's largest producer of aluminium, has signed an agreement with GEAR India, to deploy one of the largest fleets of lithium-ion battery-powered electric forklifts, becoming the first in the Indian aluminium industry to undertake such an initiative. The company shall commission 23 such forklifts in a phased manner over the next few months at its aluminium smelter in Jharsuguda, Odisha, which is one of the world's largest single-location aluminium smelters. Substituting diesel-fuelled forklifts with this green fleet will reduce diesel consumption by more than 2.5 lakh litres annually, thereby ensuring GHG (greenhouse gas) emission savings of nearly 690 tonnes of CO₂ equivalent.

These forklifts make use of the

cutting-edge 'Smart Fleet Management' system to help ensure the highest levels of safety at the site. The Smart Fleet Management system uses the Internet of Things technology to integrate the data collected by intelligent terminals and provide Vedanta Aluminium insights on a real-time basis for forklift speed, access to operate, collision avoidance, optimization analysis for operational efficiency and equipment maintenance, among others. Further, these electric forklifts are equipped with forward and reverse cameras, ensuring complete visibility to the operators, red-zone light and blue spotlights that create a safe operating zone around the forklift, as well as an automatic deceleration mechanism while turning, for enhanced safety.

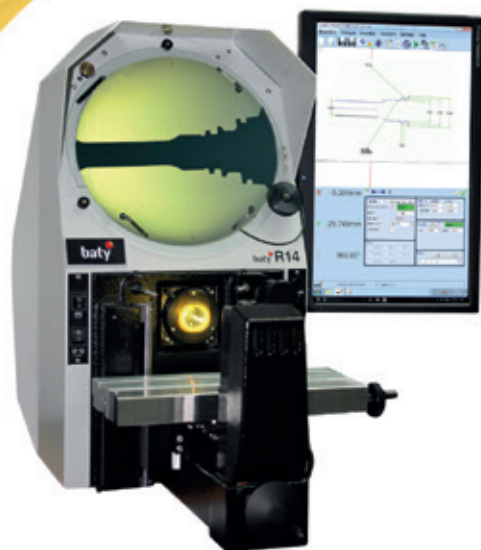
Satpal Singh assumes charge as the new CEO for Numeric UPS



SATPAL SINGH has been appointed as the new CEO for Numeric, a group brand of Legrand. Satpal has a strong background in leading and transforming organisations, with over 15 years of leadership experience spanning manufacturing, Oil & Gas and energy companies covering India, the Middle East, and Asia.

Before Numeric, he served as Country Head – Supply Chain & Business Transformation at Group Legrand India. He has worked with various Fortune 500 and MNCs across key functional areas like strategy, business transformation, strategic sourcing, supply chain and governance.

He holds a Bachelor of Engineering (B.E.) degree in Production from Mumbai University and is also an alumnus of Harvard Business School.



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Branch Offices :

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• E-mail : bakermum@bakergauges.com

• E-mail : bakerdlh@bakergauges.com

• E-mail : bakerche@bakergauges.com

• E-mail : bakerblr@bakergauges.com

• E-mail : bakerbar@bakergauges.com

• E-mail : bakermp@bakergauges.com

• E-mail : bakerrajkot@bakergauges.com

• E-mail : bakercal@bakergauges.com

• E-mail : bakerchd@bakergauges.com

• E-mail : bakerldh@bakergauges.com

• E-mail : bakerlhd@bakergauges.com

• E-mail : baker_nsk@bakergauges.com

• E-mail : bakercal@bakergauges.com

• E-mail : bakerche@bakergauges.com

Yamaha Launches FZS-Fi Models with Refreshed Styling for 2022

TO STIMULATE more excitement and sportiness in the Indian two-wheeler market under 'The Call of the Blue' initiative, India Yamaha Motor (IYM) Pvt Ltd launched the FZS-Fi model with refreshed styling along with a new variant, the FZS-Fi Dlx. The models will be available at all the authorized Yamaha Dealerships from the second week of January 2022.

The FZS-Fi continues to retain the masculine design proportions seen on the 3rd generation of the FZ-Fi model range and is powered by the same Blue Core, 149 cc engine producing 12.4 PS of peak power @ 7,250 rpm and 13.3 Nm of peak torque @ 5500 rpm.

For 2022, both the FZS-Fi models showcase LED tail lights, with the addition of LED flashers on the FZS-Fi Dlx variant. The FZS-Fi Dlx variant also features three new colours (Metallic Black, Metallic Deep Red and Solid Gray), with rich graphics, coloured alloy wheels, a two-level single seat with dual-tone colours, all of which impart the



premium appeal of the motorcycle.

Both the FZS-Fi models are powered by Yamaha's revolutionary Bluetooth Enabled Connect-X App that provides a host of convenient features that include Answer Back, Locate my Vehicle, Parking Record & Hazard, and Riding History. Apart from this, the 3rd Generation FZ-Fi and FZS-Fi model range showcase all of the existing set of features. These include a single-channel ABS in the front with a rear disc brake, a Multi-function LCD instrument cluster, an LED headlight, a tyre hugging rear mudguard, lower engine guard.

Palram Industries acquires TufLite Polymers

PALRAM INDIA PVT LTD, a 100 per cent subsidiary of Palram Industries Ltd, Israel, has acquired TufLite Polymers Ltd, India. This acquisition is part of the company's marketing strategy to increase its activity in markets where it sees growth potential, including in the Indian market. The company estimates, this acquisition is expected to significantly increase its sales in the Indian market.

Ido Rodoy, Group Managing Director of Palram, stated, "By incorporating TufLite's deep-rooted presence across India and customer base into Palram's growing portfolio, we look forward to achieving our mission of delivering exceptional Products & value to a much larger market and customers."

Mukesh Shah, Managing Director of TufLite Polymers Ltd said, "with more than 20 years of experience in serving distribution & infrastructure markets in India, TufLite is excited to become part of Palram family to bring the same high standard of Product proposition to its network of markets."

115 Companies File Applications Under PLI Scheme For Auto Industry in India

A TOTAL OF 115 COMPANIES have filed applications under the Production Linked Incentive (PLI) scheme for the automobile and auto component industry in India. Incentives are available under the scheme for determining sales of Advanced Automotive Technology (AAT) products (vehicles and components) to be manufactured in India from April 1, 2022, onwards for five years, the Ministry of Heavy Industries said in a statement.

The government has approved the PLI scheme for the automobile and auto component industry to enhance India's manufacturing capabilities for advanced automotive products with a budgetary outlay of Rs 25,938 crore. The scheme proposes financial incentives to boost domestic manufacturing of AAT products and attract investments in the automotive manufacturing value chain.

Its prime objectives include overcoming cost disabilities, creating economies of scale and building a robust supply chain in areas of AAT products. It will also generate employment. This scheme will facilitate the automobile industry to move up the value chain into higher value-added products. The PLI scheme for the auto sector will incentivise high-value AAT vehicles and products and envisaged to overcome the cost disabilities to the industry for manufacturing of AAT products in India.

Industrial Automation and Instrumentation Market in India to grow by USD 1.92 bn

THE INDUSTRIAL AUTOMATION and instrumentation market share growth in India by the industrial automation segment will be significant for revenue generation. The industrial automation market in India is mainly driven by the business imperative to use resources efficiently, improve productivity, and optimise plant operations.

Government regulations that seek to control carbon dioxide emissions by limiting power consumption and the need to minimize wastage of raw material are also driving this market. The industrial automation and instrumentation market in India is expected to grow by USD 1.92 billion from 2020 to 2025, progressing at a CAGR of 8.62% as per the latest market report by Technavio.

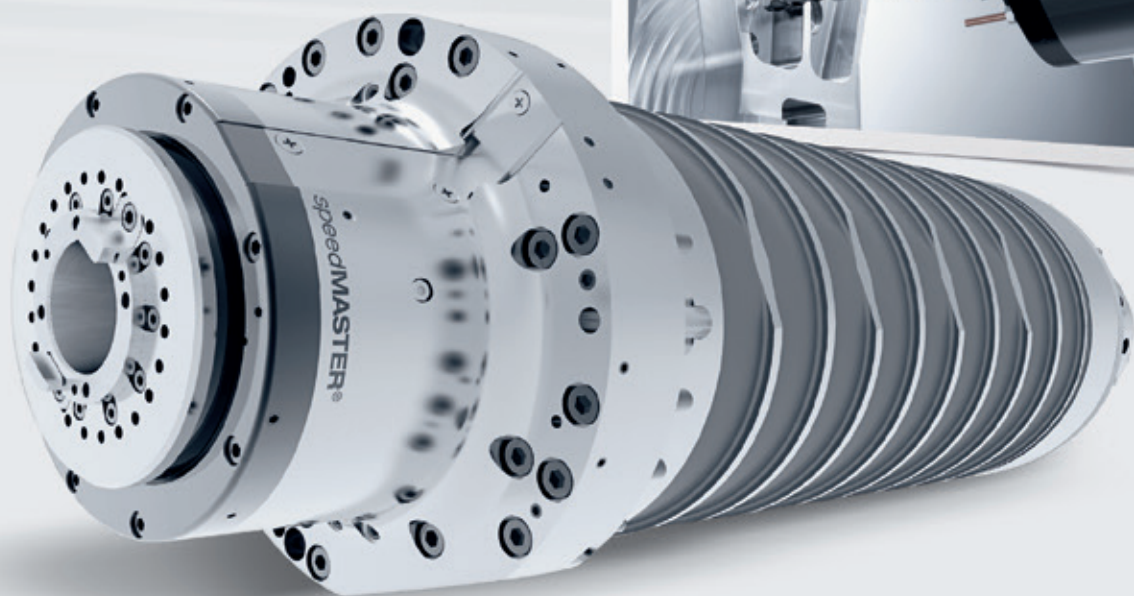
The key factor driving growth in the industrial automation and instrumentation market in India is the simplification of manufacturing through automation. Over the past years, automation in manufacturing has been transforming the factory floor and economics of many manufacturing sectors. Advancements in robotics, artificial intelligence, and machine learning are enabling machines to outperform humans in a range of work capabilities that require cognitive capabilities.

Some of the advantages of automation manufacturing include an increase in labour productivity, low labour cost, elimination of routine work, high work safety, high product quality, and a decrease in lead time. As automated systems can easily adapt to operational changes, it reduces the time taken to collect data and increases the efficiency of the overall production process.

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MG Motor India, ACMA team up for skills development in EV parts

MG MOTOR INDIA has joined hands with the Automotive Component Manufacturers Association of India (ACMA) to educate and foster skill development in the EV component industry.

Under the partnership, ACMA will conduct a study on the ZS EV to promote skill development in the component segment, syncing with the alliance's objective of supporting the development of the EV ecosystem. It will work in tandem with IIT Delhi campus of Sonipat to further its research on the deployment of electric vehicles in urban India.

Rajeev Chaba, president and MD, MG Motor India said, "MG Motor and ACMA will collaboratively add value to the EV component industry by imparting education and skill development to create

a future-ready workforce. The alliance is also aligned with MG's vision of CASE mobility, learning & skill development, and overall commitment to strengthening the EV ecosystem."

Sunjay J Kapur, President, ACMA said "A future-ready workforce for manufacturing electric vehicles is the need of the hour and this collaboration will help the auto component makers in upskilling themselves and remaining relevant."

The OEM says the association is in line with its vision to support and develop the ecosystem for the electric vehicle. Previously, MG had formed an alliance with IIT Delhi – Centre for Automotive Research and Tribology (CART) for similar research.

Local chip manufacturing could start in 2-3 years: Govt

THE GOVERNMENT'S PRODUCTIVITY-linked incentive (PLI) scheme for boosting semiconductor and display manufacturing is likely to bring results in the next 2-3 years. Minister of Electronics and Information Technology Aswini Viashnaw recently said at least a dozen semiconductor manufacturers are likely to start setting up local factories in the next 2-3 years after the government recently announced the PLI scheme for boosting chip manufacturing.

The minister said India is planning an entire ecosystem related to the chip manufacturing industry and will start accepting applications under the incentive scheme from January 1, 2022.

It may be noted that the government recently approved a Rs 76,000 crore PLI scheme to boost local chip production over the next six years. The scheme to boost domestic chip manufacturing could significantly help India's economy, including job creation, investments and reduction of import dependence.

