

THE MACHINIST

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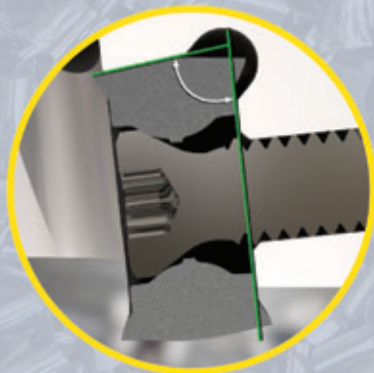
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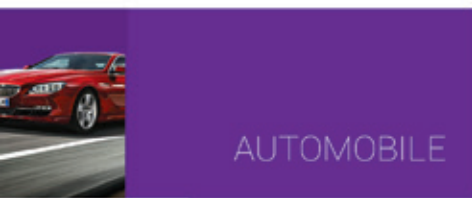
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GAME ON, VISHY!

Recently my colleague interviewed the living legend “Vishy” Anand, as he is affectionately known, in India and worldwide. Interestingly, the conversation ventured beyond the intricacies of the chessboard to uncover the profound insights that make Anand not just a chess champion, but a beacon of strategic brilliance and leadership.

Anand’s strategic playbook, it appears, extends far beyond the chessboard. His words offer guidance to business leaders, CEOs, and all those navigating complex, competitive landscapes. His emphasis on thorough preparation, visualising multiple scenarios, and embracing adaptability underscores the importance of holistic foresight. Indeed, this quality sets apart exceptional leaders, whether on the chessboard or in the corporate realm.

The concept of adaptability, according to Anand, involves meticulous planning and mental fortitude. His experiences in the World Championship match exemplify how unexpected shifts in strategy, informed by comprehensive preparation, can lead to triumph over unknown terrain. This ability to navigate uncharted waters is crucial in today’s ever-evolving business ecosystem.

Anand’s perspective on patience resonates deeply with anyone aiming for enduring success. His analogy of gradual improvement akin to his journey to a grand master title exemplifies the value of consistency and dedication. For leaders in any domain, this is a reminder that significant achievements are often the outcome of sustained effort and an unwavering commitment to growth.

The conversation also revealed Anand’s appetite for calculated risk-taking, an attribute vital for leaders and decision-makers. His bold move in the 2008 game, after extensive preparation, reminds us that innovation is best paired with readiness. The parallels to business strategy are undeniable – calculated risks can drive substantial gains, but they must be underpinned by thorough groundwork.

Anand’s insights extend to the realm of ethics, highlighting the importance of a steadfast long-term vision. His perspective on online cheating in chess illustrates that ethical principles guide our trajectory, ensuring that even in the face of challenges, a clear sense of direction and integrity prevails.

Viswanathan Anand’s interview with my colleague goes beyond chess, beyond borders, and conventional notions of strategy. It traverses the realm of leadership, offering timeless wisdom for those navigating the complexities of decision-making, innovation, and ethical conduct.

Happy Reading

R. Kamat
Editor

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THE ULTIMATE GUIDE TO PROFITABLE MANUFACTURING
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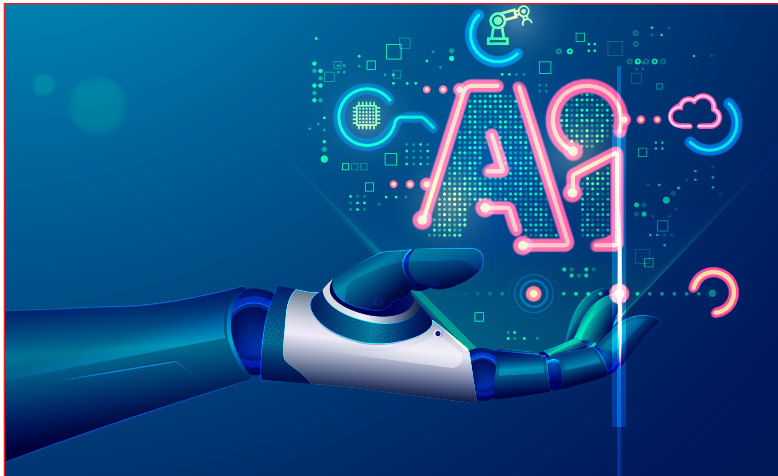
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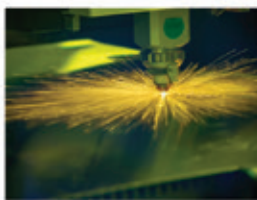
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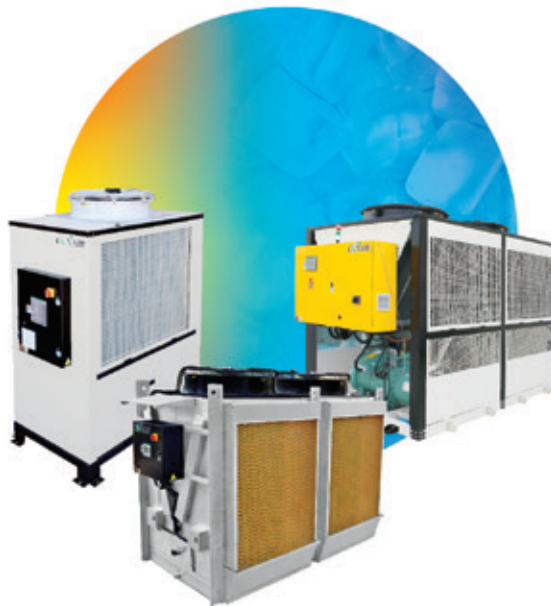
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Andreas Fritz joins CERATIZIT as President of the Regional Unit Asia Pacific

CERATIZIT, a global leader in Cutting Tools and Hard Material Solutions has announced the appointment of Andreas Fritz as President of the CERATIZIT Regional Unit Asia Pacific, effective May 1, 2023. In his new role, Fritz will oversee all CERATIZIT production and sales sites across Asia, as well as leading sales of branded cutting tool products throughout the region.

With over three decades of experience in leading positions in the cutting tool industry, Fritz brings a wealth of expertise to his new position. "Asia is already an enormously important market for CERATIZIT today and still offers a great deal of growth potential moving forward," said Andreas Fritz. He will play a pivotal role in further strengthening the company's presence in Asia and capitalising on the region's immense growth opportunities to further



establish the brand as a market leader. Beyond its strong position on the

Indian market, CERATIZIT has a very robust foothold in China and other Asian countries through the CB-CERATIZIT joint venture, a fact that is especially true for the Hard Material Solutions segment. The local know-how coupled with the sales and production network CB-CERATIZIT provides form a solid foundation to further drive growth in the region.

As part of the company's global effort to become the sustainability leader in the hard metal and cutting tool industry, Fritz will also lead the implementation of sustainable practices across CERATIZIT's operations in Asia.

"We are confident that Fritz will be a catalyst for CERATIZIT's expansion efforts in Asia on the way to becoming the third largest player in the carbide industry," stated Thierry Wolter, CERATIZIT Executive Board Member.

NCLAT clears path for AGI Greenpac's takeover of HNG

THE NATIONAL COMPANY LAW APPELLATE TRIBUNAL (NCLAT) has issued a significant ruling, dismissing the challenge by Independent Sugar Corporation Limited (INSCO) and other companies against the Competition Commission of India's (CCI) approval of AGI Greenpac's takeover of HNG under the Corporate Insolvency Resolution process.

This landmark judgment by NCLAT paves the way for a faster resolution of HNG under the IBC (Insolvency and Bankruptcy Code).

Back in March 2023, the CCI granted approval for AGI Greenpac's takeover of HNG after conducting a thorough assessment. Despite attempts to disrupt the resolution process, the NCLAT firmly rejected the contentions raised by INSCO and others, affirming the legitimacy of the process followed by the CCI.

AGI emerged as the highest bidder in September 2022 during the acquisition process of HNG, which was conducted by the Resolution Professional and Committee of Creditors led by the State Bank of India. The resolution plan put forth by AGI Greenpac received approval from 98 per cent of the Committee of Creditors in October 2022, leading to their successful bid.

This acquisition is expected to be beneficial for the supply chain of liquor, beer, food, and pharmaceutical sectors, as they rely on regular supplies of container glass bottles. HNG's glass manufacturing furnaces have been neglected for quite some time, with some of them even experiencing leaks, causing uncertainties in the supplies to major sectors.

Post-acquisition, AGI plans to make significant investments in refurbishing the furnaces and intends to preserve the livelihood of all the direct and indirect labour associated with its business.

AGI Greenpac is now hopeful that with the NCLAT's ruling, the approval of their resolution plan at NCLT Kolkata will expedite.



Deadline Extended for India's Ambitious IT Hardware Incentive Scheme

THE MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY (MEITY) has extended the date for accepting applications under the Production Linked Incentive (PLI) Scheme 2.0 for IT Hardware until August 30, 2023. This scheme, with a budgetary outlay of Rs 17,000 crore, was notified on May 29, 2023, through a comprehensive notification (No. CG-DL-E-30052023-246165). The PLI Scheme 2.0 aims to bolster and enhance the IT hardware manufacturing ecosystem in India.

For interested applicants, the Operational Guidelines for the Production Linked Incentive Scheme 2.0 for IT Hardware were officially notified on July 14, 2023.

To participate in the scheme, the application window has been opened, and the dedicated application portal is now live. Eligible applicants can register and submit their applications at: <https://2.pliithw.com/login>. This extension provides an opportunity for more stakeholders to participate and contribute to the growth and expansion of the IT hardware manufacturing sector in the country.



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1.00-2.00mm	101
2.01-3.00mm	100
3.01-4.00mm	100
4.01-5.00mm	100
5.01-6.00mm	100
6.01-7.00mm	100
7.01-8.00mm	100
8.01-9.00mm	100
9.01-10.00mm	100
10.01-11.00mm	100
11.01-12.00mm	100
12.01-13.00mm	100
13.01-14.00mm	100
14.01-15.00mm	100
15.01-16.00mm	100
16.01-16.75mm	75
16.76-17.50mm	75
17.51-18.25mm	75
18.26-19.00mm	75
19.01-19.50mm	50
19.51-20.00mm	50

Range	No. of Pins
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0.50-1.00mm	26
1.02-3.00mm	100
3.02-5.00mm	100
5.02-7.00mm	100
7.02-10.00mm	150
10.02-12.00mm	100
12.02-14.00mm	100
14.02-16.00mm	100
16.02-17.50mm	75
17.52-19.00mm	75
19.02-20.00mm	50
0.05mm Steps (Without Knob)	
0.50-2.00mm	31
2.05-7.00mm	100
7.05-12.00mm	100
12.05-15.00mm	60
15.05-18.00mm	60
18.05-20.00mm	40

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SCAN FOR PRODUCT CATALOGUE 2023

8,738 charging stations now operational in India, reveals data

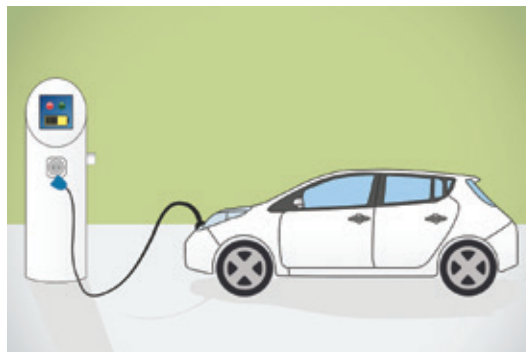
IN A SIGNIFICANT push towards electric mobility, the Government of India has taken commendable steps to encourage the adoption of electric vehicles (EVs) and establish a robust charging infrastructure.

Under Phase-II of the FAME-India Scheme (Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India), buyers of electric vehicles are incentivised with upfront reductions in purchase prices. These incentives, linked to battery capacity, amount to Rs 10,000/KWh for e-3W and e-4W vehicles, capped at 20 per cent of the vehicle cost. For e-2W vehicles, the incentive is set at Rs 10,000/KWh, with a cap of 15 per cent of the vehicle cost, effective from June 1st, 2023.

Additionally, the Government has

approved a Production Linked Incentive (PLI) Scheme for the manufacturing of Advanced Chemistry Cells (ACC) in the country. With a total outlay of Rs 18,100 crore for five years, this scheme aims to establish a competitive ACC battery manufacturing setup of 50 GWh capacity and includes 5 GWh of niche ACC technologies.

To further promote electric mobility, the FAME India Scheme was launched in 2015 on a pan-India basis. Currently, Phase-II of the scheme is in operation for a period of five years from April 1, 2019, with a total budgetary support of Rs



10,000 crore.

In terms of charging infrastructure, the country now boasts 8,738 operational Public Charging Stations (PCS) as of June 30, 2023, according to data available with the Bureau of Energy Efficiency (BEE), Ministry of Power.

India's flight to the future: 21 new Greenfield airports approved for rapid expansion

THE GOVERNMENT OF INDIA has given the green light to establish 21 new Greenfield Airports across the country. Out of these, 11 airports are already operational, including Durgapur, Shirdi, Kannur, Pakyong, Kalaburagi, Orvakal (Kurnool), Sindhudurg, Kushinagar, Itanagar, Mopa, and Shivamogga.

Additionally, the Ministry of Civil Aviation has introduced the Regional Connectivity Scheme (RCS) - UDAN (Ude Desh ka Aam Nagrik) to boost regional air connectivity and make air travel affordable for all. Under the scheme, 74 airports, including heliports, water aerodromes, and Greenfield airports, have been operationalised across the country since its inception in 2016.

Moreover, the Government has granted 'In-Principle' approval to transform seven Greenfield airports into international airports, which includes Mopa in Goa, Navi Mumbai in Maharashtra, Karaikal in Puducherry,



Jewar (Noida) in Uttar Pradesh, Dholera and Hirasar in Gujarat, and Bhogapuram in Andhra Pradesh.

The Ministry of Civil Aviation has taken significant steps to attract private investments for airport infrastructure development, allowing 100 per cent Foreign Direct Investment (FDI) in Greenfield and Brownfield airport projects. Various state governments have also undertaken Greenfield Airport projects under Public Private Partnership (PPP) mode with private investments.

This development marks a substantial boost to the aviation sector, improving air connectivity and facilitating economic growth across the country.

India Ranks 38 in World Bank's LPI

AN INTER-MINISTERIAL MEETING was convened by the Department for Promotion of Industry and Internal Trade (DPIIT) to review the implementation progress of the National Logistics Policy (NLP), marking its ten months since launch and revealing that India's ranking in the World Bank's Logistics Performance Index (LPI) has jumped six places from 44 in 2018 to an impressive 38 among 139 nations in 2023.