BHEL explores tie-up for electrolyzers, fuel cells manufacturing

BHEL, the public sector heavy engineering company, is keen to get into the manufacture of electrolyzers and fuel cells. The company will come out with an invitation for 'expression of interest' (EOI) for partnering with it for electrolyzers and fuel cells. This would then be the second such call. On November 10 last year, BHEL had issued a similar invitation for EOI, the last date for which was November 30.

"BHEL is seeking interest for partnering with it to address growing Hydrogen economy business through manufacturing of (i) Electrolyser System for Hydrogen Production and (ii) Hydrogen based PEM Fuel Cell System," the invitation for EOI had said. "Based

on the responses received, a separate request for partnership shall be issued by BHEL for selection of Partner(s) in the targeted areas of Hydrogen Value Chain business," it had said.

BHEL is mainly a manufacturer of power equipment – boilers, turbines and transmission products. The company also has had a presence in transportation—it produces locomotive engines. Apart from these, the company also produces some products, such as guns, for the Defence.

In 2020-21, it made a net loss of Rs 2,717 crore, on a turnover of Rs16,296 crore. In the first half of the current financial year, its turnover was Rs 7,634 crore and net loss Rs 513 crore.

Havells India inaugurates new facility for manufacturing washing machines

HAVELLS INDIA has inaugurated its new washing machine (WM) plant at the same location in Ghiloth where the AC plant is located. Spread over 50 acres at Ghiloth, the greenfield WM unit will significantly strengthen Lloyds WM production capacity with a targeted output of 3 lakh units annually.

With the enhanced manufacturing capacity, Lloyd is poised to have ~20 models of WMs and 50 SKUs of ACs in 2022, aiming to bolster its presence in the domestic consumer durables segment. Currently manufacturing washing machines, the facility is equipped to expand to over 5 lakh units annually. The manufacturing plant consists of best[in] class machinery from Japan, Korea and Italy and is equipped with cutting-edge technologically advanced 10 Robotic machines and AGVs (Automated Guided Vehicle) and a fully integrated material management system.

Vargus to Launch MACH Range

VARGUS, The global leader in offering threading solutions to machining industries, is launching yet another innovative range of Thread Turning and Thread Milling Tools. The global launch will be through a webinar highlighting the benefits of New Mach Range – Supersonic Threading Tools for fast machining.

"After introducing the new MACH TT Supersonic Threading to our associates, we received encouraging responses. We are excited to launch the new products to our customers globally on the 13th of January 2022. Am very sure the new product line will benefit our Indian customers and help them to be competitive", commented **Ashok Makhija, Managing Director of Vargus India**.

Vardex's Thread turning solutions offers a massive collection of diverse pitches and grade standards, IC, ranges and types of insert styles along with customised methods for the oil and gas industry. While, the thread milling solutions under Vardex provides a wide range of applications and solutions in multi-tooth, single-tooth for deep holes, and solid carbide tools.



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By Rahul Kamat

CYBERSECURITY IS OFTEN VIEWED AS AN ADDED COMPLEXITY

Cybersecurity is one of the existential threats of our time. New types of connected devices and compute platforms, from Cloud to IoT, have exploded the cyberattack surface. And more tools collecting more data doesn't equate to actionable insight for the CISO, C-suite and Board of Directors. The old way of simply scanning on-premises IT devices for vulnerabilities is no longer enough. In an interaction, **Dick Bussiere, Technical Director, Tenable** explains the new approach to deal with cyber security.

What do you feel is the most important for building cyber security resilience?

The ultimate goal of cyber resiliency is ensuring organizations thrive in the face of adversity, which cannot be achieved without cybersecurity strategies that are built upon best practices and sound cyber hygiene. These include techniques such as risk-based vulnerability management, proactive patching and continuous monitoring of the attack surface. Building resilience in-



The key to successfully implementing industrial cybersecurity is C-level understanding, which paves the way for OT security to become a priority for all stakeholders.

volves identifying each device and user in the network, providing full visibility into the attack surface including IT, OT and IoT. When security teams are aware of how data flows, securing critical assets becomes easier. Cybersecurity must be built into the development and operations lifecycle of every organization. These are basic principles and without them, organisations would be hard-pressed in addressing cyber risks in a manner that drives business growth and stability.

According to you, why is India's critical infrastructure attractive to malicious actors?

Critical infrastructure is pivotal to the Indian economy as it fuels services essential to daily life like energy, food, water, transport, communications, health and financial services. An attack on critical infrastructure would massively disrupt daily lives and the country's economy, which is why critical infrastructure is a high-value target for malicious entities. IT and OT convergence has now connected OT systems to the Internet, directly or indirectly, when previously they were isolated. This provides a rich variety of attack pathways, making critical infrastructure more vulnerable to attacks than ever before.

In today's digital world, do air-gapped networks still even exist? And why are air-gaps impractical for organisations in India?

At best, air gaps provide a false sense of security that no longer reflects the realities of today's business environment. This is because organisations require information transfer between the air-gapped and external networks to operate. With the increasing convergence of IT and OT in industrial systems, especially in smart factories, air-gapping is practically impossible to implement. The introduction of even an external PC or USB flash drive



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can destroy the most stringently enforced air-gaps and such instances are more likely to occur.

What do you feel, at this moment, are the biggest threats for companies on cyber security here in India?


Vulnerabilities and misconfigurations in the cloud pose a major threat. Almost every organisation now has a cloud-first strategy and yet many of them use legacy cloud security solutions. Vulnerabilities and misconfigurations identified at runtime are difficult to fix. Unless organisations detect and remove vulnerabilities while creating the code itself, it opens up more attack pathways for cybercriminals to leverage. The strategy of

works, and OT needs a fundamental understanding of basic cyber-hygiene principles and practices.

Why is C-level support crucial to successfully implement industrial cybersecurity?

The key to successfully implementing industrial cybersecurity is C-level understanding, which paves the way for OT security to become a priority for all stakeholders. Some organisations begin by creating a C-level role such as a Chief Digital Transformation Officer to foster collaboration between IT and OT, bridge the cultural divide and establish incident response processes. More and more organisations are deploying senior, experienced engineers from OT business units and assigning them to support security operations. This creates an environment where people, processes and technologies in both IT and OT work in lockstep.

How can manufacturers in India bridge the knowledge gaps arising out of IT/OT convergence?

Cybersecurity is often viewed by OT teams as an added complexity that could lead to downtime, rather than a necessity. At the same time, IT teams need to realise that the OT world is different and that the cyber-physical nature of the environment imposes risks that bear major consequences. Educating OT teams on how IT functions and vice versa is the first step to bridging the knowledge gap between the two spheres. This can only happen when CISOs have the required buy-in from plant managers, without which OT teams may be resistant to the involvement of IT teams in operations. This is largely due to the perception: “if it ain’t broken, don’t fix it”. Once CISOs have the required buy-in, it becomes easier to educate the entire OT population about cyber risks and the impact these can have on the safety, availability and quality of operations. 



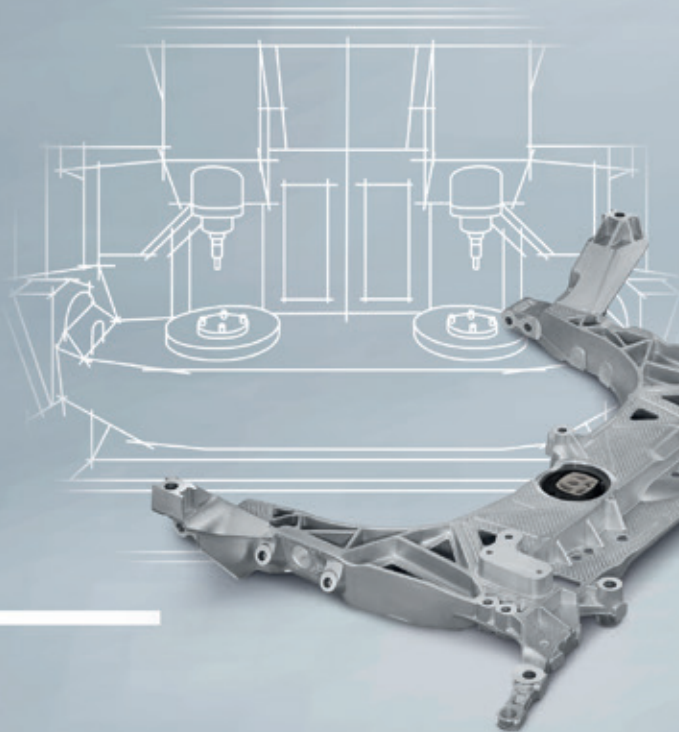
With the increasing convergence of IT and OT in industrial systems, especially in smart factories, air-gapping is practically impossible to implement.

fixing vulnerabilities during the development cycle is known as “shift left”, meaning it happens earlier than deployment. It is 10 times more efficient to fix vulnerabilities in advance of deployment rather than after.

How can the manufacturing sector create a culture of collaboration between IT and OT for the common good of the business?

This knowledge gap can be bridged with better collaboration between IT and OT teams and can be facilitated by an understanding at the highest levels of the organisation regarding the cyber risk in OT environments. Senior-level understanding paves the way for OT security to become a priority with all stakeholders. At other levels, IT needs a basic understanding of how OT

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By Kruti Bharadva

WE ARE IN THE PROCESS OF PLANNING OUR SERIES A FUNDRAISER

With passion, a thirst for innovation and creativity, wonders can happen. Here's how Virtual Forest, a unique stakeholder in the electronics manufacturing industry, is combining passion and innovation- very successfully- in an interview with **Omer Basith- CEO & Co-Founder, VirtualForest**

Give us a brief history of your company, its activities and products, and the sectors it caters to.

Virtual Forest was established in November 2019 with a mission to provide energy-efficient motor control technologies for the electronics appliance industry. I was always passionate about energy conservation and sustainability and wanted to start a venture that can create value in the electronics development ecosystem. Therefore, Virtual Forest was born as part of that thought process.

Virtual Forest was registered in 2019 and the first round of funding was completed by August 2020. From then onwards, our company has grown strength to strength. We have a manufacturing partnership with Napino Auto & Electronics; a design partnership with Infineon Technologies and a distribution partnership with Rabyte. In a two-year period, we have managed to hit major milestones by developing R&D capabilities for Brushless Direct Current (BLDC) ceiling fans, ACs, and solar pump controllers. We were also able to acquire another company, Think Circuit Technologies, which was involved in the creation of strategic technologies for Aerospace, Defense and rail applications. As of today, Virtual Forest along with its partners have a total of 8 facilities located around India including 2 R&D locations in Bangalore and Manesar, along with a comprehensive environmental and electrical testing lab located in Manesar. The company has

a unique advantage as all the co-founders come with multi-disciplinary industry experience.

We provide a unique category of service that gives the Indian consumer electronics ecosystem access to world-class Electronic Manufacturing Services (EMS) while avoiding the high-cost lengthy process of application of new technologies and capacity creation. Virtual Forest gives its customers a unique design and manufacturing experience - hand holding them in the absence of design requirements, providing in-house domain expertise, and helping them walk the journey from R&D all the way to mass manufacturing. We want to make India the hotspot of electronics manufacturing by becoming the go-to partner for leading Original Equipment Manufacturers (OEMs).



We aim to be a significant contributor to the global fight to reduce carbon emissions.

You have a very interesting vision for your business- to grow a virtual national park through the energy efficiency your products provide. Please explain this concept and vision.

Our vision is to install more efficient drives and components in common technologies, resulting in energy savings that will eventually equal a virtual forest - hence the name. Our internal milestone is to grow a virtual Sundarbans National Park in 3 years, which will involve installing a combination of drives achieving carbon emission reductions equivalent to 33 million trees while helping our customers save over Rs 500 crores in reduced energy bills. As of today, we have prevented 347 Kg of

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CO2 emissions every year, which is equal to planting 89 virtual trees through our 54 installed products.

Energy demand for motor run applications is rising which is adversely impacting the environment. The basic human need for thermal comfort, drinking water, and waste removal has led to unsustainable energy requirements and increased emissions. As stakeholders in the motor run ecosystem for over 2 decades, we have used our deep understanding of end-user requirements, cost appetites, and sector dynamics to develop solutions that are making a positive impact on the environment and the livelihoods of our customers.