The National Logistics Policy, launched last year on September 17th, 2022, aims to complement PM GatiShakti and has witnessed substantial progress across key action areas, including digital integration, services improvement, state engagement, skill development, logistics performance index, logistics cost reduction, EXIM logistics, and more.

The meeting witnessed the active participation of eleven infrastructure and user Ministries, including Road Transport and Highways, Port Shipping and Waterways, Coal, Food and Public Distribution, Civil Aviation, Steel, Commerce, Fertiliser, Revenue, Skill Development and Entrepreneurship, and Power, along with the National Industrial Corridor Development Corporation Limited (NICDC).



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Two EV Manufacturers face suspension from FAME II Scheme

THE MINISTRY OF HEAVY INDUSTRIES introduced the Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (FAME India Phase II) Scheme with a budgetary support of Rs 10,000 crore, spanning five years, starting from April 01, 2019.

This phase is prioritising the electrification of public and shared transportation, aiming to encourage the adoption of 7,090 eBuses, 5 lakh e-3 Wheelers, 55,000 e-4 Wheeler Passenger Cars, and 10 lakh e-2 Wheelers through demand incentives, and further supports the establishment of charging infrastructure.

Since its initiation, FAME India



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Phase-II has facilitated the sale of approximately 7,40,722 electric two-wheelers as of 20th July, 2023.

Additionally, the Ministry sanctioned 6,315 electric buses to 65 cities/ STUs/ State Govt. entities for intracity operations. Notably, there is currently no proposal to launch FAME-III in the Ministry of Heavy Industries.

Despite the scheme's success, the Ministry of Heavy Industries has received

seventeen complaints regarding alleged misappropriation of subsidies by some electric vehicle manufacturers. These complaints pertain to the violation of Phased Manufacturing Programme (PMP) guidelines under the scheme. In response, the Ministry has referred all complaint cases to testing agencies for re-verification.

After thorough examination of reports concerning two OEMs, the models of these two manufacturers have been suspended from the FAME scheme.

Moreover, the processing of their pending claims has been halted until they provide sufficient evidence of compliance with PMP timelines.

Here are the two more MSMEs to get MeitY support under SemiconIndia DLI scheme

AT THE 2ND EDITION of the SemiconIndia 2023 conference in Gandhinagar, the Ministry of Electronics and IT (MeitY) announced its support for two more semiconductor design startups/MSMEs under the SemiconIndia futureDESIGN DLI scheme.

The selected startups are:

1. **Aheesa Digital Innovations:** Based in Chennai, Aheesa is a fabless semiconductor startup focused on Telecom, Networking, and Cyber Security domains. Their Aheesa Vihaan series of Networking SoCs (System-on-Chip) will be fully designed and developed in India. The first version, Aheesa Vihaan, is based on C-DAC's VEGA Processor Core using RISC-V architecture. They are also releasing the GPON/ EPON ONT reference platform (Aheesa Seshnag) for Indian Network and Telecom product manufacturers.
2. **Calligo Technologies:** Located in Bengaluru, Calligo is a fabless semiconductor startup catering to HPC, Big Data, and AI/ML segments globally. Their focus is on enhancing computing performance using Software and Hardware Acceleration techniques for HPC/ AI applications. CalligoTech is developing an accelerator product utilising a revolutionary number system called POSITs, which will



be integrated as an add-on to host servers running HPC/AI workloads. This innovation, called TUNGA (Technology for Unum-based Next Generation Arithmetic) Silicon, will power the PCIe-based Accelerator Card – UTTUNGA, providing accurate CPU capabilities for HPC/ AI Applications without requiring source-level modifications.

The DLI scheme, implemented by C-DAC, offers financial incentives and design infrastructure support at various stages of semiconductor development and deployment, including Integrated Circuits (ICs), Chipsets, System on Chips (SoCs), Systems and IP Cores, and semiconductor linked designs, over a five-year period.

With this recent announcement, a total of seven startups under the DLI Scheme will be actively engaged in chip and IP core development for automotive, mobility, and computing sectors.

Indian researchers discover a process to produce Green Hydrogen from Methanol

RESEARCHERS FROM THE INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH (IISER), Tirupati, have developed an environmentally friendly, energy-efficient process to produce hydrogen from methanol at ambient conditions.

Hydrogen, known for its clean energy potential, can be sourced from various methods, but the cost and environmental impact vary. Methanol, with its significant hydrogen content of 12.6 per cent, shows promise as a hydrogen source with a clean dehydrogenation reaction.

Using a commercially available ruthenium complex as a catalyst, the scientists achieved hydrogen generation from methanol through a clean chemical dehydrogenation reaction, making it a sustainable method for producing valuable chemicals and pharmaceuticals. The research, supported by the Science and Engineering Research Board (SERB), opens new avenues for fundamental research and industrial applications, facilitating the synthesis of bulk and fine chemicals.

Additionally, methanol's potential as a hydrogen carrier enhances its usefulness in synthetic organic chemistry, offering ease of storage and transportation.



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HOFFMANN GROUP COMMEMORATES ANNIVERSARIES OF BOTH GARANT AND HOLEX TOOLING BRANDS

As a part of celebrations, the leading supplier for quality tools and equipment will be unveiling exciting campaigns, anniversary products and special offers throughout the year

The Hoffmann Group is celebrating two brand anniversaries this year. The GARANT brand was launched by the Hoffmann Group fifty years ago and the HOLEX brand has rounded out the range for the past forty years. Together with over 500 other leading brands, GARANT and HOLEX give the range from the Hoffmann Group a special touch, as GARANT offers over 55,000 certified system tools for all application areas, workstations and storage and PPE, and HOLEX offers 17,000 simple yet clever product ideas. There will be exciting campaigns, anniversary products and special offers throughout the year.

The GARANT brand came into being back in 1973. After the successful market introduction of milling cutters, taps and jobber drills with an especially good price-performance ratio, the GARANT range was then gradually expanded with the goal of offering attractive alternatives across the entire range. Today, GARANT not only stands for top quality and a design that has won 55 awards, but also for its own product



world, in which the system concept is increasing in importance.

Borries Schüler, Director of Product Management & Engineering at Hoffmann SE, says: "The demands on GARANT have been constantly growing since the brand was founded. Under the umbrella of GARANT, we now maintain our high-performance product families, including

GARANT Master for high-performance cutting, which covers an extremely broad range of applications. We are also making our mark with product families such as GARANT Tool24 for issuing systems, the workstations and storage range GARANT GridLine and the upcoming GARANT Workwear range. The way GARANT products interact is increasingly clever and they work together as part of a system. They are therefore an integral part of our Hoffmann Group 'ecosystem for industrial production' that we are building up by 2030."

After GARANT stood the test and established itself in the higher end of the market, the Hoffmann Group decided in 1983 to continue its success in the field of standard requirements with the new HOLEX brand. HOLEX products are characterised by pure functionality with the best industrial quality and are both particularly easy to use and surprisingly economical. The Hoffmann Group thereby offers tools with the right design and quality for all production and workshop applications.

The Hoffmann Group develops products for GARANT in collaboration with users and suppliers and tests them in twelve individual technology centres. The Hoffmann Group is active globally as a retailer and the GARANT and HOLEX brands are available in over 50 countries. 🇪🇺



For more information, please check Hoffmann Group's Facebook page and brand sites www.garant-tools.com and www.holex-tools.com.

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By Nisha Shukla

“LLMS ARE NOT ONE-SIZE-FITS-ALL”

Mukesh Gandhi, Founder and CEO, Creative Synergies Group shares his insights on the intricate web of Large Language Models, highlighting that while it is the future, LLMs like ChatGPT are not the determinants of success.

How Large language Models (LLMs) can support automotive OEMs when applied with the right use case?

Like with most technologies, LLMs are not one-size-fits-all. So, despite their growing popularity, large language models can only work when leveraged in the right avenues.

Small-scale OEMs with limited financial resources, often focus on establishing a place in the market over investing in expensive language models. On the other hand, medium to large-scale OEMs, can leverage LLMs to enhance existing services.

An illustration of an LLM application is a virtual assistant integrated into vehicles, where users can inquire about their car's features, receive personalised navigation guidance, and engage in enjoyable conversations. Thereby, adding a desirable aspect to the driving experience. On the other hand, crucial functionalities like automatic repair detection, software updates, and fast battery charging are essential for vehicle performance.

LLMs also significantly impact customer support, by effectively handling inquiries and troubleshooting. They aid supply chain management by predicting demand and optimising inventories.

What is the scope of LLMs in the automotive industry and why are they necessary for the auto industry. Do you think the industry should weigh on its benefits before jumping onto the next big tech trend? Kindly comment.

LLMs offer innovative solutions to age-old challenges.



With LLMs' support, we assist our global automotive clientele in process optimisation and automation, automating repetitive tasks to free up human resources for more complex and skill-based work.



Mukesh Gandhi, Founder and CEO, Creative Synergies Group

They can analyse vast amounts of data, such as, preferences and driving habits, to offer personalised recommendations for services, entertainment, and more.

Now, should the industry weigh the benefits before hopping onto the next big tech trend? Absolutely. Despite its tremendous potential, there are challenges regarding safety.

Creative Synergies Group has been working with global automotive OEMs and tier one suppliers to help them manage their technological investments and adopt ones that are best suited for their products and business.

How is Creative Synergies Group leveraging LLMs to support their automotive clientele in their digital innovation needs?

Successful integration of LLMs in automotive manufacturing requires collaboration among data scientists, engineers, and domain experts.

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FOR DETAILS





We use LLMs to help automotive OEMs with supply chain management, predicting material needs, streamlining production, and ensuring quality assurance. This technology allows us to identify and address potential errors proactively.

Technology Streams enable us to understand our clients' requirements deeply and tailor appropriate solutions and technology stacks to achieve their objectives. We leverage LLMs to support automotive manufacturers in their digital innovation needs, streamlining processes, optimising efficiency, and driving innovation.

With LLMs' support, we assist our global automotive clientele in process optimisation and automation, automating repetitive tasks to free up human resources for more complex and skill-based work.

Additionally, we use LLMs to help automotive OEMs with supply chain management, predicting material needs, streamlining production, and ensuring quality assurance. This technology allows us to identify and address potential errors proactively.

How LLMs can assist in optimisation of automotive manufacturing processes?

Currently, over 54 per cent of OEMs in India have adopted AI into their workflow. This means that they are generating a large amount of unstructured data, which regular AI helps analyse. However, workers do not want to spend their time looking at a ton of data, and would rather have the summary ready for them, this is where generative AI shines.

LLMs can assist with quality control by identifying defects in the manufacturing process, enabling manufacturers to take immediate corrective actions, ensuring an output of high-quality products.

LLMs can also help identify the most efficient production workflows, leading to better resource utilisation, reduced waste, and improved overall productivity and quality.

Our deep-domain expertise allows us to extend our support globally to OEMs, who are looking to take their products and processes a step further with LLMs. Our proficiency in digital engineering, embedded systems and IoT allows us to cover various stages of production, providing end-to-end support to our customers.

How large language models aid customer service in the automotive industry?

Picture this, you have got a question about your car's features, instead of waiting on hold for a human representative, you can engage with a virtual assistant powered by a large language model.

Large language models also excel in sentiment analysis. They can scan through customer feedback, reviews, and social media posts to gauge customer satisfaction and sentiment. This feedback loop can help automotive companies stay in touch with their customers' needs and identify pain points.

How can automotive companies ensure the security and privacy of data when using large language models?

One thing to note is that safety measures need to be put in place before adopting language models, rather than after.

Access control is key. Limiting access to data and model outputs to only authorised is of importance. To mitigate the risk, businesses need to perform regular penetration testing or implement monitoring systems to detect unauthorised access attempts.

Employing encryption methods can help ensure that data remains indecipherable to unauthorised parties.

Further, companies must anonymise data before feeding it to LLMs. This 'privacy by design' principle is crucial to safeguard sensitive information.

How LLMs can create digital assistants that can help workers on the assembly line?

As futuristic as it may seem, digital assistants are getting widely adopted across factories. Recently, we, at Creative Synergies Group, developed an autonomous guided robot for one of our European clients.

But often, even before adopting digital assistants, OEMs can be apprehensive of the effect this may have on human jobs. If anything, it elevates the role of human workers, allowing them to shift their attention to more meaningful tasks.

Moreover, digital assistants store vast amounts of information about product specifications and safety guidelines, giving quick access to information and streamlining operations.

LLM-powered digital assistants can also provide on-the-job training. New workers can receive step-by-step guidance from the assistant, allowing them to quickly get up to speed.

We too help our automotive clientele learn about nuances of new technology based on our experience across diverse industries and their needs and interests,



Over the past few years, Indian automotive companies have actively embracing innovation technologies into their products and processes. In 2021 alone, the Indian manufacturing sector spent USD \$102 billion on manufacturing technology.

ensuring that their business continues to scale and thrive.

How intuitive are LLMs in gauging road conditions and reducing road accidents?

Gauging road conditions, especially in a tropical country like India, can be tricky. However, large language models can process years of weather and vehicle movement data, correlate it to road conditions, providing accurate predictions that have the potential to be incredibly intuitive in gauging road conditions and potentially reducing road accidents.

It can process real-time data from various sensors, such as traffic signals, and weather stations, thereby predicting traffic congestion and weather patterns. This information can then be used to provide real-time warnings to drivers about potential hazards.

These models can also be integrated into the advanced driver assistance systems (ADAS) to provide real-time feedback to drivers. They can analyse a driver's behaviour and alert them if they are exhibiting signs of fatigue or distraction, helping reduce any road-safety related risks.

At Creative Synergies Group, we have trained our language models with a slew of data that we have processed internally, helping ensure accurate predictions.

Despite its capabilities, it's important to remember that LLMs are not a standalone solution; especially when it comes to road safety.

What are the drawbacks of LLMs application in the automotive industry?

A concerning drawback of language models is the amount of power it consumes. The carbon dioxide-equivalent emissions produced by GPT-3 stood at 502 tonnes in 2022, the highest when compared to similar-parameter trained models.

Several research firms and businesses are looking into green AI, which could soon become a possible solution. Until then, however, automotive businesses can benefit from analysing their use-case before deploying LLMs into their operations.