We aim to be a significant contributor to the global fight to reduce carbon emissions. We intend to maximize the reach of our campaign by making rotating machinery energy efficient and creating value for our customers.

Energy efficiency comes from your breakthrough motor control technology and advanced application algorithms – Kindly expound upon these technologies

We are addressing energy-inefficient motor applications such as fixed speed air conditioners and residential fluid movement pumps through the installation of motor control electronics. These retrofits present a low carbon pathway with a demonstrated ROI, that have the potential to deliver real-world energy savings of up to 40 per cent. We go by the analogy that emissions prevented are equal to emissions sequestered and our drives make products more energy-efficient, consequently reducing emissions.

Tell us about your virtual lab and how it contributes to the manufacturing sector through the services it provides

The Virtual Lab has been designed as a type of service intended to address deficiencies in the manufacturing ecosystem. Indian companies face numerous challenges when it comes to electronics manufacturing including poor economies of scale, long processes to develop commercially viable Intellectual Property (IP), poor availability of skilled labour, and a lack of a supply chain for domestic components.

Using our insights, we established Virtual Lab to address these challenges faced by domestic manufacturers. We deliver designs to our customers using product platforms where we do all the base level development. This way we can make sure that the products are cost-competitive but still meet the required quality and performance standards, both nationally and internationally. We have also optimised all these processes so that we are able to deliver commercial products in a short lead time.

We are creating product platforms for some key areas such as BLDC ceiling fans, ACs, washing machines, solar pump controllers, etc. By way of these product platforms, we offer original design manufacturing and

joint design manufacturing services that include system specification design, software design, manufacturing, validation and offer services to fully meet customers' expectations and the needs of various applications. So, in phase 1, we developed a product platform for air conditioning and BLDC ceiling fans. Both technologies are now in mass production. In the second phase (which we are currently in), we are developing platforms for washing machines, and solar pump controllers, and moving forward in the third phase, we will be developing controllers for refrigeration and electric vehicles. In this way, we are basically providing finished products which then can be integrated easily into the customer's end products.

How important is R&D to the company and how does it enable your mission and vision?

R&D is entrenched into the very genesis of the company. We started in 2019 by identifying the gaps that exist in the Indian electronics development ecosystem and one of our key findings was that domestic manufacturers lack significant R&D capability. This is mainly because many don't have the necessary domain expertise (including a proper understanding of design requirements) and/or do not operate full-fledged R&D departments. We also realised that we are working in a market where over 90 per cent of the electronics utilised by Indian companies are imported, and this is mostly because there is a lack of infrastructure and design capability.

It is for these reasons that we started working in the appliance ecosystem in the first place. We chose appliances because they enjoy high market penetration and large domestic demand, and because it made sense to leverage the opportunity by becoming efficient partners to Indian OEMs. Our mission is a dual one. On the one hand, we envision using green technologies to reduce emissions and help save our customers on electricity bills. On the other hand, we seek to make India a hub of electronics manufacturing and reduce foreign dependence on components and other aspects of the manufacturing process. We view these goals as synchronous and having the capacity to transform lives.

Why is there a need for energy efficiency in technologies in consumer durables?

The latest IPCC report suggests that the probability of irreversible man-made global climate change is not only very high but imminent as well. It is imperative that we make interventions by switching to green technologies. Electric motors are the most common type of technology used in every aspect of modern living in the form of ACs, washing machines, kitchen appliances, etc. It is used heavily in manufacturing & industrial processes as well. The energy consumption of consumer durables is probably the highest and with economic progress, the demand

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for these appliances is only going to grow. This is because the old systems used in motor control technology suffered from poor performance and were very inefficient and expensive. In recent times, there is a huge market for greater performance and precision in electric motors and combined with the development of better solid-state electronics and cheap microprocessors this has led to the creation of modern adjustable speed drives. Keeping this in mind, we have incorporated energy-efficient technology at the core of our business model.

India has the world's largest energy efficiency programs in place with the star rating system and it is extremely stringent. It's an interesting way in which the government has been controlling the energy efficiency of our appliances in the last 30 years. Every two years or so, the energy star rating system is revised. What is a three-star rated appliance today, in the next energy table, becomes a two-star or even a one-star rated appliance. As a result, the industry is forced to make its products more energy efficient. But the end customer is not forced to pay a higher premium because the end customer doesn't actually care about a three-star rated appliance. They don't want to spend on a new appliance if the old one is already working. Therefore, the industry is supposed to be more energy efficient in a cost-effective manner but cannot pass on the cost to the customer. So, these are some of the challenges we face as part of the industry and there is a long way to go before, we achieve 'net zero emissions.

How is Virtual Forest enabling Electronic Manufacturing Services (EMS)?

We provide EMS as part of our Virtual Factory offering along with our partner Napino Auto and Electronics. All our manufacturing processes meet ROHS and REACH standards with state-of-the-art process management component verification and traceability.

Through our Virtual Factory platform, we meet the needs of multiple customers and products both in terms of volumes and pricing. We are operating to prove our thesis with the largest companies in segments like air conditioning - wherein we have developed and commercialized technologies for Voltas which enjoys a 29 per cent market share. In washing machines, we are working with IFB (market share of around 27 per cent) on their front-loading products. In BLDC ceiling fans, we are working with Crompton, which has over 24% market share. All these companies have varying levels of internal R&D capability. Companies like IFB have extremely well-developed R&D capability with a well thought out design requirement. Others like Voltas, are also very strong in their application of R&D. So, we work with these categories of customers and can accommodate all the requirements and deliver product platforms that are now in mass production. Our ambition over the next few years is to expand the network

of companies utilizing our product platforms. We are also expanding the scope of our product platforms by entering new segments such as refrigerators and EVs.

Please describe for us the current market scenario in the electronics and home appliances market, current challenges, and opportunities, using as a reference any government initiatives.


Currently, India is largely dependent on Chinese component manufacturers. We have made a conscious effort to identify component supplies from Taiwan and other locations, just to have a Plan B in case supplies are interrupted due to exigent events like geopolitical tensions or pandemics. The reality is that we are still dependents. More than 30% of the components that India uses still come from China, and this will likely continue to be the case - domestic manufacturing still has a long way to go.

Though companies are trying to speed up their efforts, it's unrealistic to expect companies to be completely delinked. That being said, the pandemic has brought to light the fact that supply chains are extremely fragile and highlighted the importance of having other options to reduce dependency on China. People are now willing to look at other sources, develop technologies in-house, take control of their technology and their supply chain roadmaps.

What lies ahead for the company? Any new product launches?

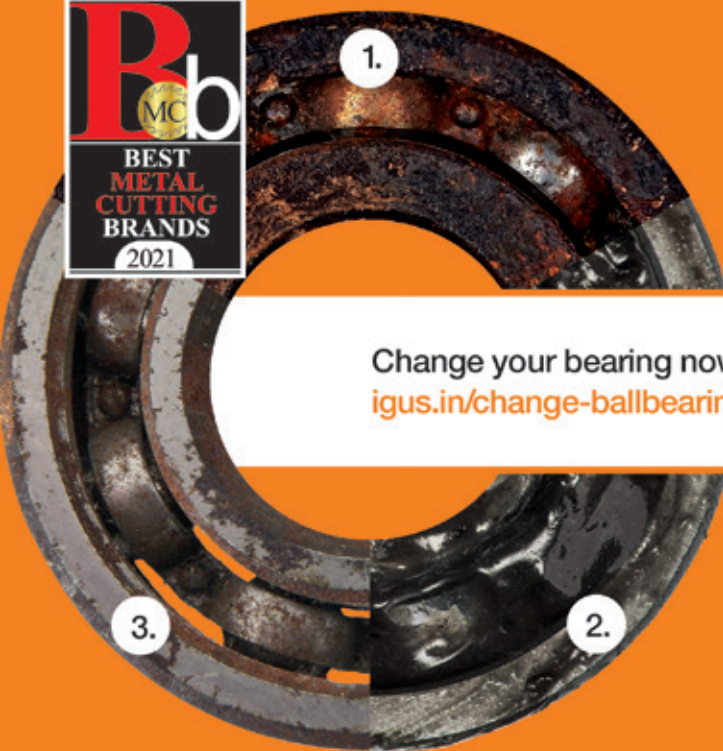
Virtual Forest has several expansion plans in the pipeline. Firstly, we are in the process of planning our Series A fundraiser so that we can build a state-of-the-art R&D set-up. This new infrastructure will house the necessary facilities for us to test all aspects of a variety of appliances moving forward, ranging from air conditioning units and washing machines to even EV controllers. This will require significant investment in terms of specialised application test equipment.

We also plan to expand our product platforms and customer base. At the beginning of our third phase, we will be developing platforms for inverter refrigerators and electric vehicle controllers in Q4 this year. With EVs, our focus will be on controllers for two-wheelers and three-wheelers, and we will be one of the first companies in India to be developing controllers that meet international automotive standards. So, our key focus in terms of what I would describe as our technology strength is going to be motor control, and human interface electronics for the next decade and much longer as this is somewhat a niche area where we see high potential and growth.

We are also increasing our team's capability to make sure that we can service all these requirements. We are doing this as a part of the PLI scheme, and as a part of our R&D and other partnerships to create new technologies for the Indian market. 

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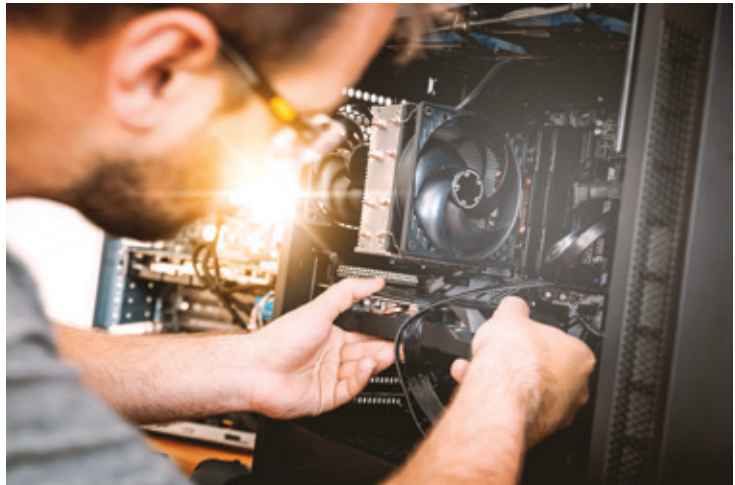
POWERING THE SUSTAINABLE, DIGITAL FACTORIES OF THE FUTURE

Digital manufacturing has become a testing ground for sustainable material use, production and delivery processes that minimise environmental impact. Here is a brief look at the factors involved

Over the past few years, sustainability has evolved gradually from an aspiration to a corporate buzzword to an articulated and measurable component of 21st-century business practices. Tri-bottom-line: Profit, People & Planet (P3P) has evolved from John Elkington's 1994 call to action to a solid business principle for corporate governance.

Several studies have shown that companies that focus on ESG (Environmental, Social, and Governance) and sustainability have outperformed their competitors. Practically speaking, it's a no-brainer: companies that adopt this strategy save money by streamlining their production processes and reducing their reliance on raw materials and energy resources.

As a result, digital manufacturing has become a



Sustainability and digital manufacturing are inseparable because they are both antithetical to waste. Production details are meticulously documented to eliminate wasteful procedures through hallmark applications, such as Manufacturing Execution Systems (MES) and Manufacturing Operations Management (MOM)

testing ground for sustainable material use, production and delivery processes that minimise environmental impact. The circular, low-carbon economy is being accelerated by digital manufacturing, which improves supply chains and reduces greenhouse gas emissions. Every production node across a globalised supply chain ensures that ethical and sustainable sourcing is met at every step. Technology and hands-on work can be combined to create more exciting and safe jobs.

Sustainability and digital manufacturing are inseparable because they are both antithetical to waste. Production details are meticulously documented to eliminate wasteful procedures through hallmark applications, such as Manufacturing Execution Systems (MES) and Manufacturing Operations Management (MOM). Lean manufacturing is all about minimal resources to produce a robust product and production process.

Production has been transformed into a data-driven enterprise thanks to the digital revolution. This data can be mined for patterns and trends that can lead to better sustainable strategies and processes using AI and machine learning. The unified digital collaboration



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platforms create a central repository at the heart of digital manufacturing, which can be examined by everyone involved for their impact on the environment.

CONNECTIVITY AND COLLABORATION: AT THE HEART OF DIGITAL TRANSFORMATION

Digitisation is made possible by interconnectivity, collaboration and communication at all levels of the industrial supply chain. The widespread adoption of digitisation depends on how companies manage the journey and encourage their employees to embrace the changes that smart manufacturing brings to their day-to-day operations.

However, it's not enough to have a culture that encourages new ideas to be developed and implemented; people need to see and feel the benefits for themselves. Pilot phases, peer-to-peer learning and cross-site collaboration have proven to be most effective in ensuring our employees' rapid adoption and appreciation of new technologies. There is now better communication amongst employees about process fixes and adjustments. It has resulted in more accurate forecasting of downtime risks.

Digitised manufacturing is leading a global revolution in designing products, learning new skills, producing goods and shipping them worldwide. Sustainable business practices are essential to this renaissance and to advance humankind's technological capabilities while also protecting and improving the environment. 

Mr. Rajesh K Khosla is President & CEO of AGI glaspac, a part of Packaging Products Division (PPD) at HSIL Limited, makers of the iconic brand 'Hindware'. Before joining HSIL, Mr. Khosla served as the President Director and CEO at PT Jindal Stainless, Indonesia. He is also a visiting faculty at numerous renowned universities, where he shares his visionary expertise with students through insightful and motivating lectures.

The Packaging Products Division of HSIL Ltd., AGI glaspac (better known as AGI), was established in the year 1972 and is one of the leading container-glass manufacturers in the country. AGI has two state-of-the-art facilities, one in Hyderabad and the other in Bhongir, Telangana. AGI glaspac is engaged in the manufacture of high-quality glass containers to meet the stringent and demanding quality standards of the packaging needs of the food, pharmaceuticals, soft drinks, spirits, beer, wine, and other industries.

DALMIA CEMENT BHARAT LAUNCHES INDIA'S FIRST E-TRUCK INITIATIVE

Dalmia Cement (Bharat) Ltd, a leading Indian cement major and a subsidiary of Dalmia Bharat Ltd, is spearheading the industry's transition towards a circular economy with the launch of its e-truck initiative in India. The pioneering move will accelerate DCBL's sustainability goal of lowering carbon emissions as well as optimise the company's overall logistics cost. With the introduction of the company's new EV truck fleet, the Co2 emissions from the diesel trucks will be reduced significantly.

As part of the initiative's first phase, two of the proposed 22-high capacity electric trucks have been put on the track and the balance 20 will be put to use before the end of FY22. Supporting the government's mission of Atmanirbhar Bharat, IPL Tech, India's first manufacturer of high capacity trucks has been commissioned by DCBL to provide the first of its kind EVs. The company will be plying the trucks to transport slag, a major raw material for cement manufacturing, from the facility of Steel Authority of India Limited (SAIL) at Rourkela to its cement manufacturing unit in Rajgangpur. Additionally, the company has commissioned 2 charging stations at its Rajgangpur Unit and three more charging stations to be installed by March 22.

"Achieving environmental sustainability has always been a priority for us at DCBL from a business and a so-



cial standpoint. While we are grateful that our government is creating the right policy and investment environment that encourages organisations to take positive environmental action, as private organisations we need to take the lead," said **Mahendra Singhi, Managing Director and CEO, Dalmia Cement (Bharat) Ltd.**

DCBL's decision to focus on EV adoption will help improve environmental conditions as well as lower health risks in and around the areas it operates in. Along with leading climate action, reducing pollution, enabling the community through life skills and educational initiatives and promoting optimal use of water resources, the company's e-Trucks initiative will also help ensure renewable energy integration.



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Premium Aerotec is one of the world leaders in the development and manufacture of structures and manufacturing systems for civil and military aircraft alike.

Aerospace experts are anticipating significant growth, with more than 30,000 new passengers and freight aircraft required by 2033. This is going to pose immense quantitative and qualitative challenges to the existing aerospace manufacturing plants. Augsburg-based Airbus subsidiary, Premium Aerotec, is ensuring its participation in this fiercely competitive field with the support of CGTech's NC simulation software, Vericut, and the application of the new Force module for ongoing operational reliability and machining efficiency.

Premium AEROTEC is one of the world leaders in the development and manufacture of structures and manufacturing systems for civil and military aircraft alike. With locations in Augsburg, Bremen, Hamburg, Nordenham, Varel and Braşov (Romania), Europe's leading aviation suppliers develop and manufacture the very latest in modern aircraft structures, from aluminium, titanium, and carbon fibre composites for the entire Airbus family.

The company is a key partner in the development and production of the A350 XWB, as well as providing parts for the Boeing 787 'Dreamliner', the Eurofighter Typhoon, and the Airbus A400M heavy-lift military transport aircraft. Premium Aerotec was established in January 2009, with the merger of the EADS plant in Augsburg with the facilities of Airbus Germany in Nordenham and Varel. Under the governance of the Airbus Group, the company's headquarters are in Augsburg. Here, around 4,000 people are employed with the focus on the manufacture and assembly of fuselage parts and heavy-duty structural components for military and civil programmes, with the use of hybrid lightweight



structures, carbon fibre technologies, infusion processes, and sandwich construction techniques.

To guarantee the surface qualities and workpiece tolerances required, high-performance material machining techniques are employed in Premium Aerotec's production area. These techniques must meet the defined quality required without scrap or elaborate repeat machining to rework components. They must also minimise the wear on the machines and cutting tools, reduce downtimes to a minimum, and be highly efficient even with complex components running in small batches; in other words, they must be fast, precise, reliable, and reproducible: without compromise.

Of course, this is an environment familiar to many in the aerospace sector, where machine tool safety and security are critical to meet ongoing delivery targets. To ensure this the company has used the industry standard NC simulation software, Vericut, as an integral element of its manufacturing processes since 1991. The fundamental aim is to avoid machine tool collisions, either with the structural components of the machine, the raw material or component, and even the fixturing systems.

Vericut was chosen to check the NC code that gen-

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For Enquiries Contact

Head Office

Mr. Hari.E

+91 - 94422 67678

☛ harie@titan.co.in

Northern & Southern Region

Mr. Praveen Kumar

+91 - 73977 01444

☛ praveenk1@titan.co.in

Western Region

Issac J Kuttisseril

+91 - 73974 84425

☛ issac@titan.co.in

Global

Mr. Anto Jauspher

+91 - 94425 05271

☛ antoj@titan.co.in

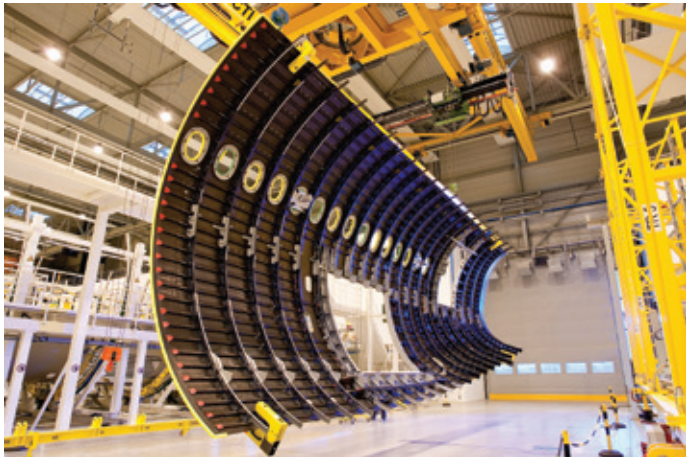
Reach us at:

TITAN ENGINEERING & AUTOMATION LIMITED (TEAL),

UNIT 1 :- Automation Solutions, No. 27 & 28, SIPCOT Industrial Complex, Hosur - 635126, Tamil Nadu, India

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erates the milling paths on the machine tools, and in 26 years of use, it has more than proved its worth. “Today, there are no more prove-outs required on the machine. No NC program goes onto the machine without having been tested first in VERICUT,” explains Werner Flagner and Michael Hoffmann, under whose supervision more than 30 Premium Aerotec personnel work with Vericut.

The leading independent NC simulation and optimisation software, CGTech’s Vericut simulates the entire CNC manufacturing process, regardless of the machine, control system, and CAM systems involved and tests the NC program for interferences and errors before anything runs on the real machines. More than 25 different machining centres used at Premium Aerotec are simulated using Vericut.

Auto-Diff is a very important Vericut module at the Augsburg plant. It provides automated identification of the differences between a CAD model and a workpiece simulated by Vericut. Within the module, anyone involved in the manufacturing process can detect points that have been incorrectly processed or errors in the programming. “It is an ideal tool, that is particularly important when extremely expensive parts are involved, and which, when it comes to allowances and tolerances has proved to be indispensable,” says Werner Flagner. “Auto-Diff helps cut programming time and speeds up the entire process,” adds Michael Hoffmann.

Given the high material removal rates, of up to 98 per cent, is it even possible to achieve a reduction in production times – including setting up, parts handling, measuring, and run-through? There are several approaches to improving machining efficiency. These include machining in a single setting, with the integration of different manufacturing procedures. Ideally, the complete machining process takes place in ‘one-hit’


reducing positioning errors or damage to the components during manual handling.

Optimised work-holding strategies and new machine tools with modern cutting tools also have the potential to increase cutting speeds, material removal volumes, and improve machining qualities, while also increasing service life. However, process safety and security remain an absolute requirement in manufacturing, and that is why Premium Aerotec has applied the new physics-based module, Force, from CGTech to increase efficiency while maintaining operational reliability.

Force is the culmination of a joint development between CGTech and UTC (United Technologies Corporation). A physical and scientific optimisation method Force is a software module within Vericut that uses known physical parameters to determine the maximum reliable feed rate for a given cutting condition based on four factors: force on the cutter, spindle power, maximum chip thickness, and maximum allowable feed rate. It calculates ideal feed rates by analysing tool geometry and parameters, material properties of the stock and cutting tool, detailed cutting tool edge geometry, and Vericut cut-by-cut contact conditions.

Managing Director, Tony Shrewsbury, explains: “It relates to helix and rake angle, as well as the general geometric form of the tool. What is decisive is the material type – carbide or hard metal or HSS – and the issue of when the tool breaks. As loading peaks are also displayed in Force, these can be managed and reduced to ‘smooth’ the loading to make the cutting action less ‘shocking’ to both the tool, workpiece and the elements of the machine tool.”

Another advantage is that Force does not need any user findings; it is optimised solely based on the values determined. Likewise, no elaborate software tests are required. He goes on: “The issue is not about milling strategies of existing programs. No tool path needs to be changed. Force simply divides or splits, the path to introduce advances. Everything is governed by the feed advance, so the geometries are not altered.”

Premium Aerotec has gained right from the start with the new Force solution. The savings achieved so far are around a 22 per cent reduction in machine cycle times with programs optimised by Force, with a substantial improvement in tool life as well. Tony Shrewsbury is confident there are still more potential benefits to be seen in the future: “Force is extremely well-suited to materials that are difficult to machine, and for complex multi-axis operations. We are encountering both these factors increase, not only in the aerospace sector but in all precision machining industries. For real-world efficiency gains, Force is the most innovative software currently available.” 

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Product of Proven Performance

“WE HOLD ADEQUATE SYNERGIES TO DEVELOP ELECTRIC VEHICLES FOR INDIA”

Envisioning India at the heart of global manufacturing and commerce, Hyundai, began its journey in India 25 years ago, moving towards mutual progress. The company is proud to have come this far in India, developing a sustainable and thriving ecosystem leading to the collective evolution of the Indian automotive industry.

In an exclusive interview, **S S Kim, Former Managing Director & CEO, Hyundai Motor India Ltd** spoke to **Kruti Bharadva** on how Hyundai is India's leading smart mobility solutions provider redefining the mobility landscape with products that take customer aspirations to new heights.

Give us a sense of understanding of Hyundai Motor India Ltd (HMIL) presence in India, product portfolios and market share?