At Creative Synergies Group, we assess the needs of our clientele before leveraging any technological solutions, and the same holds true for LLMs. If it is not going to add any real value to their operations

or products, we redirect them to the best suited technological solutions instead.

Where do Indian automotive companies stand in terms of tech adoption?

Over the past few years, Indian automotive companies have actively embracing innovation technologies into their products and processes. In 2021 alone, the Indian manufacturing sector spent USD \$102 billion on manufacturing technology.

The shift towards electric mobility is an example of tech adoption in India. Several Indian automotive companies have introduced electric vehicles (EVs) and are investing heavily in EV technology.

However, it's worth noting that the pace of tech adoption can vary among different companies. While some are leading the charge in embracing new technologies, others might still be in the early stages of adoption.


Despite challenges, Indian automotive are growing focus on research and development, collaboration with technology partners, and government support for innovation.

With the ongoing tech maturity, how will the responsibility of LLMs in the automotive industry evolve in the next five to ten years?

There will always be a better use-case for something that is already in use today. We are currently in the initial stages of advanced AI development and as the technology matures, it will become capable of a lot more complex functions.

As LLMs become more ingrained in critical systems like autonomous vehicles, the demand for understanding their decisions will only grow. As a result, we can expect to see language models that are more transparent and interpretable, striking a balance between complexity and explainability.

Technology advances will lead to more power-efficient hardware and innovative algorithms, enabling LLMs to run more efficiently even on resource-constrained automotive systems.

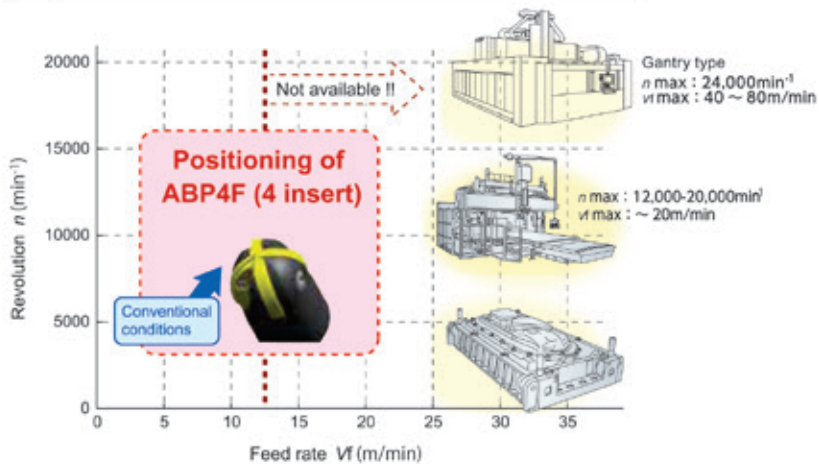
As LLM technology becomes widespread, we can anticipate cost-effective solutions. The industry will find ways to integrate these language models more seamlessly into existing systems, making their adoption more accessible for automotive companies of all sizes. 

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Example of large press die for automotive parts



Processing advantage of 4-flutes end mill

Figure : Finishing

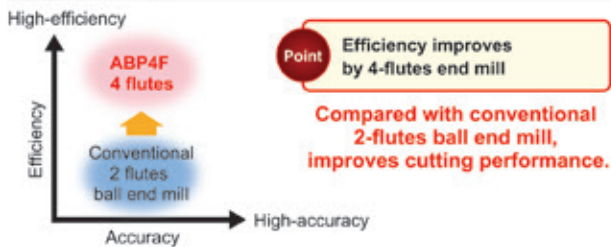
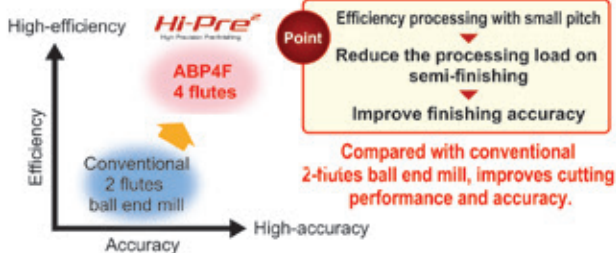


Figure : Semi-Finishing



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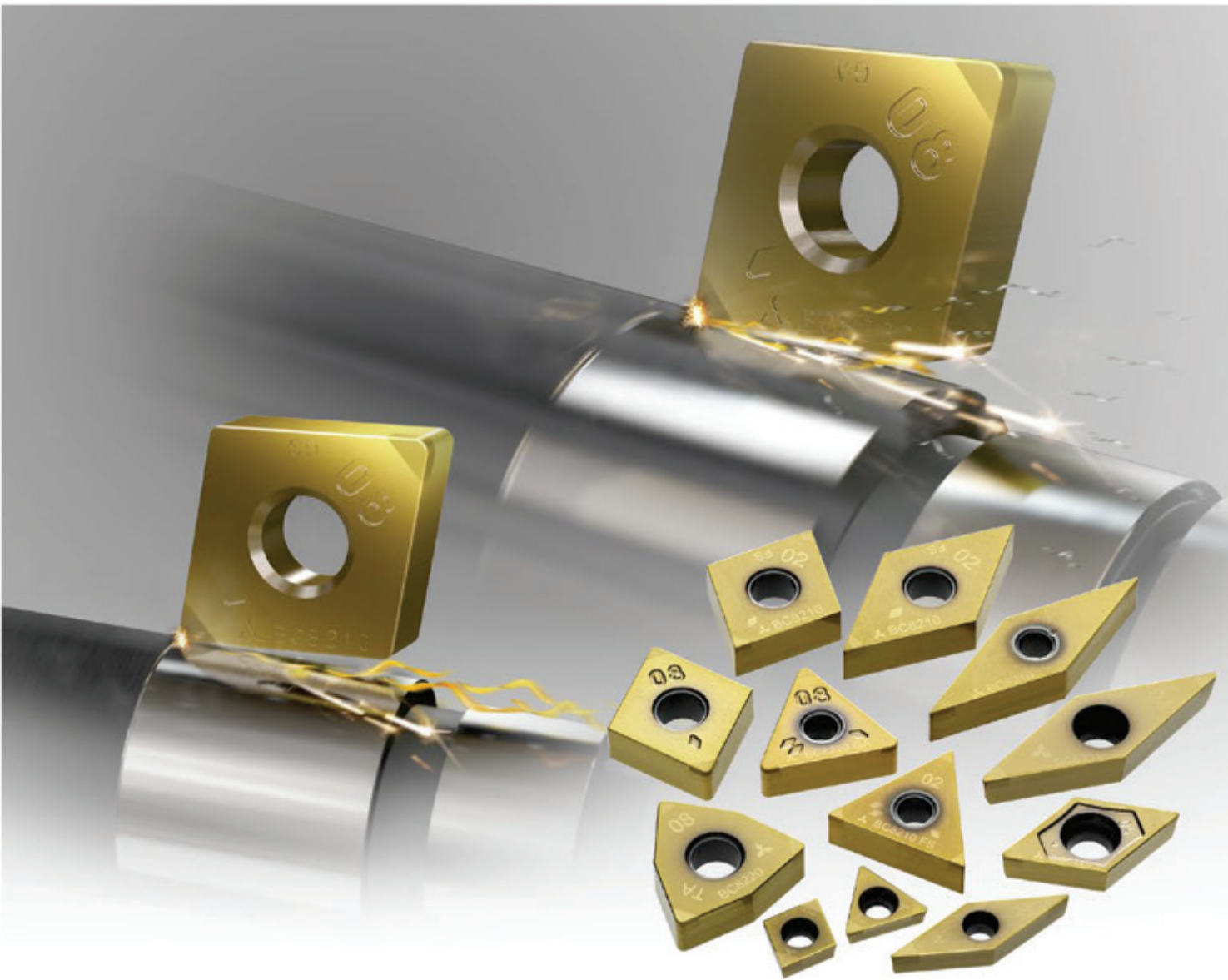


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THE E-COMMERCE BOOM HAS INCREASED THE DEMAND FOR WAREHOUSING INFRA

To increase our revenue by 15 per cent, we are expanding our warehousing network to reach new markets and cater to a broader customer base besides focusing on improving inventory management systems, says **Lancy Barboza**, Managing Director, Flomic Global Logistics

What are the key factors contributing to the current growth and development of the supply chain warehousing sector?

The warehousing sector in India is experiencing rapid growth and transformation. The implementation of the Goods and Services Tax (GST) has led to the consolidation of warehousing operations, resulting in larger and more efficient facilities. Additionally, the e-commerce boom and the rise of online retail



Lancy Barboza, Managing Director, Flomic Global Logistics

have increased the demand for warehousing space. The growing middle class and urbanisation have also contributed to the expansion of the warehousing sector. Furthermore, government initiatives like the “Make in India” campaign and the focus on infrastructure development have boosted the logistics and warehousing sector in India.

How has the warehousing industry been influenced by government policies, and to what extent has your company leveraged these policies to its advantage?

India’s government policies, such as the implementation of the Goods and Services Tax (GST) and the “Make in India” campaign, have had a significant impact on the warehousing industry. These policies have resulted in the consolidation and modernisation of warehousing operations, leading to larger and more efficient facilities. Flomic Global Logistics Ltd, a leading logistics company, has capitalised on these policies by investing in state-of-the-art warehousing infrastructure, expanding its warehousing capacity, and leveraging technology to improve efficiency and visibility in its operations. We have aligned their services with the changing needs of the industry, offering integrated warehousing solutions



India’s government policies, such as the implementation of the Goods and Services Tax (GST) and the “Make in India” campaign, have had a significant impact on the warehousing industry. These policies have resulted in the consolidation and modernization of warehousing operations, leading to larger and more efficient facilities.

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Flomic currently devises a competitive pricing strategy that takes into consideration various factors such as market conditions, customer requirements, and cost analysis. They aim to offer cost-effective solutions to their customers while ensuring profitability. By conducting regular market research and analysis, we adjust their pricing accordingly to stay competitive in the industry.

and value-added services to meet the growing demands of e-commerce and online retail.

The freight forwarding industry is known for being highly fragmented and unorganized. How does Flomic Global Logistics plan to navigate and overcome these challenges?

We have plans to navigate and overcome the challenges of the fragmented and unorganised freight forwarding industry by implementing a strategic approach. We focus on streamlining their operations and creating a robust network of reliable partners. By investing in technology and automation, we aim to provide end-to-end visibility and transparency to our customers, ensuring efficient and timely delivery of goods. Additionally, we at Flomic Global Logistics aim to build strong relationships with customers and cater to their specific needs. Through these measures, we aim to differentiate themselves and establish a strong presence in the highly competitive freight forwarding industry.

You announced expansion into Maharashtra, Delhi NCR, Bangalore and Chennai. Are there any specific technologies or strategies that you will implement to enhance warehouse operations and efficiency?

We have plans to implement advanced technologies and strategies to enhance warehouse operations and efficiency in their expansion locations. We will utilise state-of-the-art Warehouse Management Systems (WMS) to optimise inventory management and streamline processes. Additionally, we will incorporate automation technologies, Internet of Things (IoT) devices to improve order picking, packing, and tracking. These technological advancements will enable real-time monitoring and data analysis, leading to improved accuracy, speed, and overall efficiency in warehouse operations. As always, Flomic Global Logistics aims to provide its customers with seamless and cost-effective warehousing solutions through these strategic implementations.

Could you share some insights into the pricing strategies that Flomic Global Logistics is currently devising?


Flomic currently devises a competitive pricing strategy

that takes into consideration various factors such as market conditions, customer requirements, and cost analysis. We aim to offer cost-effective solutions to their customers while ensuring profitability. By conducting regular market research and analysis, we adjust their pricing accordingly to stay competitive in the industry. We also strive to provide transparency in their pricing structure, allowing customers to understand the value they receive for their investment in their warehousing services.

How do you believe the implementation of ESOPs will benefit the company and its employees in the long term?

Our company believes that giving Employee Stock Ownership Plans (ESOPs) can be beneficial for both the company and its employees in the long run. ESOPs can incentivise and motivate employees by aligning their interests with the success of the company. It can foster a sense of ownership and loyalty among employees, leading to increased productivity and commitment. Furthermore, ESOPs can also provide a tax-efficient way for the company to reward and retain talented employees. Overall, Flomic Global Logistics sees ESOPs as a valuable tool for promoting employee engagement and long-term company growth.

Flomic Global Logistics expects its supply chain warehousing revenue to increase by 15 per cent in FY24. What strategies are you implementing to achieve this growth target?

To achieve a 15 per cent increase in supply chain warehousing revenue, we are enhancing our customer acquisition and retention efforts by offering competitive pricing and solutions. Additionally, investment in technology and automation to streamline warehouse operations, improve efficiency, and reduce costs. We are also expanding our warehousing network to reach new markets and cater to a broader customer base, besides focusing on improving inventory management systems and processes to minimise stock-outs and optimise warehouse space utilisation. Lastly, we are also strengthening relationships with suppliers and negotiating favourable terms to maximise profitability. 

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FROM CONVENTIONAL TO SMART: HERE'S HOW DIGITAL TECHNOLOGY IS TRANSFORMING MANUFACTURING LANDSCAPE

By Nisha Shukla

Digital manufacturing is revolutionising the production landscape and fostering substantial growth across industries. By leveraging cutting-edge technologies such as Artificial Intelligence, Internet of Things (IoT), and Advanced data analytics, manufacturers are optimising processes, enhancing their product quality, and streamlining their operations. As digital manufacturing continues to evolve, it surely promises to reshape the industry, unlock new opportunities, and propel businesses towards growth in the modern era of Industry 4.0.

India's manufacturing sector is undergoing a profound transformation with the advent of smart and digital manufacturing technologies. As the country aims to become a global manufacturing hub, these advanced technologies are playing a pivotal role in revolutionising traditional manufacturing practices, enhancing productivity, and driving economic growth.

Digital technologies such as automation, robotics, IoT and artificial intelligence (AI) are transforming the manufacturing landscape and are now making inroads into the once conventional facilities. According to Rockwell Automation's 8th annual 'State of Smart Manufacturing Report,' India boasts the largest number of manufacturing organisations making substantial investments in technology. The study also highlighted that 57 per cent of companies are using

smart manufacturing solutions, while 59 per cent of companies intend to adopt digital technologies within the next year. Besides, several companies in India are embracing digital technologies to make their manufacturing more productive and efficient.