Hyundai Motor India Limited (HMIL) is India's first smart mobility solutions provider and the largest exporter since inception. As India's progressive brand, Hyundai continues to redefine customer experiences by introducing products and services that suit the needs of millennials and Gen Z. Our product portfolio includes 12 models across segments starting from Santro, Grand i10 Nios, all-new i20, i20 n line, Aura, Venue, spirited new Verna, all-new Creta, Alcazar, Elantra, new 2020 Tucson & Kona Electric.

The demand for SUV's continues to surge as customers love for Hyundai SUVs – Creta, Venue, Tucson and Kona Electric along with the newly launched Alcazar made us the highest selling SUV brand in India. We introduced Alcazar, a truly versatile six and seven-seater SUV that has captivated the hearts



Hyundai Motor India Engineering is a centre with one of the most advanced research and development facilities which focuses on state-of-the-art product and design engineering and rigorous quality enhancement

and minds of customers across the nation. With our stellar lineup of Five SUVs, we have secured market leadership in the SUV segment, capturing a market share of 22.2 per cent with a sale of 2,12,777 units till October 2021. The company sold 1.25 lakh units of new-gen Creta in 2021 alone and sold over 2.15 lakh units of the model since its launch in March 2020. Cumulatively, the vehicle has registered a sale of over six lakh units in the domestic market since its launch in 2015.

HMIL is a critical component of the company's export business to Africa, the Middle East, etc. Ex-

pound upon Hyundai's global business and the role Hyundai India plays in this?

Hyundai became the first Indian company to have surpassed the 10 millionth milestone in the second quarter of this year. During the successful export journey, Hyundai Motor India has won prestigious awards including - seven EEPC National and five South Region awards as the top exporter of the year for large enterprise category.

Hyundai Motor India is presently exporting 8 models namely - Atos (Santro in the domestic market), Grand i10, Grand i10 4 Door (Aura in the domestic market), i20, Venue, Accent (Verna in the domestic





market), Creta, Creta Grand (Alcazar in the domestic market). Globally, Hyundai Exports 'Made-In-India' cars to 85 Countries across five continents namely Africa (31 countries), Latin America (28 countries), North America (Mexico), Asia Pacific (14 countries) and the Middle East (11 countries).

How did HMIL navigate the pandemic and what policies have been put in place in terms of adapting to the changing business needs in a post-pandemic environment?

The pandemic has created major disruptions across businesses and economies. However, it has also presented organisations with an opportunity to innovate and adapt. At Hyundai, we commenced a very comprehensive social outreach program that has encompassed societies and communities to ensure the appropriate aide reaches people in need.

How has the company been affected by the global semi-conductor shortage?

The global semiconductor supply constraint continues to be challenging resulting in lower production across the industry. We are closely monitoring the situation to optimise production in line with supply conditions and taking necessary measures such as adjusting production schedules.

How has the company been performing in the current quarter and what is expected in the short term

as well as long term?

HMI's strategy is to offer the widest range of cars across all fuel types and price points for maximum customer satisfaction. Our 6-7-seater SUV Alcazar is gaining wide acceptance from all corners of the country, and we have received excellent bookings since the launch. Our recently launched motorsports-inspired i20 N line has also received an overwhelming response from millennial customers since its launch on 2nd September. We are confident that it will redefine the mobility landscape and take customer aspirations to new heights.

How Hyundai is moving towards sustainability?

As a socially responsible brand, at Hyundai Motor India, we keep sustainability at the core of all our functions and ensure that every step in the making of a car and beyond is sustainable and conducive for the environment. Our manufacturing facility in Sriperumbudur, Chennai is a great example of green manufacturing with self-sustainable resources. To ensure sustainable practices throughout the year, the Hyundai Motor India plant (spread across 540 acres) follows eco-friendly processes to conserve resources and reduce consumption of energy and water. The year 2021 marks 25 years of our presence in India we would like to reaffirm our commitment towards building a sustainable roadmap for India.

In the past three years, HMIL has conducted dry wash on 3.7 million Hyundai vehicles and saved

over 431 million litres of water. To ensure sustainable contribution to the environment, HMIL follows numerous eco-friendly processes in the service network like rainwater harvesting, usage of LED lighting and waterborne paint systems.

To date, we have planted around 21,000 trees inside the plant premises to maintain a zero discharge policy and are aggressively following rainwater harvesting. The Chennai plant has six ponds with a total capacity of 335,000 tonnes (approximately 950,000 metric cubes). The rainwater catchment area is increased to 85 per cent by harvesting the rainwater collected from the plant.

Hyundai becomes the number one OEM in renewable energy usage with:

- 100 per cent LED for all types of lighting system
- First Auto MNC to implement ISO 50001
- State of the art Regenerative Thermal Oxidiser in both plants
- Over 33 per cent green belt area
- 84 per cent renewable energy is used for factory operations

In addition to this, we recently launched our corporate brand campaign '**Beyond Mobility**' which represents the company's commitment and aspirations for the India of tomorrow. The campaign highlights HMIL's commitment to provide people quality time and empower the consumers to pursue their passions. Based on Hyundai's Global Vision of 'Progress for Humanity' the new brand campaign has been developed on three pillars - Technology, Innovation and Sustainability.

What are your thoughts on India's move towards e-mobility and how the company is embracing this change?

Electrification is one of the top priorities for the Indian government, and we have already showcased our prowess in this segment by introducing India's first full-range electric SUV Kona Electric in 2019. We have recently announced our vision to turn carbon neutral by 2045. As a technology pioneer, over the last many years, we hold adequate synergies to develop electric vehicles for India. We continue to evaluate market opportunities from time to time and will introduce products depending on the favourable factors prevalent during these times.

What are the dynamics and trends Hyundai has identified in the Indian automotive market?

As the country's leading smart mobility solutions provider, Hyundai continues to develop innovative solutions for its customers and remain much ahead of the industry peers by introducing new fuel technologies and powertrain options. Hyundai was the first OEM to introduce compact BS6 diesel – Hyundai 1.2 EcoTORQ diesel and offers the widest range of BS6 compliant diesel engines: 1.2 l, 1.5 l and 2.0 l. Further, we have already introduced a BEV to India Kona Electric and globally have recently showcased a new era of electric mobility with the IONIQ 5.

Guided by our global vision of '**Progress for Humanity**', Hyundai has invested in the development of advanced technologies to ensure we can elevate customer experiences while also making a positive impact on the environment.

We are confident that SUVs and EVs will disrupt the market in a big way in the next five years. As a technology and innovation-driven brand, Hyundai is aligned and committed to embarking on the journey of India's future mobility.

Hyundai has an ethos of people first. Tell us about some of these policies and how it has translated into Hyundai having one of the best shopfloors in this part of the world?

As a brand, Hyundai Motor India has been an integral part of many Indian families, completing 25 years of excellence in India. We recently inaugurated our state-of-the-art new corporate headquarters in Gurugram, reflecting our commitment to customers, stakeholders and employees in India. Developed as the **Centre for Transformation for a Better Tomorrow**, our new corporate headquarters will nurture young talent, while acting as the pivot of change to create a brighter and



greener future for India and truly epitomises our 'Smart Culture'.

At Hyundai, employee health, wellness and safety is of the utmost importance. To build a strong, sustainable and happy workforce, even during such challenging times, organisations must keep in mind the human side of enterprise. Our efforts have been focused on promoting health and wellbeing, by distributing various immunity-boosting kits, sanitization and protective kits while also conducting regular sanitization drives in our office premises. Our workspace has been designed to accommodate more than 500 people out of which only 45 per cent – 50 per cent employees work from the office in – A & B shifts. Thereby promoting a safe and balanced work environment during these COVID times. Our new corporate headquarters also has a thermal body temperature scanner at the entry gate to create a safer workspace by identifying high temperatures. **We have adopted "Smart Work" policies, practices and programs** to ensure seamless functioning and at the same time ensure that all safety & hygiene protocols are met. We are working with lower strength in multiple shifts, promoting staggered lunch timings and flexible timings for all employees, to maintain an effective and healthy work-life balance.

To foster '**Transformational Culture**' and bring **Inclusivity amongst employees in the organisation**, we have been undertaking the following initiatives:

- Meetings, huddles, conferences, and employee engagements are also conducted largely via virtual platforms.
- Co-creating experience programs for all employees starting from new joiners to mid-level and also for CXO level individuals.
- Organised vaccination drive for all our employees
- Emergency paid special leave benefit

As a progressive organisation, we want to be fu-

ture-ready and hence conduct readiness studies to diagnose employees' sentiment in real-time, and further implement futuristic systems and processes.

Your Chennai plant is regarded as a perfect example of plant flexibility. What makes this plant a state-of-the-art plant?

Our fully integrated plant boasts advanced production, quality and testing capabilities and is spread across a total area of 540 acres. Along with advanced Manufacturing 4.0 production, it is equipped with over 650 - **generation 4 robots, quality and testing capabilities and flexible engine plants** to cater to the growing domestic demands as well as the global markets making it an exceptional example of '**Make In India For The World**'.

The Hyundai Motor India plant is amongst the top five plants across all Hyundai Motor Company plants worldwide. To ensure absolute focus on quality, Hyundai monitors the materials right from the supplier stage also offering its expertise to resolve probable vendors' issues.

Hyundai's mega manufacturing plant is working on four core principles for the next decade under the initiative – My Place My Pride (MPMP)[®]. Safety Ambassador, Quality Marshal, Weight Reduction, Cost Reduction, Work Place Cleanliness, Morale Captain are the six pillars of the My Place My Pride initiative. The aim is to instil pride in minds of Hyundai employees and align their goals and skills with that of the company.

Tell us about Hyundai's CSR activities in India?

To combat the fight against this pandemic situation prevailing in the country, we have been lending a helping hand to support governments of the most affected states and individuals to help the victims of the COVID.

For this, we initiated a series of CSR programmes that offered long-term and meaningful assistance to people and governments. We commenced the Covid-19 CSR 2.0 Program under the 'Hyundai Cares' campaign in which Hyundai's philanthropic efforts was focused on three key activities – Health, Education and Hygiene.

Below are the key three projects undertaken under the Hyundai Cares 2.0 CSR initiatives - Rakshak, Shikshak and Grameen Sanitisation.





As a socially responsible brand, at Hyundai Motor India, we keep sustainability at the core of all our functions and ensure that every step in the making of a car and beyond is sustainable and conducive for the environment

- **Rakshak project** - Approximately 30,000 Made-in-India Khadi Masks were handed over to the Gujarat & Maharashtra state governments for creating a Safe and Healthy Environment. Masks were produced by self-help groups thereby giving them employment.
- **Shikshak project** - 1,000 tablets loaded with two years academic course curriculum were distributed to the children of Covid Warriors from lower-income groups. This initiative is a token of gratitude for their relentless efforts in the nation's fight against the pandemic.

Under Grameen Sanitisation - A unique sanitization drive was undertaken to disinfect 1800 plus villages in 292 Districts/ Tehsils across India.

As the second wave of Covid pandemic got more perilous, we accelerated support to state governments by undertaking the following measures:

Project: Back-to-Life'

1. Ensured the uninterrupted delivery of lifesaving medicare oxygen equipment to most affected Covid-19 states that include, New Delhi, Maharashtra, Tamil Nadu, Haryana and Telangana:
 - Oxygen Concentrators: 700
 - High Flow Oxygen (HFO) Plants: 10
 - High Flow Nasal Oxygen (HFNO) machines: 200
 - BiPap Ventilator Machines: 225
 - Donated a package of Rs. 10 Crores towards Pandemic Relief to Tamil Nadu
 - Over 50 Oxygen Concentrators were handed over to the Collector of **Kancheepuram District** for further distribution to hospitals in the district
 - Package included donation for Rs. 5 Crores and lifesaving equipment worth Rs. 5 Crores
 - Rs 25 crore was disbursed as a part of Hyundai Cares 3.0 initiative

In addition to this, we have initiated myriads of activities to support society in the best way.


- Recently, we announced 'Art for Hope, 'an industry-first program to help the Artists Community in India. Under this initiative, 25 artists with community art project concepts around the theme of Hope, Solidarity and Gratitude will receive a grant of Rs 1 lakh each.
- We contributed towards enhancing the education standards by renovating two schools in Sukhrali

village, in Gurgaon and will also be renovated 7 Sr Sec Govt schools in Tamil Nadu

- We celebrated a week-long initiative - 'Share to Care' to mark respect and care to the elderlies at the senior citizen home care centres/ old age homes in Gurugram on World Senior Citizen Day. 'Share to Care' initiative by Hyundai Motor India Foundation is a humane connection towards giving back to society.
- we are continuously upskilling youth under programmes like Saksham
- We will also be coming up with an interesting project for public transport drivers-will be announcing it soon

You have an R&D facility in Hyderabad. How it has facilitated a centre of engineering excellence?

Hyundai Motor India Engineering is a centre with one of the most advanced research and development facilities which focuses on state-of-the-art product and design engineering and rigorous quality enhancement. The new R&D Centre at Hyderabad in India is Hyundai Motor Company's fourth overseas R&D centre. Set up with an investment of Rs. 184 crores, the new 200,000 square-foot facility R&D Centre, is aimed at further accelerating local content development and enabling Hyundai to respond even more quickly to changing customer needs across the world.

The R&D Centre will facilitate the development of India as Hyundai's global hub for the manufacturing and engineering of cars. The new R&D Centre in Hyderabad will support all back-end operations like computer-aided engineering (CAE), computer-aided design (CAD) and help the R & D work taking place across Hyundai's car line-up. The R&D Centre will help in developing vehicles which include their styling, design engineering and vehicle test & evaluation. The R&D Centre will play a pivotal role for cars manufactured in India to satisfy the specific needs of Indian customers. 

Note: Hyundai Motor Company has appointed Unsoo Kim as the Managing Director (MD) of Hyundai Motor India Limited (HMIL), starting from 1st January 2022. He will replace SS Kim, who will lead the Global Operations Division in Hyundai headquarters in Seoul, South Korea.

By Rahul Kamat

“THE DRAFT DEFENCE PROCUREMENT POLICY IS A NEW WINE IN A NEW BOTTLE”

In a fireside chat **Rajinder Bhatia, President & CEO, Kalyani Group** discuss how India could be the next export hub in the world. He also explains how the Indian aerospace and defence sector could be a great contributor to India's GDP.

In the last few years, the Kalyani Group has formed joint ventures with Thales, IAI, Arsenal, AMG partners, etc. to mention a few. How are these JVs helping the group's defence business achieve growth opportunities that they have outlined for the coming years?

Yes, we indeed have several strategic joint ventures and partnerships with global OEM players. And, these joint ventures are mainly addressing certain opportunities in the defence and aerospace sectors. Most of these partnerships are based on what we call 'buy-and-make'. In such partnerships, we tie-up with global OEM players to bring their products to India so that we can indigenize them as per the requirement. As one of the oldest players in India, our relationship with global OEMs



The defence sector has enough scope for growth and can become a strong foundation for India's GDP growth.

in this category is excellent. Currently, along with our global partners, we are working on developing new edge ammunition and small arms. Meanwhile, just before the Covid pandemic one of our joint ventures received a \$100 million order. There are several other opportunities we have addressed including a multi-billion-dollar opportunity in the CIWS space. As we go forward, we are very confident more and more such opportunities will come our way.

Does Bharat Forge collaborate only with global players or do you also get domestic players onboard while fulfilling domestic orders?

Honestly speaking, defence is a very interesting sector and no large player can afford to operate on its own in this segment. The entire defence sector is a tier-based structure; where you have a lead, integrator followed by tier-I sub-assembly providers and tier-II sub-system providers. As far as Kalyani Group is concerned, we have created a large portfolio of home-grown products in the aerospace and defence sectors. For these, we have collaborated with many Indian companies which have expertise in various segments and sectors. At present, for our artillery sector, we have partnered with almost 450 MSMEs. Meanwhile, several start-ups with cutting edge technology are mushrooming in India. So we, as a group, also support such start-ups. As we speak, some of them are already working with us in industrial navigation space, artificial intelligence space.

Do you think that make-in-India in the defence production is very crucial and not just an option and subsequently, what factors can make Indian defence manufacturers more competitive considering our geopolitical position?

This is an extremely important question. Our Prime Minister has laid down a vision of doubling the GDP from the current \$2.8 trillion to maybe \$5 trillion in the next five years. To achieve this, one of the key contributors would be the manufacturing sector. And in

manufacturing, apart from the automotive sector, the defence sector has enough scope for growth and can become a strong foundation for India's GDP growth. We are looking at improving the overall contribution of the manufacturing sector from 16 per cent to 25 per cent. And to achieve this the government must focus on the aerospace and defence sector.

There is one basic challenge in the entire aerospace and defence sector is the procurement process. So how the government is addressing this challenge, and do you see a drastic change?


Let's look back and understand the history of procurement policy. In 2002, the so-called defence procurement procedure was a secret document. It was kept under locks and keys, and anybody issuing out or even putting extracts out in public was subject to serious, criminal and disciplinary proceedings. Cut to 2021, now the industry players are being consulted for procurement process is a great shift. This reflects the current government's openness and transparency. Of course, this change is all in a positive direction. The policy framework, I think has reached a stage where it has pretty much matured. There is a full drive



How are we addressing the concern of non-serious players with no strong technical base rushing into the field?

We would find a solution to this concern as we mature as an industry. Right now, everybody wants to want a share of this pie. But they must remember; this is not a short-term sprint, but a marathon. We are very hopeful that the process itself will ensure that the non-serious players get eliminated and only serious players remain in the business. But let me tell you that there are several entry barriers in this business that will automatically take the non-serious players out of competition. But I think there should be far more data vetting so that national security is not compromised. And I think there is no place for organisations or companies which are anti-national to be in this sector.

Do you think that India can be an export hub for the aerospace and defence sector?

As far as cost and quality is concerned, which is the better country than India? I would like to clear some myths and explain the realities here. A study carried out by a US-based firm and supported by two leading analysis organisations from India, suggests that our country rated second and fourth consistently for the last couple of years in aerospace and defence manufacturing. This means we have outdone most of the countries in advanced manufacturing. Meanwhile, mere manufacturing would not help the country, it also needs the support of technology. Today India supports more than 800 centers for research and development that are doing R&D on behalf of global multinational corporations. Importantly, it employs nearly 400,000 bright Indian engineers. With such kind of reservoir pool of talent is available in India, I don't think there would be an issue. At present, whatever R&D we are working on, should be able to use it for our country. 

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The current draft defence procurement policy reflects the current government's openness and transparency.

to get the Indian industry also into this ecosystem. However, the operationalisation of these policies does take a bit of time. I think we are going through that phase right now.

But Mr Bhatia most of the defence analysts say that the current draft defence procurement policy is merely old wine in a new bottle. What do you have to say?

There are two perspectives to every situation – a glass half full, or a glass half empty. But I would call it full than empty, and that's my perspective. The process is more open and transparent with several issues being addressed. The government intends to give a level playing field so I would not say that it is old wine in a new bottle. I think, perhaps, it's new wine in a new bottle. But this new wine requires a little more time to mature.

By Rahul Kamat

WE ENCOURAGES AND EMBRACES CONCEPTS THAT SPUR INNOVATION

Prashanth Doreswamy, Country Head - Continental India & Managing Director, Continental Automotive India talks about how the global automotive industry has been pushing boundaries in developing sophisticated technology that makes driving convenient and safe.

What are some of the new technologies that we are getting to see in automobiles?

While the world is still not fully out of the dark shadow cast by the pandemic, this is clear: increasingly, the car is becoming much more than just a mobility device. This period was also a moment of reckoning for the industry on the new normal – new forms of cooperation, business model transformations, net-zero vehicles and so on. What remained consistent was the focus on technology and trends. As a result, the industry continues to mould the car into space like a home, like an assistant, even handling some aspects of driving so that



the commuter focuses on other experiences. The CES 2022 underscores this.

The Indian auto industry has also been going through many changes, and we see the increasing trends of digitization and electrification. We already know that connected cars have been identified as the fastest-growing technological devices after tablets and smartphones. There is a strong interest in connected vehicles in India. According to a report by Deloitte, over 80 per cent of Indian car buyers think increased vehicle connectivity will be beneficial in the long term. Technologies like navigation, vehicle tracking, smartphone connectivity can be seen in almost every modern car today on Indian roads. The demand is constantly growing, and we have the next-gen technologies available that can be widely adopted as the infrastructure scales up.

With the introduction of 5G hyperconnectivity, we will see more development in smart sensor technology, holistic camera systems, eHorizon, V2X, C-V2X, digital car access solutions like Continental's CoSmA, etc. These technologies will not only contribute to the convenience of the vehicles but also increase safety.

Do you think, ADAS technology gaining momentum in India?

Advanced Driver Assistance Systems (ADAS) is gaining interest in India. Various ADAS technologies are already being deployed in vehicles, especially in the premium segment with assisted functions like surround-view, alert functions, emergency brake assist, etc. We are also witnessing the entry of ADAS into vehicles beyond the premium segment. The development and introduction of affordable radar sensors, and rear-view systems will pave the way for the penetration of technologies into entry- and mid-segment passenger cars.

I also think electric vehicles will become more mainstream, thanks to the Government push and the range of models available in India. Globally an increasing number of consumers are opting for greener trans-



port and buying of EVs. This trend will also slowly pick up in India.

How have Industry 4.0 solutions in the backend helped you bring faster innovations to the end consumers?

As much as the market trend for Connected, Autonomous, Shared and Electrified (CASE) Mobility is significant for the industry, digital tech is transforming the overall landscape, production, and processes on the manufacturing side. This change was already in motion before the pandemic, transforming the operations of manufacturers. For instance, Continental has been implementing Industry 4.0 technologies for many years now, and several of our plants globally are smart factories, including our plant in Bommasandra. The pandemic and the subsequent shortage crisis have made this transformation relevant to organizations. Industry 4.0 has helped many companies increase supply-chain transparency, operational continuity, improve employee safety and several challenges posed by the pandemic. Virtual audits, automatic reporting, real-time monitoring, big data analysis have helped improve transparency, efficiency, and quality improvement.

To give one example of optimization and transparency, Continental SCM has already started its digitization journey with the vision of having an autonomous supply network by adopting smart factory solutions, implementing MES, big data analytics, and so on. This helped us significantly during the crisis time.

How are Cobots helping on the shop floor?

One of the trends post the pandemic is an increasing interest in and demand for robotics in manufacturing operations, warehouses etc. Continental was well on its journey towards making our factories intelligent. So we have been deploying Cobots in several plants across the globe, including India. A collaborative robot, or cobot, shares the workspace with humans and is an efficient

addition to any intelligent factory.

A significant advantage is that we can upgrade our people to manage production processes and have the cobots handle monotonous and precision-focused aspects of production. With improved technology, cobots are becoming faster, safer and lightweight. They are easy to program and are safe to co-exist with people. The results include higher quality of output, improved efficiency, and productivity.

How have you utilised robotic process automation (RPA) in your processes?

RPA is a crucial element of digital transformation for the automotive industry, allowing manufacturers to streamline operations and reduce the complexities of managerial processes, thus creating a more agile system. As a technology company, Continental has always believed in the power of automation - be it in the products we manufacture or in-house processes. Efficiency improvement, productivity increase, transparency are all benefits. In my view, the best part of RPA is how we can use data - real-time, right from insights for a strategy to estimation and planning.

What does your footprint look like in India currently?

Although we have been in India for over 50 years through partnerships, Continental set up our first legal entity in India in 2008 with headquarters in Bangalore. Today we are established as a tier 1 automotive supplier, tire manufacturer, and industrial partner operating across India - with about 9,000+ employees across 14 locations, including seven plants that cater to the Indian market and a Technical Center that supports Continental's global R&D activities.

Even in the last two years, our presence has emerged stronger. For instance, in 2020, the Continental tires plant significantly expanded its truck tires production capacity at the Modipuram plant in Uttar Pradesh. In November 2020, Continental Automotive India reached a key milestone of producing 50 million Wheel Speed Sensors at its Manesar plant. In 2021, our Bengaluru plant reached a yearly milestone of producing one million Airbag Control Units (ACUs).

We recognise the potential of the Indian automotive market and India's strength as a hub for high-quality engineering talent. We have made significant investments in the country, and we will continue to align our localization strategy of "in the market, for the market".

What is the challenge in India in terms of bringing new technologies to the automotive space?