Furthermore, the report also delved into the top five technologies the manufacturers invested in and yielded the highest returns over the past year. While process automation secured a remarkable 33 per cent return on investment; cloud computing and software as a service (SaaS), on the other hand, stood strong with a solid 30 per cent return on investment (ROI). Industrial Internet of Things (IIoT)/ Internet of Things (IoT) delivered 25 per cent ROI; machine integration garnered 24 per cent, whereas Machine learning/artificial intelligence delivered 23 per cent ROI.

While these new-age technologies are



revolutionising production processes and garnering ROIs, we also look at how these technologies are disrupting the manufacturing industry.

WHAT'S DISRUPTING THE MANUFACTURING INDUSTRY?

Digital transformation in manufacturing presents a plethora of opportunities for manufacturers to thrive in the modern landscape. Several factors such as changing customer preferences, emerging distribution methods, geopolitical uncertainties, supply chain challenges, and the implementation of Environmental, Social, and Governance (ESG) regulations has led to emergence of new opportunities for the manufacturing sector in terms of revamping and introducing innovative business models.

According to the PwC India's Reimagining Digital Factories of Tomorrow survey, manufacturing companies are now adopting one standardised digital solution across plants.

The survey also highlighted that, on basis of the global trends, several Indian manufacturing firms are

now implementing advanced technology solutions such as additive manufacturing, analytics, artificial intelligence (AI), augmented reality (AR)/ virtual reality (VR), and smart devices.

Given the demand for digital technologies is accelerating, we spoke to industry leaders and asked them about how these digital technologies are disrupting the manufacturing sector:

Artificial Intelligence/ Machine Learning: According to PwC India's recent survey, there is a noticeable upward trend among Indian companies in embracing analytics and artificial intelligence (AI), with the current adoption rate reaching 54 per cent.



**Nitin Bakshi, Vice President,
Global Supply Chain-
India, MEA, SAM & Pacific,
Schneider Electric**



**Nitin Kalla, Founder and
MD, EXZOD India**

When asked about how AI is transforming the manufacturing industry, **Nitin Bakshi, Vice President, Global Supply Chain- India, MEA, SAM & Pacific, Schneider Electric** said, "Artificial intelligence (AI) and machine learning (ML) are playing vital roles in analysing data to optimise processes, predict outcomes, and enable autonomous decision-making." He further noted that manufacturers are employing these technologies for quality control, predictive maintenance, and supply chain optimisation.

According to Nitin Kalla, Founder and MD, EXZOD India, the biggest asset for a company going digital is the trove of information that they possess and it's difficult for humans to decode them easily and accurately. "Data quantity and Computing power are thus the two significant reasons why manufacturers should deploy AI-led technologies," he added.

Ranjit Patil, COE Head - Manufacturing Operations Management, Tata Technologies shared his perspective on how AI is helping in optimising supply chains. According to him, "digital technologies



are enabling in improved supply chain management through enhanced visibility, demand forecasting, and inventory optimisation, resulting in reduced costs and improved customer satisfaction.” He also noted that manufacturers are now leveraging data analytics and machine learning algorithms to gain valuable insights and make data-driven decisions, optimising production processes and minimising waste.

Apart from data driven decision-making and supply chain optimisation, AI is also analysing data from sensors and machines to predict potential breakdowns and maintenance needs, enabling proactive maintenance and minimising downtime.

As per **Nitin Bakshi**, by leveraging IoT devices, sensors, and connected machines, one can collect machine data for analytics and predictive models. “This will enable in early fault detection, anticipating equipment failures and scheduling maintenance activities proactively,” he added. He further noted that condition-based maintenance schedules are based on actual equipment condition, optimising component lifespan, and minimising unnecessary maintenance.

Bakshi also underscored the importance of predictive maintenance tools in streamlining operations. According to him, by implementing Advance EcoStruxure and Aveva Advanced Analytics tools, Schneider Electric has enabled predictive maintenance in their manufacturing facilities, thereby reducing unplanned downtime, optimising spare costs,



Ranjit Patil, COE Head - Manufacturing Operations Management, Tata Technologies



Deepak Keni, Executive Vice President – Digital, Strategy and Agtech of Deepak Fertilizers & Petrochemical Ltd

and ensuring efficient operations.

Talking about its benefits, **Rajesh Parameswaran, Executive Director & Industrial Sector Leader - India/South Asia, IBM Consulting** said, “Predictive maintenance solutions predict machine behaviour on basis of historical trends and health indicators in real time. It primarily involves deploying sensors and capturing data and using it for decision making in any meaningful way.”

He further notes that “with data, maintenance managers can fix the problem without losing equipment utilisation, while saving cost on scheduled maintenance. Besides, asset performance management solutions also provide potential failure root causes saving lengthy debugging procedures.”

THE RISE OF ADDITIVE MANUFACTURING

Additive Manufacturing (3D printing) is a game changer for the manufacturing industry as it allows for flexibility of supply chains without physical constraints

of location and proximity. Commenting on its benefits, **Deepak Keni, Executive Vice President – Digital, Strategy and Agtech of Deepak Fertilizers & Petrochemical Ltd** said, “Additive manufacturing allows for easy portability and customisation of designs as per the product and process needs and allows for easy manufacturing of one unit or millions of units without heavy investment in infrastructure and immovable assets. The assembly line and manufacturing processes

“COMPATIBILITY WITH DIFFERENT MANUFACTURING PROCESSES AND SOFTWARE PLATFORMS IS PARAMOUNT”

What are the new digital (automation and robotic) technology solutions you offer to your clientele? How is it helping them to revolutionise their manufacturing process and output quality?

We employ digital twin technology, which offers our clientele a revolutionary solution for streamlining their manufacturing processes. By creating a virtual replica of their physical manufacturing systems, including machinery and processes, we enable them to simulate and test changes without any operational downtime. This virtual simulation capability empowers manufacturers to make informed decisions, optimise their processes, and implement improvements rapidly. Traditionally, making changes to manufacturing operations could result in extensive downtime, lasting several months. However, with the adoption of digital twins, this downtime is significantly reduced to a mere 2-3 weeks. By leveraging virtual simulations and implementing virtual changes, our clients can fine-tune their processes, identify bottlenecks, and enhance overall efficiency.

The implementation of digital twins also allows for real-time monitoring and data analysis, providing actionable insights into process performance. This comprehensive understanding enables manufacturers to proactively address potential issues and make data-driven decisions for continuous improvement.

Do you think manufacturers are still hesitant in integrating new age technologies to their facilities? How do you assure them about its benefits and safety?

Manufacturers' hesitation in adopting new-age technologies, like automation, stems from factors such as limited awareness of ROI, uncertainty about benefits, and budget constraints. To address these concerns, we offer comprehensive support by calculating and demonstrating ROI specific to their operations. Our team conducts thorough analysis, emphasising potential gains and cost savings. For those seeking a safer work environment, we emphasise enhanced safety measures rather than ROI. We assure manufacturers of our technologies' adherence to safety standards, providing documentation, certifications, and client testimonials. Our tailored approach aims to alleviate hesitations and empower manufacturers to embrace new technologies for improved facility operations.

How do you ensure compatibility with different manufacturing processes or software platforms?

As system integrators, our solutions are highly customisable to meet specific client requirements. We ensure seamless integration with existing systems and processes without disruption. Considering limitations such as space, footprint, and available resources, we design tailored solutions that address client needs while working within



Mahesh Waghle, Director and Co-Founder, Cybernetik

constraints. Compatibility with different manufacturing processes and software platforms is paramount. Through thorough assessments and robust communication, we seamlessly integrate our solutions, optimising efficiency. Our focus is on delivering customised solutions that drive operational success while considering client limitations and objectives.

What advanced technologies do you incorporate into your automation and robotic solutions? How does it help manufacturers to streamline their production operations?

Our automation and robotic solutions are at the forefront of incorporating advanced technologies that are revolutionising the manufacturing industry. The advent of Industry 4.0 has paved the way for the integration of artificial intelligence (AI), machine learning (ML), virtual reality (VR), the industrial internet of things (IIoT), predictive data analytics, augmented reality (AR), and more.

These technologies bring significant benefits to manufacturers, enabling them to streamline their production operations. By leveraging AI and ML, our solutions facilitate real-time data analysis, allowing manufacturers to make informed decisions, optimise processes, and identify areas for improvement. VR and AR technologies play a crucial role in training, maintenance, and troubleshooting. Manufacturers can use VR simulations for immersive training experiences and AR overlays for real-time guidance in complex tasks.

A notable highlight of our solutions is the inclusion of collaborative robots, or cobots, which work alongside human workers in a shared workspace. These cobots enhance efficiency and precision while ensuring a safe working environment. By automating repetitive tasks, they free up human workers to focus on more complex and value-added activities.

Are your automation solutions scalable to accommodate future growth or changes in production requirements?

Our automation solutions are designed with scalability in mind, allowing for future growth and changes in production requirements. By adopting a modular approach, we ensure that our solutions can be easily expanded or modified as needed. From the initial design and construction phase, we factor in the potential for scalability, enabling the addition of more robots, conveyors, or other components to increase throughput in the future.

However, in cases where scalability was not considered during the initial implementation, the feasibility of expanding the line depends on the specific solution. Nonetheless, for most of our solutions, scalability remains possible even after the initial deployment. We prioritise flexibility and adaptability to accommodate our clients' evolving needs and ensure that our automation solutions can grow and adapt alongside their business.

“SUPPLY CHAIN VISIBILITY AND REAL TIME COLLABORATION CONTINUES TO DRIVE BUSINESS VALUE FOR VALUE CHAIN PLAYERS”

What are the opportunities associated with digital transformation in manufacturing?

How can manufacturers make the most of it?

Digital transformation trickles down data led tactical decision making down the hierarchy giving more time to supervisors and plant heads to drive strategic change. Also, workforce shortage on shopfloor during pandemic and ageing manufacturing employee base has re-emphasised the need for human agnostic and autonomous processes.

Digital transformation offers benefits that align on two different fronts: On one hand, manufacturers can drive ongoing operational improvements, including increasing production throughput, improving asset utilisation, and enhancing product quality. On the other hand, they also have an opportunity to create greater customer value by revolutionising manufacturing capabilities, delivering design improvements, and optimising service.

Having said that, there's no one size fit all. Manufacturers need to take an extremely objective view of the business value they want to drive with digital transformation in an age of rapid disruptive technology changes.

How digital manufacturing technologies are enhancing supply chain management for your customers?

The pandemic caused a major supply chain disruption primarily for manufacturers dependent on partners across countries and continents. Supply chain visibility and real time collaboration continues to drive significant business value for value chain players. A digital supply chain is data driven and digitally executed to create transparency, support advanced planning, predict demand patterns, and leverage asset availability. It's predicated on real-time access to data across an enterprise and its collaboration partners, and on the use of advanced technologies. It integrates suppliers, manufacturers, and customers to help create an end-to-end view.

For instance, automotive OEMs are getting to use traceability across the supplier network to help ease recall and warranty processes. Food chains were early adopters of provenance use cases to ascertain food quality and assuage ethical sourcing concerns. Further, data driven



Rajesh Parameswaran,
Executive Director &
Industrial Sector Leader
- India/South Asia, IBM
Consulting

insights and advanced analytics are enabling scenario planning and forecasting use cases to absorb market uncertainty to some extent.

How do you ensure your technology remains in-sync with the latest industry trends and scalable to accommodate future growth or changes in production requirements?

IBM Consulting has IBM Institute for Business Value (IBV) which collaborates with industry professionals, leading-edge clients, academics, and a wide range of IBM consult-

ants and subject matter experts around the world. IBV uses data-driven research and expert analysis to deliver thought-provoking insights to business leaders about emerging trends, opportunities, and challenges. IBV's thought leadership reports offer prescriptive recommendations to address the most pressing industry and marketplace challenges and opportunities that will determine future organisational success. This insight feeds into IBM portfolio for us to stay responsive to market trends.

Do you have a research and development team dedicated to innovation?

IBM Research is one of the largest tech innovation entities that has always been ahead of the curve in expanding the frontiers of innovation. Quantum computing, adoption of 5G into the connected ecosystem of manufacturing, use of generative AI with watsonx platform are areas of focus of ongoing research programs. We are actively working on solving some serious problems mankind has ever faced from sustainability standpoint as well.

How do you determine the cost of your automation solutions? Kindly provide an estimated return on investment (ROI) that clients can expect from your products and services.

Cost of our solutions is driven by value we create for our clients. While the business model may vary on case-by-case basis, our fundamentals are strongly rooted in enabling clients achieve their desired outcomes. ROI varies between 1.5 to 3 years depending on organisation's digital maturity and problem at hand.

can be condensed with a high degree of customisation and offers flexibility to produce parts or entire components on demand.”

He further noted that retailers and service units can also become manufacturers with this technology, allowing the company to provide the best value and services to customers, while the cost of storage and inventory/spare part is drastically reduced.

According to Ranjit Patil, “With 3D printing,

the manufacturers can create complex and intricate designs, reduce material usage, and eliminate the need for assembly processes.”

This (additive manufacturing) technology has opened new possibilities in sectors such as, healthcare, aerospace, automotive, and consumer goods. “It allows for rapid prototyping, small-scale production, and customisation of products to meet specific customer requirements. Additionally, 3D printing has the

potential to decentralise manufacturing, reduce supply chain complexities and enable localised production,” he added.

5G AND SMART MANUFACTURING

The rollout of 5G in India is said to play a crucial role in driving the industry 4.0 transformation, and the manufacturers can leverage this technology to boost their competitiveness. According to Bakshi, the Indian manufacturing sector is set to benefit from 5G due to its faster and more reliable connectivity, real-time data exchange, and advanced tools like IoT and AI.

He further noted that “with 5G, manufacturers can achieve seamless connectivity across their production systems, enabling better control, predictive maintenance, and optimised resource utilisation.” “This technology empowers them to gather valuable data through IoT devices and sensors, leading to process optimisation and improved quality control,” Bakshi added.

Deepak Keni believes that the rollout of 5G technology in the market will not only enable faster and deeper communication and digital connectivity between people, but it will also pave the way for enhanced communication between machines through IoT (Internet of Things) and IIoT (Industrial Internet of Things). “This will further allow low latency and high reliability of communications between machines; and people + machines; allowing for reliable and confident use of real time critical communications over 5G network as mandated by Industry 4.0 use cases,” he added.

Essentially, “all devices on the manufacturing premises connected through sensors and IoT can communicate seamlessly, securely over 5G networks; allowing manufacturers to create a competitive advantage with increase in connectivity and speed of communications; allowing for more flexibility in production,” Keni said, while talking about the perks of 5G technology.

For Nitin Kalla, the fifth-generation mobile network, is a faster and more powerful and, capable of handling the full integration of the IoT in a smart factory. He affirms that 5G has finally entered the realm of manufacturing and some companies in advanced economies are already testing it. “Not only has it cut production time but is also a sustainable way of production as downtime is low,” Kalla added.

DIGITAL TWINS

Digital twin technology is rapidly evolving and set to make a profound impact on the manufacturing sector. Digital twins enable real-time monitoring, simulation, and optimisation of manufacturing processes, leading to improved productivity, reduced downtime, and

enhanced product quality.

According to Patil, the adoption of Digital twin technology is expected to increase as manufacturers are realising its benefits. He further noted that “with advancements in IoT, AI, and data analytics, digital twins will become more sophisticated, providing a holistic view of the manufacturing environment, and enabling predictive maintenance and optimisation. As a result, manufacturers can expect increased efficiency, cost savings, and accelerated innovation in the days to come.”

As per Nitin Bakshi, Digital twin technology, such as the EcoStruxure Machine Expert Twin, enable manufacturers to create virtual models of machines, allowing for efficient design, commissioning, and testing before the physical construction begins. He further noted that “Technologies such as this offer several benefits including reduced commissioning time, faster time-to-market, savings on quality costs and improved machine performance.”

Bakshi goes on to suggest that “with the continuous advancement and seamless integration of digital twin capabilities into manufacturing processes, one should anticipate a surge in their adoption and utilisation across diverse industries.” Moreover, “digital twins hold the potential to empower agile production, enhance productivity, and offer greater flexibility in both design and operations,” he added.

CLOUD AND EDGE COMPUTING

Cloud and Edge Computing is transforming data storage, processing, and analysis. Cloud platforms offer scalable storage and computational power for easy data access and collaboration. “Edge Computing brings computing closer to data sources, enabling real-time analysis. Manufacturers are leveraging these technologies for data management, remote monitoring, and faster decision-making,” said Nitin Bakshi, while commenting on its application in the manufacturing industry.

IOT, IIOT & SUPPLY CHAIN

IoT (Internet of Things) and IIoT (Industrial Internet of Things) have had a profound impact on the supply chain in the manufacturing industry. These interconnected technologies have revolutionised the way manufacturers manage their supply chain processes, leading to increased efficiency, visibility, and responsiveness.

According to Deepak Keni, “Digital manufacturing technologies including IoT and IIoT along with integration of IT and OT technologies are creating an agile and flexible supply chain which is highly efficient and responsive to both internal and external factors.” He further noted that all the manufacturing processes

“WE AIM TO SIMPLIFY THE MANUFACTURING INFRASTRUCTURE WITH ‘UNIVERSAL FACTORIES’ CONCEPT”

What are the new digital (automation and robotic) technology solutions you offer to your clientele?

Currently, CynLr is actively engaged in reference design collaborations with prominent manufacturing industries and giants within the automotive and machine tool industries. Together, we are focused on solving the hardest automation problem that demands very high dynamism and adaptability – part-mating and assembly. With our proprietary vision and grasp technology, our objective is to empower robots to be as dynamic and versatile as humans, when it comes to performing tasks involving object manipulation.

We firmly believe that achieving this goal will act as a catalyst for disrupting the manufacturing, and warehousing industries. By replacing the complex variety of machinery for every task to a uniform “standardised” visual robot across all tasks in a line, we aim to simplify the manufacturing infrastructure. This concept is known as ‘Universal Factories’. The factories of the future will be characterised by their adaptability, streamlined operations, and cost-effectiveness. We envision that our visual object technology will bring about transformative changes in the functioning of universal factories while revolutionising traditional processes and enhancing overall efficiency and productivity of the businesses.

Do you think manufacturers are still hesitant in integrating new age technologies to their facilities?

Surprisingly manufacturers are investing heavily on automation and more importantly on advanced manufacturing motivated by onshoring. The perspective on manufacturing changed after Covid, especially. When supply chains were disrupted, people realised that manufacturing is the ultimate backbone of any economy and building capacity is extremely important. Recognising this potential, conglomerates worldwide have already embraced new-age technologies and embarked on the path of smart manufacturing - integrating automation, robotics, artificial intelligence (AI), and the Internet of Things (IoT). However, in India, a significant number of manufacturers still face challenges in incorporating automation into their business models and struggle to transition into the new industrial revolution driven by automation.

We think that it is the perception problem that keeps manufacturers from automating their operations. Robots are universally considered to be a tool to cut/reduce costs. Instead, it should be viewed as tools for value creation. It's perceived otherwise because value is associated with the produce and the scale of produce, while manufacturing is seen as the cost for the produce. That's because



Gokul NA, Founder, CynLr

the whole manufacturing infrastructure is often and always rigidly built to produce a specific product. Instead, if the factory could produce even a new design of product out of the same machinery, the capital expense on the machinery would suddenly be treated as investment, instead of cost and manufacturing will become the centre of value creation.

Our customer base mostly includes specific sectors in manufacturing such as automotive, electronics, white goods, aerospace, jewellery, some use cases of e-commerce warehousing and logistics. Customers who are looking to automate previously non-automatable tasks can do so using CynLr's visual intelligence. Our platform enables simplified deployment with no need for hardware customisations from task to task or object to object. CynLr's robots can be deployed 70 per cent faster with 30 per cent lower costs. The biggest benefit is that they are adaptable and not tied to a specific product.

How do you ensure compatibility with different manufacturing processes or software platforms?

Our groundbreaking visual object intelligence platform empowers industrial robotic arms to see, comprehend, and manipulate objects in random and unstructured environments, offering a comprehensive solution for automation and object handling.

So, our product is highly dynamic and adaptive. It obsoletes the need for customised solutions. Customers don't have to deal with learning 30+ technologies, designing complex custom design engineering and a long strenuous cycle of research and validation for even simple tasks. We ensure this by using cutting-edge techniques such as Auto-Focus Liquid Lens Optics, Optical Convergence, Temporal Imaging, Hierarchical Depth Mapping, and Force-Correlated Visual Mapping in our hardware and algorithms. These AI and Machine Learning algorithms enable robotic arms to perceive and generate rich visual representations, allowing them to manipulate and handle objects based in any environment.

Kindly provide an estimated return on investment (ROI) that clients can expect from your products and services.

There are well established benchmarks to determine the cost of automation, especially when they are seen as the direct cost replacement for labour wages. But that's hardly ever the reason for industries to automate. The cost of non-synchronous production that leads to unpredictable output, demanding heavier stocking, complex inspection process and the cost of recall in the automotive industry are the major drivers of automation.

So, the premium of the solution typically varies based on the criticality and impact of that task to be automated. The cost dynamics change entirely when we automate an entire line. The repercussions of automating a whole line are hierarchical and the cost impact is deeper. That said, globally a typical industrial robot today costs between \$100K to \$150K. Since we were productising, we worked backwards from this number to build the product, so that it becomes a no-brainer for the customer especially when we simplify the hardships of customisation.

Most of the conventional robots involve 70-80 per cent upfront costs for customised end-of-arm-tooling, part-specific structuring mechanisms, tedious calibration,

custom software development, and systems integration. The reusable component, i.e., the robot itself, comprises only 20-30 per cent of the cost. To get a realistic ROI, the manufacturers should expect at least 2-3 years ROI and when we include the time taken for designing and building the custom solution the ROI period increases. Also, with today's shrinking product life cycles, even a 2-3-year ROI has become harder to achieve except in specific run-of-the-mill automation.

CynLr's robotic arms are adaptable and versatile, so the robot itself can be considered as an essential asset which ensures a 1-2-year ROI, irrespective of product type, design, or customer.

across the supply chain can be digitised for real time visibility and increasing process efficiency.

"The traceability from procurement to finished goods, transportation/ warehousing, point of sales and consumption is significantly enhanced with advancements in sensor technology and communications technology. Supply chain command centres are very common which provide improved end to end visibility, traceability and efficient management and control of supply chain operations," Keni added.

Sharing his viewpoint, Patil said, "Real-time data analytics, IoT devices, and automation provide visibility into inventory levels, production processes, and potential bottlenecks." Further he stated that the traceability is enhanced by capturing information at every stage, ensuring compliance and quality. Automation streamlines tasks like order processing and inventory management, reducing errors and improving efficiency.

CHALLENGES

Digital manufacturing offers numerous benefits, but it also comes with its fair share of challenges. Some of the key challenges in digital manufacturing include:

Integration Complexity: Integrating various digital technologies, such as IoT devices, cloud computing, AI systems, and data analytics, can be complex and challenging. Ensuring seamless communication and compatibility among these technologies is crucial for their effective functioning.

According to Ranjit Patil, "Integrating automation and robotics into the manufacturing process involves overcoming technical challenges such as establishing seamless communication protocols between the master programmable logic controller (PLC), Message Queuing Telemetry Transport (MQTT) broker, cobot, and Autonomous Mobile Robot (AMR)."

Besides, he also highlighted about addressing compatibility issues, adapt the physical layout to accommodate the new equipment, and ensure safety measures for human-robot collaboration. To address these issues, says Patil, "Tata Technologies implemented advanced algorithms, motion planning

techniques, and continuous monitoring, wherein they optimised the system's programming and coordination to enhance efficiency and minimise cycle times." However, through careful planning, rigorous testing, and technical expertise, they successfully integrated automation and robotics into their Smart Manufacturing Lab.

Data Security and Privacy: With the increased use of connected devices and data sharing, manufacturing facilities face heightened concerns about data security and privacy. Protecting sensitive manufacturing data from cyber threats and unauthorised access is paramount.

According to Nitin Bakshi, "Potential vulnerabilities in this era include increased attack surfaces due to IT and operational technology convergence, targeted attacks on IoT endpoints, and the risk of disruption or data theft."

However, to protect sensitive data, intellectual property, and critical manufacturing systems, Bakshi suggests a few best practices including regular patching to address known vulnerabilities, mapping out normal behaviour across industrial infrastructure to detect anomalies, adopting a Défense in Depth approach with layered protection, and fostering collaboration between IT and OT experts.

To mitigate cybersecurity risks, Patil, too suggested a host of measures including robust network security measures, regular assessments and audits, strong access controls, employee education, software updates, data backup, and incident response planning.

Missing Intelligence: Trilogy of Lean, automation and digital go together in all process improvement programs. Automation or digitalisation of sub-optimal processes can impede full realisation of business value.

"While production automation and robots have been part of manufacturing for decades, their limited success can be attributed to missing intelligence," says Rajesh Parameswaran. Typically, "manufacturing automation is based on control systems and programming languages that are not fully capable of adjusting to complex changing conditions, both internal and external. An isolated robot or cell might



be efficient in executing its task. But that same robot or cell is not capable of optimising customer orders or substantially impacting the overall equipment effectiveness (OEE) of the whole production facility,” he added.

However, “to address this issue at IBM,” said Parameswaran, they have been “working towards evolving automation which entails robots and cells connecting and working together in an optimised way.” For example, as the automation industry moves toward more open protocols, collaborative robots (cobots) and other transformative enablers flourish.

“Automation facilitates innovations such as lot-size-one, self-healing factories, and putting robots to work in areas where human interaction is required. The latest automation technology can engage in data sharing and co-creation within the manufacturing framework, learning from other units, and enabling plant optimisation,” he added.


Job loss and Workforce Skill Gap: The adoption of digital manufacturing requires a skilled and tech-savvy workforce. Many manufacturers face challenges in upskilling or recruiting employees with the necessary expertise to operate and maintain advanced digital systems.

According to Nitin Kalla, the digital transformation of the shopfloor will lead to elimination of jobs in the immediate future, given automation will take over it. However, he is optimistic that “the demand for skilled workforce will rise considerably and this will lead to employees enhancing their skills to be future-

ready.” Besides, “governments and corporates will have to invest in skilling activities to ensure that many employees are not left stranded on the unemployment highway,” Kalla added.

When asked about Industry 4.0’s impact on jobs, to which Patil, said, “While automation and new technologies may replace some repetitive tasks, they will also create opportunities for upskilling and transitioning into higher-value roles.”

“More emphasis should be laid on workforce development programs which focuses on equipping employees with skills in areas such as data analytics, AI, and robotics,” he added. Patil further believes that “rather than resulting in widespread job loss, digital transformation is more likely to reshape job roles and create a demand for a different skill set, fostering career advancement and the creation of new roles.”

The future of digital technologies in manufacturing promises a dynamic landscape of progress and transformation. With the maturation and commercial viability of emerging technologies, along with customised solutions and platforms tailored to specific use cases, the potential impact is boundless. The manufacturing supply chain is on the brink of significant disruption and innovation, driven by technologies like Artificial Intelligence, Cognitive Intelligence, Augmented Reality, and quantum computing. These advancements will facilitate faster processing of vast amounts of data and real-time transactions with minimal delays, paving the way for novel operating models and business approaches. 



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By Lalit Kumar Mishra, Country Head- Cognex Corporation (India)

MACHINE VISION AND ARTIFICIAL INTELLIGENCE: ADVANCEMENTS IN VISUAL PERCEPTION FOR INDUSTRY 4.0

This article explores the key advancements in machine vision and AI, their applications in Industry 4.0, and their transformative impact on businesses.



In today's rapidly evolving technological landscape, the convergence of machine vision and artificial intelligence (AI) has paved the way for significant advancements in visual perception. This dynamic combination holds immense potential, particularly in the context to Industry 4.0, where automation and digitisation are reshaping the industrial landscape. Machine vision, powered by AI algorithms, enables machines and robots to perceive and interpret visual data, mimicking human visual capabilities with unprecedented accuracy and efficiency. As a result, industries across various sectors are leveraging these advancements to enhance productivity,

quality control, and safety standards.

This article explores the key advancements in machine vision and AI, their applications in Industry 4.0, and their transformative impact on businesses.

Machine vision is the technology that allows machines to visually perceive and understand the world around them. Traditionally, this involves utilising cameras and image processing techniques to capture and analyse visual data. However, with the integration of AI algorithms, machine vision systems can now go beyond basic image processing and perform complex tasks such as object recognition, defect detection, and even contextual understanding. AI



algorithms, particularly deep learning models, enable machines to learn from large datasets and improve their visual perception capabilities over time.