We, of course, see the percolation of newer technologies into the Indian automotive industry. But India has its own set of challenges in adopting the new technologies.



As we know, the key trends of C.A.S.E (Connected, Autonomous, Shared and Electric mobility) are driving the disruption, and globally we already see these trends changing mobility behaviour, creating new models of cooperation, bringing in new players into the game, and so on. To fully support such growth and development and to gain confidence for more investments in technology, we need consistent and sustained support of policy, infrastructure, a growing R&D ecosystem, skilled workforce, awareness among end-users and so on, all of which are complementary to each other.

Governmental support includes policy, clear communication of strategic intent, roadmaps, and then incentives and subsidies. There is good support from the Government on EV topics. However, e-mobility cannot be successful just through incentive schemes, we probably need regulations on carbon emissions that in turn increase EV adoption. Other recent ones such as the scrappage policy, the recent incentive scheme for semiconductor manufacturing, are all positive steps in the right direction. Infrastructure and networks are other areas with room for improvement. If I cite an example of an L2 level of Automated Driving technologies, we would need an overhaul in our road infrastructure, and standardisation, before we introduce these effectively in the market at a large scale. From an electrification point of view, the infrastructural requirement includes easy and affordable access to charging infrastructure.

We also need to be cognizant of the fact that India is a price-sensitive, value-conscious market, and the current pandemic has only made consumers even more cautious. Newer technology will drive up the costs of vehicles, which can be addressed only by economies of scale. Legislations will go a long way to bring in this change through standardization. A good example is a safety. Not long-ago safety technologies were exclusive to certain vehicle categories. With legislation and increasing awareness among end consumers, this changed,

and we saw a growth in the adoption of safety technologies. There are several more areas where standardization would increase uptake of technology, which eventually means safer roads and comfortable commuters.

Since we are currently on the path of electric mobility, pricing is a critical factor here as well, for consumers to invest in EVs. A large part of the overall EV costs is also the high battery prices. Technology investments can reduce battery costs, increase efficiency, and drive down costs making EVs more accessible to the average consumer.


Lastly, companies also need to know that we do not need to do everything on our own. Globally we see newer models of cooperation emerging, for instance, to tackle the topic of software-defined vehicles. This is something the Indian automotive industry can also learn from, to benefit from working with others with complementary strengths and capabilities e.g., pathbreaking technology, as well as sharing the risks and investments.

How will the future of automobiles look like in terms of the technologies they carry?

The global automotive industry has been pushing boundaries in developing sophisticated technology that makes driving convenient and safe, and cars are evolving into mobile living spaces. As I mentioned earlier, the CES 2022 – including the technologies from Continental – is a good indicator of what the future holds.

Technology is transforming towards fully connected, automated and software-defined vehicles. It is estimated that the cars of today consist of over 200 Million lines of code. Continental is driving this by offering solutions for server-based architectures. We were the first supplier to bring a Body High-Performance Computer (HPC) to the market with Volkswagen's ID. electric series. In addition to platforms for domain-focused HPCs, Continental is also offering modular platform solutions for cross-domain HPCs. A first cross-domain HPC from Continental, which covers functions and features from the body and vehicle control domain, will be integrated into future electric vehicles from a major Chinese vehicle manufacturer.

Technologies also provide the possibility for drivers to integrate the functions they want during their vehicle's entire service life by downloading software updates. Continental's Automotive Edge Framework, for instance, enables this. It is a modular hardware and software platform that connects the vehicle to the cloud and features numerous options to develop, supply and maintain software-intensive system functions.

I cannot cover the different innovations here, but I can say that the possibilities of technology are immense, and we see how it enables functions and features that were unimaginable a decade ago. 

By Kruti Bharadva

CHARGING UP INDIA'S ELECTRIFICATION DRIVE

Pune-based Startup, BatteryPool was founded in 2018 and offers battery charging solutions for EV fleets and commercial vehicles. Here is a quick insight into the country's electrification drive and what the founder of BatteryPool has to say about it

Pune-based Startup, BatteryPool was founded in 2018 and offers battery charging solutions for EV fleets and commercial vehicles. Their vision is to foster mass adoption of electric mobility in India where Fleet and Commercial Vehicle charging is poised to become a \$2.7 Billion opportunity by 2030 as fleets and commercial vehicles become electrified. BatteryPool is building and deploying technology driven SaaS and hardware solutions that are crafted to meet the needs of EV fleet operators.

Their flagship product is a battery swapping station for 2/3 W EVs that gives drivers of fleets and commercial electric vehicles access to a fully charged battery in under 30 s (v/s 3+ hours it can take to recharge). These swapping solutions are agnostic to battery type and are accessible over an API layer. BatteryPool has some of the largest 2/3 W EV fleets as their customers and has been backed by 100X.VC, Department of Science and Technology (Government of India), and Social Alpha. We had a quick chat with **Mr Ashwin Shankar, Founder, BatteryPool** and here is what he had to say:

Tell us briefly about your company and its product offerings

BatteryPool provides battery charging and swapping solutions for 2/3W electric vehicle fleet operators. Our flagship product is an IoT enabled battery swapping station that is battery agnostic and software driven.

Please describe your company's role in bringing EV technology to the forefront

With our products, we enable fleet operators to adopt EVs without any of the operational hassles. Our battery swapping stations eliminate any downtime in recharging EVs for fleet operators. This allows fleet operators to leverage the lower cost of ownership of EVs without losing any revenue to downtime due to recharging of the EVs.



These charging stations need to be complemented by battery swapping stations for 2/3W EV commercial vehicle use cases and smart plug points which will help proliferate adoption of EVs across segments and vehicle form factors

As a company involved in EMobility, please explain the current scenario with regards to adopting electric vehicles in India

We are witnessing a rapid adoption of EVs in fleet and commercial vehicle use cases due to their favourable economics. At BatteryPool we are very bullish on this sector (Specifically 2/3W EVs) and believe EVs are likely to be adopted in this segment in India before personal mobility.

We are also witnessing launches of good products by large OEMs in the personal mobility space which are all encouraging signs for EV adoption in India.

While EVs are slowly gaining market share, kindly comment on whether India is truly ready for EVs in terms of infrastructure and government policies?

Government policies are shaping up the right way with incentive structures on both the demand and supply side in the form of FAME-2 and PLI schemes respectively. There is however a lot of investments needed from private enterprise in EV charging infra and battery production which are important factors in making the economics and operations of EVs favourable vis a vis ICE vehicles.

How relevant is the government's aim of setting up

approximately 2600 EV charging stations in 62 cities, across 24 states and union territories by 2023?


These will certainly spur the adoption of EVs and get the ball rolling in terms of setting up the infra for electric mobility. These charging stations need to be complemented by battery swapping stations for 2/3W EV commercial vehicle use cases and smart plug points which will help proliferate adoption of EVs across segments and vehicle form factors.

What are the dominant factors contributing towards adoption of E-Mobility?

Combination of policy, global auto industry movement towards electrification and falling battery prices leading to favourable economics are leading to the adoption of E-Mobility.

Why is there a need for E mobility and sustainability in today's scenario?

Electric mobility can clean up city centres and enable energy security for the country. Also, in combination with clean energy production, it can help us meet our GHG emission targets and mitigate our contribution to climate change.

BatteryPool also offers SaaS and hardware solutions that allow fleet operators to deploy and manage electric vehicles. Enabling EV fleet operators to manage EVs, the company provides real-time, actionable insights into the electric vehicle charging, maintenance, and operations. Fleet operators can also set up battery swapping stations at their locations, enabling riders to exchange battery packs without having to wait for a recharge. 

ET RECOGNIZES THE BRAND CUSTODIANS IN THE METAL CUTTING AND FORMING INDUSTRY



They say, measuring any brand's success is always a tricky affair. It is especially so in the contemporary digitised economy where people increasingly believe in interacting with a brand. Meanwhile, the Indian metal cutting and forming industry today has a variety of options when it comes to choosing its metal cutting and forming partners. However, with a gamut of Indian and international players competing in the market, how can the industry know which is the best brand for it?

With this in mind, recently, the Economic Times organised Best Brands in Metal Cutting and Metal Forming Awards in Bengaluru on 22nd December 2021. The initiative was appreciated by the audience as it was the first on-ground event after two years.

The Economic Times Best Brands in Metal Cutting & Metal Forming 2021 is an ET Edge Initiative and the knowledge partner for this initiative was Break-

through Management Group India Private Limited, popularly known as BMGI. The Best Brands list is based on the market research conducted by BMGI. The Machinist magazine is driving this project from the editorial point of view. In this category, Best Brands featured the key players from the Indian metal cutting industry, analysing their overall performance,

based on their product offer, market presence, and brand awareness. The leading companies were shortlisted and made to go through a further assessment based on publicly available data before making the final list.

This initiative is designed to bring various innovations and disruptions under the metal cutting and forming umbrella with an eclectic mix of the panel discussion, keynotes and eventually highlighting the success stories from the Metal Cutting and Forming segment in India.

The event was attended by who's who of the Indian metal cutting and forming industry. The chief guest for the event was **Anjum Parwez**, Managing Director, Bangalore Metro Rail Corporation Ltd; **Ramesh Ramadurai**, Managing Director, 3M India Limited; **Kamal Bali**, President and Managing Director, Volvo Group India and **Venu Nuguri**, Managing Director & CEO, India and South Asia region.

By Rahul Kamat

ELECTRIC MOTORS MUST HAVE A MINIMUM EFFICIENCY OF IE2

In an interaction, **Xercsis Marker**, Executive Vice President & Business Head, **Godrej Lawkim Motors** explains how the newly launched e-switch technology would be a gamechanger replacing the traditional centrifugal switch.

Godrej Lawkim Motors has recently launched the electronic switch (E-Switch) technology for its range of general-purpose motors. From a technical standpoint, what advantages does this offer over conventional centrifugal technology?

Due to multiple moving parts, the technology present in the traditional centrifugal switch and the open circuit switch motor sparks at the point of contact which leads to higher wear and tear. The latest e-switch technology has no mechanical components and, as a result, does not generate any sparks when in use, making it completely safe. Replacing the centrifugal



The e-switch technology is an asset for the consumer since it provides cost savings on motor installation, is maintenance-free and compact.

switch will, therefore, ensure smooth functioning and minimum noise while starting the motor. The e-switch is also capable of detecting near-lock-rotor conditions and sending timely overload alerts.

Since this is the first of its kind technology, which sectors can take the advantage of this technology and How does the end-user benefit from E-switch technology?

The e-switch technology will be applicable across sectors such as agriculture, dairy, food, sme, construction, and more. the e-switch technology is an asset for the consumer since it provides cost savings on motor installation, is maintenance-free and compact. a long-lasting, dependable motor can help the user save time and money. furthermore, the e-switch is environmentally benign, causing less harm to the environment while still providing efficient performance.

Do you expect a higher market share thanks to motors equipped with E-switch technology?

With the newly equipped general-purpose motors, we

hope to increase our market share of 100S frame motors by 30 per cent for applications in fields such as monkey lifts, woodworking machines, air compressors, betel cutting machines, milking, paint mixing, and agri-machinery.

Can we presume that new technology upgrades to your products are largely based on in-house R&D?

We have an inter-functional team of mechanical, electrical, and electronics specialist engineers who have built numerous comprehensive homegrown solutions and are equipped with the most up-to-date test setup for verification and validation.

We also engage with worldwide industry and academic experts to validate our design and development efforts across a wide range of products from time to time. To design electronic cards and supporting software for BLDC motors, we have established an in-house expert team.

How motors produced by Godrej Lawkim Motors have become more efficient – in terms of material efficiency, which is to say less material used, and energy efficiency?

With the application of advanced electromagnetic analysis, Godrej Lawkim Motors has become more energy and material-efficient (less material utilised). We also employ the most advanced electromagnetic materials




operates on an electrical connection and does not require mechanical assembly. Modern e-switch motor technology is environmentally benign, has no toxic ingredients, and has a longer operational life, making it more dependable.

The small induction motor we created for one of our customers was challenging for us to manufacture, but it was cost-effective and efficient, which benefited them. Similarly, we have BLDC higher efficiency motors with control cards, which have a lower motor cost but a somewhat higher overall cost due to the control cards. We plan to use it horizontally in the future for other Hermetic applications.