One of the most prominent applications of machine vision and AI in Industry 4.0 is - quality control and inspection. In manufacturing processes, especially discreet manufacturing, the ability to identify defects, measure dimensions, and ensure product consistency is critical. Machine vision systems equipped with AI algorithms can perform these tasks with speed and precision, reducing the reliance on human inspectors and minimising errors. These systems can detect even subtle defects or variations that may be imperceptible to the human eye, thereby significantly improving product quality and reducing waste.


Another area where machine vision and AI are making significant strides is autonomous vehicles and robotics. The ability of machines to perceive their surroundings accurately and make real-time decisions is vital for the safe and efficient operation of autonomous systems. Machine vision combined with AI algorithms, enables vehicles and robots to navigate complex environments, detect and avoid obstacles, and interact with humans and other machines. This technology has the potential to revolutionise transportation, logistics, and manufacturing industries, especially electronics, packaging and automobiles, including EVs, by enhancing productivity, reducing accidents, and optimising resource allocation.

The healthcare industry is also leveraging the power of machine vision and AI for a wide range of applications. Medical imaging, such as X-rays, MRIs, and CT scans, generates vast amounts of visual data that must be analysed and interpreted accurately. Machine

vision algorithms can aid in detecting abnormalities, assist in diagnosing diseases, and even predict patient outcomes. AI-powered systems can learn from vast medical data, improving diagnostic accuracy and enabling personalised treatment plans. Additionally, machine vision can enhance patient monitoring and assist in surgeries by providing real-time visual guidance to healthcare professionals.

In the realm of agriculture, machine vision and AI are transforming the way crops are monitored and managed. Smart farming techniques leverage machine vision systems to analyse plant health, detect diseases or pests, and optimise irrigation and fertilisation processes. By capturing and analysing visual data from drones or satellite imagery, farmers can make data-driven decisions, leading to improved crop yields, reduced resource consumption, and more sustainable farming practices. This integration of machine vision and AI is revolutionising the agricultural sector, making it more efficient and environmentally friendly.

The advancements in machine vision and AI are not limited to industrial sectors alone. Retail businesses, too, are harnessing this technology to improve customer experiences and optimise their operations. Machine vision systems can analyse customer behaviour, track inventory, and even enable cashier-less checkout systems. By automatically recognising products or facial features, these systems enhance the efficiency of retail operations while providing personalised and seamless shopping experiences for customers.

Despite the numerous advancements, challenges remain, posing opportunities for the widespread adoption of machine vision and AI. 

GODREJ PROCESS EQUIPMENT SETS SIGHTS ON GREEN HYDROGEN REVOLUTION

Godrej & Boyce, the flagship company of the Godrej Group, announced that its business Godrej Process Equipment, in line with the government's push for more sustainable energy production, is eyeing to double its process equipment share in the Green Hydrogen space by FY29. India's growing commitment to expedite the adoption of green hydrogen and achieve its ambitious goal of net-zero carbon emissions, and drive towards a more sustainable and eco-friendly economy has furthered the company's ambitions in this area.

Over the last few years, India has emerged as a key player in the global shift towards Green Hydrogen. The country's National Green Hydrogen Mission envisions developing a green hydrogen production capacity of at least 5 million metric tons per annum by 2030.

In line with this vision, Godrej Process Equipment is leveraging its capabilities and expertise to support the Green Hydrogen revolution through related projects and strategic investments. The company has already successfully supplied equipment globally for Blue Hydrogen projects and received orders to supply critical Heat Exchangers for a Green Hydrogen project in the Middle East.

Hussain Shariyarr, Senior Vice President and Business Head, Godrej Process Equipment said, "We have invested Rs 300 Crore for the enhancement of our Dahej Facility in Gujarat, for delivery of specialised and large equipment especially in the Hydrogen Clean Energy and Power sectors. We look forward to partnering with many more companies in India and globally to further the green energy revolution."

#THEFOMINSPIRINGSTORIES: DRIVING INDIA'S ECONOMIC PROGRESS THROUGH EXPORTS AND INNOVATION

Amit Pendse, President, Electronica Plastic Machines Ltd. underlined the importance of exports in India's economic progress.

Working for the nation entails more than just working at its borders. Any action taken towards the growth of the country is a contribution to your country. A discussion with Amit Pendse, President, Electronica Plastic Machines Ltd, during the FOM Inspiring Stories Series, underlined the importance of exports in India's economic progress. He emphasised that the country's circumstances for expanding the output of this sector are favourable, as it is home to leading technologies and is producing pioneering work in the same.

Pendse described his travels, revealing that his father's job required him to relocate to several districts of Maharashtra. He received his primary education in Nasik and pursued his further studies in Alibaug. Pendse received a diploma in petrochemical technology before enrolling in an intense polymer engineering programme at the University of MIT Pune. Meanwhile, he spent a year at Fergusson College in Pune, exploring his interest in photography while also competing in badminton and cricket championships.

Growing up in a family that encouraged a nurturing bond between his siblings, the Electronica President has instilled this childhood learning into his profession as he maintains close relations with his company's workers. Today, Pendse is a proud father of two children and a loving husband to his wife, with his children prospering in chemical engineering, nuclear power, commerce, and language.

He advised, "Be true to yourself. Whatever you do, your conscience should be confined, and you should be



Mr. Amit Pendse, Electronica Plastic Machines Ltd

committed to it. Once you decide something, you must honour that and not give any excuses, as it comes from the heart." He believes he owes everything to society and is dedicated to working for it.

Implementing his wide base of knowledge into his work ethic, he began working with Finolex Cables Ltd. Subsequently, he gathered experience working alongside Garware-Wall Ropes Ltd. This proved momentous for him, as his company was the first to explore the possibility of using PP multifilament for rope manufacturing. This was pivotal; his involvement in the task of raising the supply of their goods from twenty tonnes to over a hundred tonnes per month, proved beneficial to the company, and it has only grown since then. Pendse remains proud to have been a part of it.


His work translated into success as he joined Electronica Plastics in 1996 as a Manager for Applications and Customer Support which enabled him to realise customer grievances and the issues that rose with the

manufacturing of their product. His efforts in bringing these concerns to the attention of the manufacturing team, resulted in him being appointed to oversee the company's nationwide manufacturing activities.

The company dissolved the independent Electronica entity that dealt with sales and the new organisational pattern brought manufacturing and sales under one roof, establishing direct communication with its end consumers. The year proved prosperous as Electronica also achieved the status of a limited company. The driving force behind these accomplishments was a genuine commitment to design energy-efficient machinery with minimal production costs. Intent on maximising their exports, they have broadened their reach into international markets.

Achieving significant milestones in his work portfolio, Pendse assumed the position of Managing Director in 2014. Electronica has grown significantly

in two ways since then. To begin with, they have expanded as a company, surpassing the 100-crore mark in 2017. Secondly, they have grown as a family with a cohesive, responsive team that not only works closely but is also emotionally knitted together in the company's fabric.

The Electronica President expressed his confidence in the country by speaking about the underlying potential that India's youth possess. He mentioned that Indians today are heading leading multinational companies across the world. In the sector of plastic machinery, India is at par with the world, and we beautifully mould ourselves to incorporate the new advances in this niche into our products, and that is how we support the Indian industry. Manufacturing companies like Electronica are the focal point of this growth and should be supported by the service industries revolving around them. 

SCHNEIDER ELECTRIC AND SAMRIDHI GROUP SIGN MOU TO OFFER ENERGY EFFICIENT SMART HOME SOLUTIONS

Schneider Electric, the leader in the digital transformation of energy management and automation, and Samridhi Group Pvt. Ltd., has announced the signing of a Memorandum of Understanding (MoU) to foster sustainable and technologically advanced smart home solutions. Through this partnership, Samridhi Group will create energy-efficient and environmentally positive residential spaces powered by a plethora of products from Schneider Electric that include Wiser Smart Home Solution, Unica Pure, a premium range of wiring devices, low-voltage switch gears, etc.

Wiser, an innovation-driven smart home solution by Schneider Electric, combines electrical, multimedia, and telecommunications technologies into a single user-friendly smart or automatic home solution. This automation system makes living comfortable by offering seamless control of your music, home theatre, lighting, air conditioning, sprinklers, and so much more. It also enables reduced energy consumption and an enhanced sense of safety by converting any new or old home into a smart home within a few hours.

Schneider Electric's Unica Pure range of wiring devices offers safety, convenience, and sustainability. Powered by six patented technologies, this range is designed for minimum environmental impact and has the highest international green certification (Green Premium). This versatile range covers requirements across segments, whether it's residential, hospitality, office, or commercial projects.

By embracing cutting-edge solutions and products designed to reduce carbon footprints, the collabora-



tion between Schneider Electric and Samridhi Group will pave the way to smarter, greener, and more environmentally friendly solutions designed for the real estate industry.

Sharing his thoughts on the partnership, Manish Khandelwal, Vice President, National Sales, Schneider Electric, said, "Schneider Electric's core value of sustainability has catapulted our consistent efforts in offering energy-efficient and environmentally impactful solutions to builders and consumers in the home automation space. Recognizing the urgency and complexity of sustainability challenges, we believe that partnerships and collective action are vital for creating meaningful and lasting change. The alliance between Schneider Electric and Samridhi Group brings together the shared vision of amplifying the impact and advancing the cause of sustainability."

We remain steadfast in supporting real estate leaders in their pursuit of creating responsible and sustainable homes in the face of climate change challenges."

“OUR PHILOSOPHY IS TO MAKE THE PRODUCT EASY TO CHOOSE AND EASY TO USE”

In an interview, **Saravana Kumar CY**, the Senior Manager of Duracarb India, sheds light on how the company is playing a pivotal role in transforming the machine and tools industry through its unique innovations and cutting-edge products. He also elaborates on the vital role their R&D centre plays in meeting the industry standards and much more.

How is Duracarb India revolutionising the machine and tools industry with its one-of-its kind innovations and products?

Duracarb is a new IMC brand in India focusing on giving unmatched value for money to our manufacturing supply chain organisation. Manufacturing continues to grow in India, and with AatmaNirbhar Bharat, supply chain and SMEs, many new SME organisations are coming up and require solutions to increase productivity and reduce cost. Duracarb offers a complete range of precision metalworking tools and solutions covering Turning, Milling, Drilling, Parting,



Saravana Kumar CY, the Senior Manager of Duracarb India

Grooving and Threading. With manufacturing facilities in Europe and Asia, marketing activities throughout the world, latest technology products and solutions from Duracarb help customers reduce their manufacturing costs and maintain consistent product quality.

Our advanced research & development initiative has also resulted in the quick introduction of new products and regular product upgrades. User feedback is incorporated in all stages of product manufacturing, to ensure precise and simple product selection without compromising performance, quality, and output needs.

Each Duracarb smart tool is crafted to the highest standards in state-of-the-art IMC facilities around the globe, including in Bengaluru, India. Our facilities comply with international standards, wherein our products and processes are certified for complete quality and environment management systems. Decades of knowledge acquired by IMC group on the formulation of basic carbides and coatings provide unmatched advantages for Duracarb R&D. Our carbide grades meet the exact demands of machining in shop floors of Automotive, General Engineering, Power, Aerospace, and many other industries. Our philosophy is to make the product easy to choose and easy to use, and at every stage. We ensure that the selection process is simple and user-friendly. We at Duracarb understand that the essence of a good tool supplier and customer partnership largely depends on timely availability of products. Our logistics system and distribution network fully support this need and ensures on time delivery. A well-trained network of application engineers and channel partners provide excellent after-sales service across the country all the time.

What sets your machining and tooling services apart from competitors in the industry?

Duracarb has a competitive edge over other players



in the industry because of its adherence to the IMC standards in product design, which guarantee superior quality, performance, and reliability. With its dedicated customer support team that provides prompt and professional after-sales service across the country, Duracarb's products and solutions are designed to help customers reduce manufacturing cost and maintain consistent product quality. A strong research and development base enables Duracarb to introduce new products and upgrade existing ones regularly.

Tell us in detail about your R&D centre and how it helps with customisation of your products and services.

Duracarb India has a state-of-the-art research and development (R&D) centre in Bangalore, which is the hub of innovation and excellence for our company. The R&D centre is equipped with the latest technology and equipment to conduct cutting-edge research on various aspects of machining and tooling.

The R&D centre helps us with customisation of our products and services by:

- Developing new carbide grades and coatings that meet the exact demands of machining in shop floors of various industries. Our carbide grades are formulated with the knowledge and expertise of IMC group, which is a global leader in metal cutting solutions. Our coatings are designed to enhance the wear resistance, toughness, and performance of our tools.
- Designing new geometries and profiles for our tools and inserts that suit different applications and materials. Our geometries and profiles are based on user feedback and market trends, and they ensure precise and simple product selection, without compromising quality and output needs.
- Testing and validating our products and solutions in our own machining centre, where we simulate

real-life machining conditions and measure various parameters such as tool wear, cutting forces, surface finish, dimensional accuracy, etc.

The R&D centre is also involved in several ongoing research and development projects aimed at improving the performance or introducing new features in our precision tools. This includes developing hybrid tools that can combine different machining processes in one tool. These hybrid tools can perform multiple operations such as face milling, shouldering, slotting among others with one tool. This enables us to reduce the number of tools required, save tool changing time, and increase productivity for the customer.

What are the new innovations you have introduced in your machine and tooling services and products?


Duracarb has developed new carbide grades and coatings that meet the exact demands of machining in shop floors of various industries. Duracarb's coatings are designed to enhance the wear resistance, toughness, and performance of its tools. Duracarb uses PVD and CVD coating methods according to material and component requirements.

Some of the coatings that Duracarb use includes

- TiN coating, which is a titanium nitride-based coating that provides excellent resistance to high temperatures, abrasion, and adhesion. TiN coating is suitable for machining steel, stainless steel, cast iron, and non-ferrous materials.
- ALOX coating, which is an aluminium oxide-based coating that provides superior resistance to oxidation, diffusion, and thermal shock. This coating is suitable for machining high-temperature alloys, titanium alloys, and nickel-based alloys.
- TiCN coating, which is a titanium carbonitride based coating that provides optimal resistance to wear, cratering, and plastic deformation. This coating is suitable for machining steel, stainless steel, cast iron, and hardened materials.

Duracarb has designed new geometries and profiles for its tools and inserts that suit different applications and materials. The geometries and profiles are based on user feedback and market trends, and they ensure precise and simple product selection, without compromising quality and output needs.

Some of the new geometries and profiles that Duracarb has introduced are:

Duracarb India works with a wide range of materials for machining projects, such as steel, stainless steel, cast iron, aluminium alloys, copper alloys, brass alloys, bronze alloys, titanium alloys, nickel-based alloys, high-temperature alloys, hardened materials, etc. 

HERE'S HOW MOBIL'S™ ADVANCED SOLUTIONS ARE MAKING MACHINE SHOPS MORE LUCRATIVE

Mobil partnered with Mitsuba India Private Limited to address efficiency concerns in their CNC and VMC machines and helped the company extend coolant life, reduce oil consumption, and improve environmental improvement

At the pivot of India's growth story, manufacturing and allied sectors are expected to play a driving role in the country's journey towards becoming an economic powerhouse. With a strong multiplier effect on downstream businesses, India's manufacturing sector is poised for positive growth at a projected CAGR of 11.45 per cent during 2022-2027. Contributing positively to expansion in the sector, the machine tools sub-segment, especially, will play a vital role. Equipment health will be a key determinant in the success of the manufacturing sector, and ensuring machine maintenance for continuous performance and productivity will be key to long-term profitability. Duly, the machine tools segment is emphasising micro-efficiency in production processes by optimising machine health with the use of superior lubrication solutions. Promisingly, the India machine tools market size reached USD 1.4 billion in 2022 and is expected to reach USD 2.5 billion by 2028, exhibiting a growth rate (CAGR) of 9.4 per cent during 2023-2028.

Lubricants play an important role in equipment performance by guaranteeing uninterrupted operations and reduced downtime – making their selection and servicing important factors in determining machine shop performance. Here, Mobil™ is playing a formative role in collaborating with businesses to enhance their user experience and help them make the most informed choices that will, in turn, contribute to the growth of the manufacturing sector.

SOLUTIONS FOR OPTIMAL PERFORMANCE

Recently, Mobil associated with a renowned automotive parts manufacturer, Mitsuba India Private Limited, in Gurugram, Haryana. The company operates various CNC and VMC machines at its plant. These machines were previously lubricated with conventional cutting oils which caused significant challenges, including excessive oil consumption, unpleasant odours, and

reduced tool life. These issues hampered productivity and profitability.

To address the performance efficiency concerns, Mitsuba sought guidance from Mobil's Field Engineer Service (FES) team. The team visited the company's facility and conducted thorough investigation using the Mobil™ Solcare kit, a comprehensive tool for coolant analysis. Based on the findings, the FES team recommended the adoption of Mobilcut™ 250, a high-performance semi-synthetic metalworking fluid specially formulated to enhance machine performance. Along with recommending the lubrication solution, Mobil also offered its digitised coolant monitoring tool, the Mobilcut™ Solcare Service app, to enhance machine shop productivity with data-driven insights and tailor-made recommendations.

The switch to Mobilcut™ 250 helped the company resolve numerous problems related to foul smell, excessive oil consumption, and reduced tool life. Mitsuba was able to achieve extended coolant life and substantial reduction in oil consumption. The switch also contributed to environmental improvement by eliminating approximately 2,928 litres of waste and resulting in an overall annual savings of Rs. 3,20,240.


DRIVING LUBRICATION INNOVATION

The Mobilcut™ Series includes Mobil's line of high-performance water miscible metal removal fluids. Formulated with leading edge-base oils, additives, and emulsifiers, the Mobilcut™ series provides dependable performance in a wide array of metal removal processes. Low maintenance and inherently stable, the Mobilcut products are designed for the modern machine shop where long service life, excellent machining performance and health and environmental concerns are important factors for increased productivity. A part of the series, the Mobilcut 250 is a high-performance versatile semi-synthetic water-soluble metalworking fluid. It is designed for a broad range of metals for

use in cutting and grinding operations. The unique additive package of this product makes it a first choice for precision machining and consistent high-quality manufacturing. Mobilcut 250 is designed to help increase productivity of modern machine shops by providing features like form stability, resistance to biological growth, low foaming, corrosion protection, and good separability from fines.

Further, in today's machine tools sector, services are playing a crucial role in ensuring success. Here, Mobil has set industry-leading standards by implementing advanced digital solutions to streamline equipment monitoring and enhance efficiency. The Mobil Solcare app has been instrumental in addressing customer challenges through continuous real-time

monitoring, easy data access, trendline insights, and open communication. The app's paperless reporting reduces environmental impact while automating paperwork and providing comprehensive data access to assist engineers in staying informed, scheduling tasks, generating instant reports, and evaluating performance.

For the success of the machine shop, and in turn, India's manufacturing sector, a combination of superior production solutions and servicing platforms are critical. To meet these goals, Mobil is actively forming industry collaborations with its advanced suite of innovative products and services that prioritise customer experience in tandem with performance, productivity, and profitability. 

CONTINENTAL AUTOMOTIVE HONOURS OUTSTANDING SUPPLIERS FOR 2022

Continental Automotive honoured the performance of its best suppliers for 2022 with the prestigious "Supplier of the Year" awards. The ceremony on August 2 was the first onsite event after three years of pandemic-related virtual presentations. 55 international participants attended an evening in the historic Herzogssaal in Regensburg.

Speaking at the event, Nikolai Setzer, Chief Executive Officer of Continental, acknowledged the performance of the business partners. "We always had a strong relationship with our suppliers and became even closer in the past, very dynamic as well as challenging years. Cultivating a synergistic relationship with our strategic supply base is a crucial key to success for us – after all, "for one another" is a core corporate value at Continental."

In 2022, a total of 145.5 billion components were delivered across 78 Continental locations worldwide.

"With the "Supplier of the Year" award, we emphasise, that we are eager to continue our strong collaboration and shape the technological transformation in the Automotive market earlier together", said Peter Popp, Head of Automotive Purchasing at Continental during the ceremony.

The ten distinguished series suppliers include:

- Renesas bagged the Special Quality Award,



- ROHM Co., Ltd. (Power Supply & Multimedia) was awarded in the electronics category
- *Electromechanics*: Panasonic Industrial Device Motor BU (Motor Systems) and Elec & Eltek (Standard Printed Circuit Boards) was recognised in this segment.
- *Mechanics*: Mansfield Group (Deep Drawn and Spring Parts) and Shinko Nameplate Co., Ltd. (Decorative Plastics) bagged the award in this category
- *Business Area specific solutions*: Corning Automotive Glass Solutions LLC (LC Displays) and Ningbo Sunny Automotive Optech Co. Ltd. (Optical Devices) won in this category.
- *Production Equipment*: Fuji Corporation (Automated Insertion Machines) bagged an award in production equipment category
- *Software Engineering Services*: GlobalLogic (Software Engineering Services) was named as winner in this category.

By Dipika Lalwani

“OUR GROWTH WILL BE DRIVEN BY R&D”

In an interaction, **Pankaj Khanna**, Managing Director, PP Rolling Mills talks about its strategic partnership with Pomini Long Rolling Mills. Edited excerpts:

What is the current state of the steel industry, and what are the opportunities for growth, both domestically and internationally?

In the last 10-12 years, the steel sector in India has experienced significant growth, with production increasing by 75 per cent since 2008. It is projected that India's domestic steel demand will continue to rise at an annual rate of 7.5 per cent, reaching 130 million tonnes (mt) in the current fiscal year. The Indian Steel Association (ISA) estimates that domestic steel demand reached 120 mt in fiscal year 2022-23. To fulfil the vision of Prime Minister Narendra Modi, the capacity needs to reach 300 million tonnes.

Looking ahead to 2023, the outlook for the Indian steel industry appears promising, as the country aims to become a US \$5 trillion economy by 2030 or even sooner. Given this context, I believe our contribution

will be significant, as our machinery products play a vital role in driving growth.

How do you anticipate emerging technologies, trends, and disruptive forces shaping the future of the steel industry, and how is the combined entity prepared to adapt and thrive in this evolving landscape?

In the ever-changing landscape of enterprise operations, emerging technologies have become commonplace, fundamentally transforming the way we conduct business in a digitally-driven world. These advancements in technology offer significant advantages, such as improved productivity, increased accessibility to services, and streamlined operations.

Given these transformative changes, we must adopt The ADAPT framework. This framework promotes a



Pankaj Khanna, Managing Director, PP Rolling Mills



proactive approach to accepting and integrating new technologies that shape our work and operations. Letting go of outdated practices is a vital aspect of this framework, reinforcing our dedication to innovation and change, which has been instrumental in our success over the past seven decades.

Moving forward, it is essential that we embrace and integrate new technologies that align with our goals and effectively address industry-specific challenges. By fostering a culture of change and encouraging our workforce to embrace innovation, we can leverage these technological advancements to maintain our competitive edge in the digital age.

How does the combined entity of PP Rolling Mills and Pomini Long Rolling Mills position itself to leverage these opportunities?

This strategic move by PP Rolling Mills (PPRM) not only expands our presence in the developed markets of Europe and America but also strengthens our commitment to delivering exceptional products and services worldwide. Additionally, it will enable Pomini LRM to secure new projects for higher-capacity mills, even from our existing customers. In turn, PPRM can offer support and assistance to enhance Pomini LRM's operational efficiency and improve overall corporate performance.

Our growth will be driven by a focus on innovation through research and development (R&D), the introduction of world-class products from Pomini LRM, and the expansion of our international operations. This partnership enables us to offer state-of-the-art technology to the Indian steel industry,

supporting their growth and capacity expansion endeavours. Furthermore, these strategic actions demonstrate our commitment to continued growth, innovation, and delivering value to our customers on a global scale.

What are the primary goals and objectives of the partnership between PP Rolling Mills and Pomini Long Rolling Mills?

- **Driving Technological Advancement:** The partnership aims to leverage Pomini Long Rolling Mills' extensive experience in producing special steels and rails, along with PP Rolling Mills' manufacturing and sourcing capabilities, to drive technological advancements in the steel industry. By pushing the boundaries of innovation, we seek to provide our customers with superior technology and cost-effective solutions.
- **Addressing the Growing Steel Market:** We recognise the unprecedented opportunities presented by the Indian steel industry which is projected to grow to 300 million tonnes by 2030. By leveraging the expertise of Pomini LRM and the established customer relationships of PPRM, we are strategically positioned to cater to the rising demand for steel products in India and beyond, thereby further strengthening our commitment to the 'Make in India' initiative.
- **Providing Sophisticated Steel Rolling Mill Solutions:** One of the primary objectives of the partnership is to deliver exceptional steel rolling mill solutions. We are committed to adhering to the highest manufacturing and quality standards,



Given these transformative changes, we must adopt The ADAPT framework. This framework promotes a proactive approach to accepting and integrating new technologies that shape our work and operations. Letting go of outdated practices is a vital aspect of this framework, reinforcing our dedication to innovation and change, which has been instrumental in our success over the past seven decades.

ensuring improved performance, accuracy, and sustainability in our products. By offering unparalleled value to our customers, we aim to establish ourselves as a trusted provider of sophisticated steel rolling mill solutions.

- **Supporting Indo-Italian Trade and Development:** The partnership symbolises a commitment to fostering cooperation between India and Italy. By harnessing the collective strengths of PP Rolling Mills and Pomini Long Rolling Mills, our objective is to contribute to the growth of trade and support the development of both economies. In doing so, we aim to benefit not only our employees, customers, and suppliers but also the broader community.

How do you envision synergies between the two companies? Are there specific areas where collaboration will be focused?

Given the complementary nature of our respective footprints and technologies, we have the potential to bring significant value to each other. PPRM can offer leads to Pomini LRM for high-technology and high-capacity plants, while Pomini LRM can support PPRM by providing enhanced technology and increasing workload for their factories. The combination of Pomini LRM's advanced technology and PPRM's world-class manufacturing facility and operational efficiency creates an ideal synergy for delivering an exceptional customer experience.

Are there any specific markets or product segments that the company plans to enter or expand into in the future?


There is immense potential for the establishment of high-capacity plants in Africa and the implementation of advanced rolling mills in the Middle East for the production of automobile steel and stainless steel. These regions present significant opportunities where Pomini LRM can make a substantial impact. Additionally, the PLI scheme recently announced by the Government of India (GOI) can provide a vast ocean of opportunities for Pomini LRM in the field of special steel projects within India.

How does this partnership impact job creation and local economies?

The collaboration between PP Rolling Mills and Pomini Long Rolling Mills is expected to have a positive impact on job creation and local economies. By combining our expertise, this partnership will generate new employment opportunities and promote a culture of continuous learning and skill development. We are committed to expanding Pomini LRM's facility, increasing our workforce, focusing on research and development, and introducing new products to further drive growth.

Furthermore, the success of this collaboration will contribute to industry transformation and foster stronger Indo-Italian business relations, ultimately advancing the steel sector and regional economies as a whole.

Are there any specific initiatives or programs planned to enhance Indo-Italian trade relations and foster further trade development?

This partnership will undoubtedly strengthen Pomini LRM's overall business. Moreover, we will continue expanding the Pomini LRM facility in Italy to support this growth. Additionally, India will benefit from the enhanced presence of Pomini LRM's superior technology, which is well-suited for the continuously expanding Indian Steel industry. 



THE IGUS E4Q.64L – SAME BENEFITS AT A LOWER COST

The igus E4Q, a globally proven e-chain for applications with large unsupported lengths and high fill weight, now has a new variant: the “L”.

Though the E4Q energy chain has established itself in demanding applications, it is often oversized in applications with medium loads.

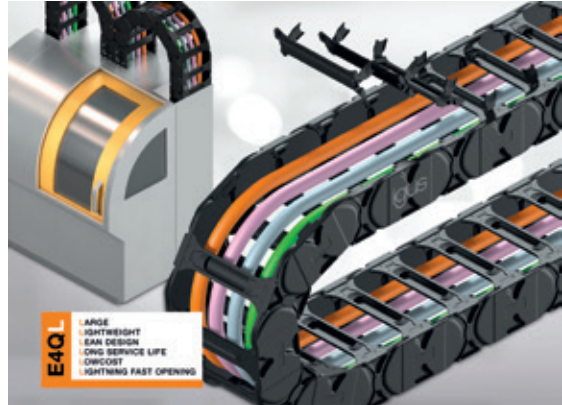
“To offer users advantages of the E4Q and at a lower price, we developed the L version - the E4Q.64L,” says Christian Ziegler, Head of e-chain Product Management, igus. “Depending on the width, the low-cost version of the energy chain costs between 15 per cent and 20 per cent less than the E4Q.”