It is learnt that India can achieve tremendous savings by scrapping inefficient (IE-1 or below) motors and replacing them with IE-2 or IE-3 motors. What is your overall view on the precariously high presence of inefficient motors in India's industrial sector?

Electric motors must have a minimum efficiency of IE2 for industrial applications, IE2 for line-operated three-phase motors, and IE2 for several home appliances such as air conditioners and refrigerators, to name a few. Several other applications, such as commercial air conditioning, electrical/domestic appliances, and so on, still require such standards.

We believe that replacing old inefficient motors with high-efficiency motors will provide significant long-term benefits, although at a slightly higher cost. The payback time is getting shorter as electricity tariffs rise. In some instances, the power cost savings might be realised in as little as 1 to 2 years. The potential is so great that the industry has aided in lowering the cost of constructing new power plants with massive power generation and transmission in terms of megawatts, owing to the annual addition of millions of new energy-efficient appliances. 



With the application of advanced electromagnetic analysis, Godrej Lawkim Motors has become more energy and material-efficient (less material utilised).

and a strong insulation system. To replace the traditional electromagnetic switch, we have introduced modern technology such as the electronic switch. As a result, the motor is compact and reliable. Other new technology solutions, such as BLDC motors with intelligent controls, have also been launched. Precision engineered components are also produced in India's most modern, integrated manufacturing plant by us.

The traditional centrifugal switch, for example, requires numerous moving parts for various types of motors and polarity, whereas the new e-switch technology in motors just requires a single device, and is simple to operate. The open circuit switch also required mechanical assembly by a skilled person which was both costly and time-consuming; nevertheless, the e-switch

HIGH-END MULTI-PRESENCE

Tools with threaded heads have significant advantages as they demonstrate impressive versatility, provide rational utilisation of cemented carbide and are user-friendly with simple head replacement.

Back in the early 2000s, the introduction of ISCAR's MULTI-MASTER system of rotating tools with interchangeable carbide heads played a significant role in the development of cutting tools. Tool assemblies with exchangeable heads were known long before ISCAR's MULTI-MASTER. This was a product that changed the traditional view of the design concept of such systems.

Within the MULTI-MASTER product line, heads are secured by using a thread connection. Cemented carbide is a very hard and wear-resistant material and has lower impact strength when compared to high-speed steel. In a threaded carbide part, the thread is a source of stress concentrators that is crucial for tool functioning, especially under cyclic loading. Rotating tools with exchangeable carbide heads are reasonable in a relatively small diameter range, typically 6-25 mm (.25"-1.00"), which limits appropriate thread diameters and the height of a thread profile.

The above points make it problematic to use standard threads and strongly determine a special thread shape to comply with the specifications of the connection. Therefore, a thread connection as the head clamping element was highly questionable. Fortunately, the MULTI-MASTER, which is based on the threads of a specially designed profile (*Fig. 1*), dismissed all doubts and its success led to a new look on common canons. Sometime after that, almost every tool manufacturer developed its system for rotating tools with exchangeable threaded carbide heads.

Tools with threaded heads have significant advantages as they demonstrate impressive versatility, provide rational utilisation of cemented carbide and are user-friendly with simple head replacement. It has been frequently asked what the se-

crets are of the MULTI-MASTER's success and what are the features that ensure its popularity and longevity of the product.

Aside from the benefits outlined above, which are crucial for tools with exchangeable threaded heads, the MULTI-MASTER provides high dimensional repeatability with its face-contact design concept. This concept holds the "no setup" principle for replacing a worn head - no additional setup operations for adjustment are necessary and the head can be changed without removing the tool from the machine.

Another unique aspect of the MULTI-MASTER is its very wide variety of heads that cover a broad spectrum of applications in milling, hole making, engraving, and gearing. In milling operations, these cover square shoulders, faces, 3D surfaces, chamfers, cavities and pockets, slots and grooves, threads, and machining by high-speed- and high-feed milling methods. And in Holemaking operations, centre and spot drilling, countersinking, etc.

Combining two types of heads is a beneficial combination of two design approaches: fully ground heads from solid blanks and heads from pre-shaped sintered inserts. Together with a wide choice of shanks, adap-

tors, and reducers significantly simplifies the process of finding the best tool configuration for a variety of metal cutting operations. Apart from that, the line and its products are ideal for tailor-made products, which makes tool customization much easier. All of this turns the robust MULTI-MASTER line into a powerful tool for improving productivity and cutting production costs while ensuring longstanding customer commitment.

A new horizon of applications starts with ISCAR's new thread size T12, intended for end milling heads with a 32 mm



Fig. 1 – A special profile thread facilitates reliability and robustness of the MULTI-MASTER line.



Fig. 2 – A 100° countersink head is commonly used in manufacturing aircraft parts.

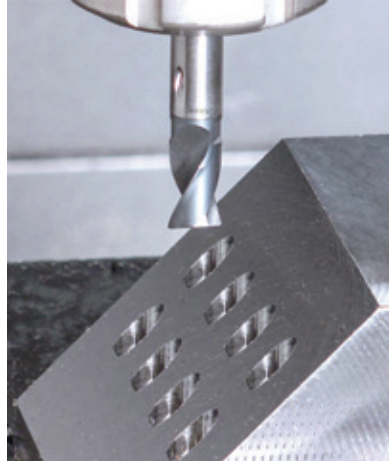


Fig. 3 – Efficient drilling inclined surfaces is not a problem for flat bottom heads.

(1.25”) diameter. Even though solid carbide endmills in this diameter are not common due to their high cost, there are industrial sectors, such as aerospace that need such tools.

Assemblies with exchangeable heads provide a much more cost-efficient solution and ISCAR is enthusiastic about its prospects of new developments. It’s important to note that among ISCAR’s introduced products, there are 5-flute endmill heads with a variable helix that were designed specifically for machining difficult-to-cut titanium alloys and high-temperature materials (ISO S group of application). The heads have a corner radius of 4 and 5 mm (.120”, .250”, .375”), which are typical for aircraft part production.

In the aerospace industry, the line was enhanced with 6-flute endmill heads in diameters of 8-25 mm (.315”-1.00”) for machining titanium, including hard-to-cut β - and near β -alloys, especially by the trochoidal milling method. The heads feature a combination of a different helix and variable angular pitch to improve chatter stability.

A typical aircraft countersunk screw requires a 100° countersink. The same angle is often needed for riveting. The MULTI-MASTER provides an appropriate solution with its newly developed 2-flute countersink heads (Fig. 2) with 100°-point angle in diameters 9.525-19.05 mm (.375”-.750”). The heads are also suitable

for chamfering and spot drilling.

The growth of 5-axis CNC machines has brought new efficient strategies for milling complex 3D shapes. This has increased the demands for cutting tools with a specific geometry, i.e., barrel endmills.

Following new needs, MULTI-MASTER replenished its range with appropriate heads that were successfully adopted by the customer, particularly in the aerospace, medical, and die and mold industries.

In hole making, the recently introduced precise flat bottom drilling heads have considerably expanded the line applicability in shallow drilling operations for steel, stainless steel, and cast iron (ISO P and K groups of application) including direct drilling inclined surfaces (Fig. 3). The head diameter tolerance meets the accuracy grade h7, while the head drilling capabilities extend up to 1.2 of the diameters.

ISCAR’s motto “be more user-friendly” relates to the recent upgrade of the MULTI-MASTER groove milling head with a new clamping option. Incorporating a hexalobular TORX recess into a head design enables securing the head with ISCAR’s fix- or adjustable torque wrenches for reliable clamping.

An advantage of the MULTI-MASTER is that the heads are excellent to produce special profiles. This line contains several threaded blanks from uncoated cemented carbides for tailor-made products. A short time ago the range of available blanks was expanded by disc-shaped semi-finished heads (Fig. 4), which are successfully used for customised solutions in milling slots and grooves, grooves, threads, splines, and many more.

The above examples not only illustrate the development directions of one of the leading rotating tool systems with exchangeable carbide heads but distinctly show that the sources for development and improvement of system capabilities are far from being exhausted.


The needs of modern manufacturing bring more and more requests and open new application fields that require an appropriate tooling response. The history of ISCAR’s MULTI-MASTER concludes with high versatility of tools with exchangeable heads and highlights their ability to meet growing industrial demands. 



Fig. 4 – A disc-type blank head is ideal for customized solutions in milling slots and grooves. The hexalobular recess in a head face is intended for applying TORX-tipped wrenches with controlled torque for reliable clamping.

MD800 COMPACT AC MULTIDRIVE ANSWERS CALL OF OEMs

Industrial automation group Inovance Technology has announced the release of the MD800 – an AC multidrive designed to meet the needs of European OEMs for ever more flexible and scalable multidrive performance in an ever more compact footprint.

MD800's modular design enables up to 8 drives to be supplied from one rack with a single rectifier, sharing energy through the common DC bus. The product offers comprehensive functionality including an individual STO (safe torque off) on each drive, the ability to control PM and induction motors from a single software package, a +24 VDC control backup supply, and a full range of Fieldbus and I/O expansion options cards. Meanwhile,



the dual rating of each drive module allows heavy-duty 150 per cent overload for demanding torque applications or normal duty 110 per cent overload for fan and pump applications.

Additionally, MD800 is highly cost-effective, and also offers a significantly reduced total cost of ownership. Installation costs, in particular, are slashed as a result of user-friendly pluggable, spring type connectors, and a faster build time due to reduced wiring and fewer external components. The product is also designed to operate in the harshest of industrial environments with 3C3

and 3S2 conformal coating, an operating temperature range of -20 to +60°C, an operating altitude of up to 4,000 metres, and a separate cooling channel for the heatsink.

EQUIPPING ROBOTS MADE EASY WITH THE QUICKROBOT ONLINE TOOL FROM IGUS

A new version of the robot equipment configurator finds the right energy supply system for cobots, SCARA and industrial robots

Highly flexible cables and hoses ensure that robotic applications are supplied with energy, data and media. Energy supply systems are required to protect them safely even with high dynamics and torsion. With the extended QuickRobot, igus offers a free online tool for the quick configuration of the individual energy chain system for 418 robots. New features such as product videos support the selection process.

These robots weld, rivet, palletise and assist. For the small and large production to be able to work fail-safe in 24/7 operation, they need the right energy supply system to safely route the cables and hoses from axis 1 to axis 6. For the simple design of the individual energy chain for cobots, SCARA, 4-axis robots and 6-axis robots, igus has now expanded the capabilities of its robot equipment configurator. In the online tool, users can select their robot from 418 different models from 10 manufacturers and find the optimum energy supply for axes 1 to 6.

A suitable energy supply system from a thousand configuration options

The path to the customer-specific energy chain is very simple. After selecting the robot model, the user is shown all compatible energy supply systems, such as the three-dimensional triflex R energy chains and retraction systems or the new SCARA cable solution. It features videos of the individual products, illustrating real appli-



cations and movements of the energy chain. A visualisation of the robot and an exploded view of the components support the configuration. More detailed information on the components can be found by clicking on the help buttons for the individual fields. The customer can choose the best system for the robot. The price is calculated in real-time. The parts list is created

automatically, can be downloaded or can be transferred directly to the shopping cart. The CAD data of the individual components, a PDF report and also assembly videos of the components are offered by the tool as a supplementary service. In addition, the configuration can be easily saved for coordination within the team or subsequent projects.

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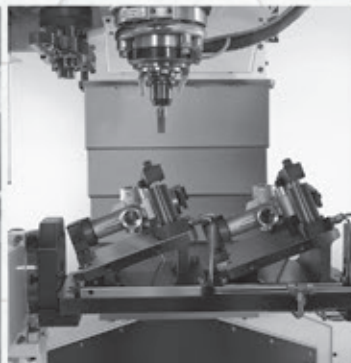


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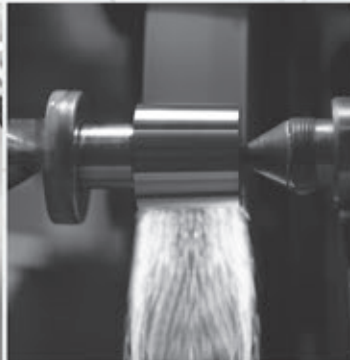
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