Low weight, and three stop-dogs per chain link

The igus designers have modified E4Q’s design. The side links are narrower thereby reducing the weight. Additionally, a rethought stop-dog system has come in place, with The E4Q.64L becoming the first igus energy chain with three stop-dogs per chain link, ensuring a regular power flow and a longer service life.

Up to 20 per cent more unsupported length

Tests prove that the E4Q.64L has an approximately 30 per cent greater breaking moment than the 14240 series, which is also used for unsupported applications. This



results in up to 20 per cent more length with the same fill weight, and the increased strength enables applications, including car washes and airport passenger boarding bridges, cost-effectively.

The chain further offers a reverse bend radius (RBR), which means that circular movements can be implemented.

Adaptability

Keeping the E4Q’s crossbars unchanged, has ensured that it can be opened just as easily, and has made available an extensive product range of crossbar widths. The E4Q.64L has been offered in 29 widths between 100 and 500 millimetres.

HERE IS WHAT UNITED GRINDING GROUP AIMS TO OFFER AT EMO HANNOVER 2023

The UNITED GRINDING Group, a leading global manufacturer of grinding, eroding, laser, and measuring machines, along with machine tools for additive manufacturing, is set for EMO Hannover 2023 with a showcase of cutting-edge innovations. The group will be present at Hall 11, Booth E34, featuring 16 machines, and can be expected to see following the motto of this year’s EMO Hannover “Innovate Manufacturing.”



An Emphasis on Customer Care

UNITED GRINDING Group will dedicate a special exhibition area to showcase products and services that accompany customers throughout their machines’ service life, facilitating efficient production from start to retrofit. This inclusive approach highlights digital assistance systems, such as the Production Monitor, Service Monitor, and Remote Service, collectively known as UNITED GRINDING Digital Solutions™.

Machine Highlights:

Among the 16 machines on display, UNITED GRINDING Group will unveil several exciting novelties.

BLOHM, renowned for surface and profile grinding

machines, is proud to introduce the world premiere of the PLANOMAT XT 408. This innovative machine features automatic work piece loading and unloading, catering to internal machining of hydraulic motor stators.

STUDER, on the other hand, presents an inventive automation solution featured on the S31 universal external cylindrical grinding machine, providing visitors with a glimpse into cutting-edge automation

technology.

WALTER introduces the revolutionary “Laser Contour Check” measuring system for highly accurate, non-contact measurement of various tool parameters on cylindrical tools. This system is now available as an option for the HELITRON-IC MICRO and HELITRON-IC MINI PLUS tool grinding machines, taking precision to new heights.

Experience C.O.R.E. Technology

To further elevate the visitor experience, the Group will demonstrate its C.O.R.E. technology. This advanced hardware and software architecture sets the foundation for a new generation of machine tools, offering seamless networking, intuitive smartphone-like operation, and the ability to use modern software applications directly on the machine.

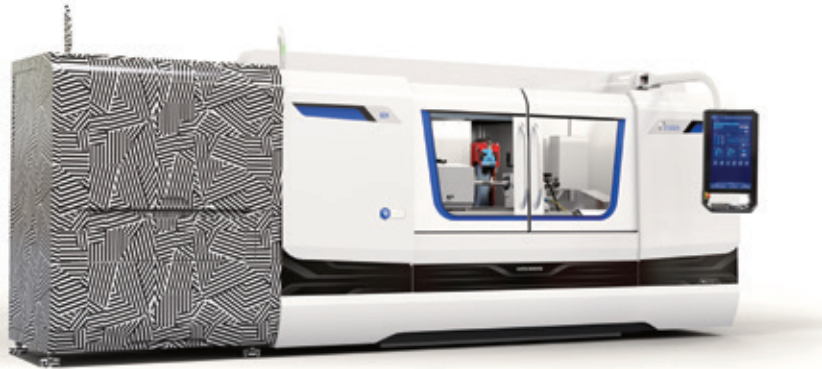
FRITZ STUDER AG TO UNVEIL NEW AUTOMATION SOLUTION AND REVOLUTIONARY TECHNOLOGY AT EMO 2023

Fritz Studer AG, one of the market and technology leaders in universal, external, internal cylindrical, and non-circular grinding, will present a new automation solution on the S31 universal external cylindrical grinding machine at EMO 2023 in Hanover. In addition, visitors can look forward to other machines on display:

1. favorit - The price hit for the most important applications.
2. S33 with uniLoad - The value for money for individual requirements.
3. S100 - The ergonomic machine for the entry-level segment.
4. S131R with roboLoad - The expert for every conceivable internal grinding task.

The customer-oriented REvolution continues

With the first-time presentation of C.O.R.E. at EMO 2021 in Milan, the UNITED GRINDING Group has



triggered a revolution in the field of machine tools. The advanced hardware and software architecture on which C.O.R.E. is based enables a novel machine interaction concept. But C.O.R.E. is much more than just a revolutionary operating system.

It opens up new possibilities for networking, controlling, and monitoring the production process and thus for process optimization. It also lays the foundation for the operation of modern IoT applications and thus opens the door to the digital future.

HEXAGON SIMPLIFIES QUALITY INSPECTION WITH ITS NEW OPTIV SCOPE

Hexagon's Manufacturing Intelligence division has announced the launch of OPTIV Scope, an innovative vision Coordinate Measuring Machine (CMM) that simplifies quality inspection across industries. OPTIV Scope provides ease of use, enabling businesses to save time and reduce the costs of quality inspection. The system is effective for inspecting high volumes of parts with similar shapes.

OPTIV Scope eliminates the time-consuming process of manual part alignment before each measurement, allowing machine tool operators and quality professionals to focus on their critical tasks and maximise productivity.

With an accuracy of up to ± 0.7 microns, OPTIV Scope provides reliable and repeatable measurement data, independent of the operator, at the press of a button.

Joerg Deller, General Manager, Stationary Metrology Devices and Machine Tool Measurement, Hexagon, said "OPTIV Scope completes our multi-sensor lineup, offering an entry-level, easy and precise machine that streamlines high-volume measurement for machine tool operators and quality professionals alike, saving time and costs."

OPTIV Scope is available in six models with varying work volumes and camera resolutions, with a maximum 300 x 200 mm field of view. The system ensures comprehensive coverage of dimensioned features on a part and is equipped with a double telecentric optical lens with a large depth of field. The system offers reliable edge detection with automatic focus.

OPTIV Scope caters to a broad range of industries and diverse manufacturing applications. Its versatility makes it an indispensable tool across sectors such as electronics, injection moulding, low-voltage electrical appliances, mobile phone accessories, printed circuit boards, medical equipment and many more.



HENDRICKSON LAUNCHES AIR AND MECHANICAL SUSPENSIONS

Hendrickson, a leading global manufacturer and supplier of medium and heavy-duty mechanical, elastomeric and air suspensions, integrated and non-integrated axles, and other commercial vehicle systems, announces the launch of their innovative air and mechanical suspensions and axles for trailer applications in India.

With a rich legacy of 110 years in driving technology, design, and innovation, Hendrickson continues to set new benchmarks in providing customised components and suspension systems for the global commercial transportation industry.

Hendrickson (a Boler Company) forayed into India in 2006 through a Joint Venture with Tata AutoComp Systems and in 2011 incorporated a 100 per cent subsidiary named Watson & Chalin India Pvt Ltd to expand its manufacturing footprint for truck and trailer products and serve as a manufacturing base to support global customers in Europe, Middle East and Asia.

Hendrickson presently have sales and distribution facilities and/or state-of-the-art manufacturing and research and development centers in the United States, Canada, Mexico, Colombia, United Kingdom, Germany, Austria, Romania, France, Poland, Turkey, India, China, Japan, Thailand, Australia and New Zealand. With its manufacturing facilities for truck and trailer axles and suspensions, Hendrickson is committed to delivering cutting-edge products tailored to the local geography and terrain in India.

Expressing his delight about the launch of these innovative products in India, Matthew Joy, President, and Chief Executive Officer of Hendrickson, states, "Today, we are excited to introduce these innovative Ride Solutions for trailer applications in India, with the goal of serving and supporting the industry's evolving needs. Every day, millions of Hendrickson suspension systems and components worldwide carry loads of freight and raw materials, showcasing our commitment to providing durable, lightweight, and high-performing suspension systems and components."

"Our global presence and dedication to delivering products and services that benefit manufacturers, fleets and owner-operators worldwide are key factors in our success. Our tagline, 'The World Rides on Us' encapsulates our brand's spirit and reflects our 110-years of innovation" added Joy.

Richardo Martin, Vice President of International Operations, adds, "Over the years, we have become a force to reckon with in the industry. Our entrepreneurial attitude fosters a culture of innovation, encouraging all our associates to discover, invent, and modernise. This philosophy enables us to create state-of-the-art products and establish ourselves as an industry leader. We work



closely with fleets and truck and trailer manufacturers worldwide, collaborating on new product development. In addition to our innovative products, we provide extensive technical support and training services to ensure the proper installation, operation, service, and maintenance of Hendrickson equipment and aftermarket components. Our 'Innovation Built In' philosophy extends throughout our global network of operations and employees. We are committed to serving the transportation industry with cost-effective ride solutions that enhance productivity and profitability".

Hendrickson India's commitment to innovation and advanced technology is evident in the unique features and patented technologies incorporated into their products for Trucks and Trailers.

As Mohit Khosla, Whole-time Director and Chief Executive Officer for India & Middle East, states, "We are happy to introduce these cutting-edge products in the Indian market. In India, we are committed to continual improvement, ensuring customer trust and safety. We have gained the trust of OEMs, fleets, and owner-operators, thanks to our advanced innovative patented technologies. We are rapidly transitioning into India's leading axle and suspension system manufacturing

company for truck and trailer applications.

"With the introduction of our new Air and Mechanical Suspensions, we reaffirm our dedication to delivering rugged, high-performance and cost-effective solutions. These products offer outstanding ride quality and control for various types of trailers on Indian roads, including flat beds, containers, tankers, bulkers, sidewall trailers, and tip trailers. These suspensions will be manufactured locally as part of the Make in India initiative of the Government of India and will be the lightest systems in the market offering unmatched payload and operating efficiency advantages to their customers. Especially designed and applied for the Indian terrain, these suspensions exemplify our unwavering commitment to excellence and our mission to drive technology, design, and innovation in the commercial transportation industry.

"The Indian market currently witnesses an annual demand of about 40,000 trailers, with mechanical suspensions accounting for about 70 per cent of the market share. The migration to air suspensions has commenced and will gain momentum as the road infrastructure continues to grow and customer expectations demand the adoption of new technologies. To cater to this growing market, Hendrickson in India is introducing a dual brand strategy of bringing premium products under the Hendrickson brand and cost-effective, locally manufactured products under the Watson & Chalin brand. These options will offer solutions to a wide base of customers all having different business challenges that need to be addressed."

Hendrickson Severe Duty Suspension (HSDS): Premium Suspension Delivering Rugged Per-

formance and Outstanding Reliability with Un-matched Ride Quality for Indian Roads. Since its introduction in 2011 on Indian roads, the HSDS system has been a premium and trusted solution for various heavy-duty trailer applications, including flat bed, containers, tankers, bulkers, sidewalls, and tip trailers. The HSDS@ system incorporates a very light-weight design, enabling highest payloads and offers maximum reliability and durability.

The HSDS system comes in capacities varying from 12T to 14T for the Indian market. The HSDS system uses a Tyre Inflation and Deflation System (Tiremax Pro), which increases tyre life by maintaining optimal tyre pressure without human interface. This feature significantly reduces operational costs and increases productivity. With long recommended service intervals, the HSDS system minimises vehicle downtime. The HSDS system incorporates premium shock absorbers and large diameter air springs, providing superior suspension performance, stability, and load-carrying capability. These components contribute to a comfortable and controlled ride. The HSDS system uses patented Tri-FUNCTIONAL bushings, which play a vital role in providing ride stability and ride quality. By enhancing durability and minimising wear, these bushings contribute to the bottom line of customers by reducing maintenance cost.

TA 14 - Heavy Duty Air Suspension

The TA 14 Heavy Duty Air suspension is designed for Indian applications keeping in mind the Indian road conditions and the changing face of infrastructure in India. This suspension comes in Top and Low Mount variants offering numerous options to the customers based on their application requirements.

This suspension is the lightest suspension system amongst its peers in the market and offers higher payload capability.

Its technologically advanced design coupled with state-of-the-art manufacturing processes (including friction welding and robotic welding) result in a superior ride quality for drivers and minimum vibrations to cargo.

The TA 14 Heavy Duty Air Suspension offers high reliability, durability contributing to reduced vehicle downtime, minimum maintenance requirements and best in class operational efficiency. This suspension system features dynamically balanced brake drums, enhancing tyre life and ensuring optimal braking performance.

This suspension has been applied to operate in the harshest of operating conditions and is suitable for various applications including flat bed, containers, tankers, bulkers, sidewalls, and tip trailers.

Single Axle - Heavy Duty Trailer Axle

The Single Axle is a high-quality axle designed for Indian and global markets. This Single Axle can be coupled with any Air and Tandem or Tridem Mechanical Suspension system, providing a reliable solution for various applications.

The Single Axle is manufactured using a high-strength alloy steel tube, ensuring better durability and long service life. The Single Axle uses friction welded spindles (a manufacturing practice only adopted by Hendrickson and Watson & Chalin in India for Trailer axles) which results in lowest weight and superior product life. This

Single Axle comes with AIS 113 certified brake liners, meeting industry standards for braking performance and ensuring safer operation.

The Single Axle uses a patented dust filter technology for extended wheel end life, and dynamically balanced brake drums for increased tyre life. It includes an outboard drum for easier servicing and heavy-duty bearings for reliable performance in demanding conditions.

MS 16 - Heavy Duty Mechanical Suspension

The MS 16 Heavy duty Mechanical Suspension is rated at 16T capacity and is designed to meet the diverse needs for on-road and off-road applications offering exceptional load-carrying capability and performance. The MS 16 Suspension is available in tandem and tridem configurations and features a heavy-duty leaf spring assembly. Its robust construction ensures optimal performance and durability. The MS 16 Suspension is manufactured with cost-effective, locally manufactured, high-quality components such as equalisers with thicker side plates and highly durable polyurethane bushes in the torque arm. These features contribute to low maintenance costs, reduced downtime and increase operational efficiency.

MENCOM INTRODUCES NEW ILME “21.21” METAL HOODS WITH M25 ANGLED CABLE ENTRY

The wide range of 21.21 rectangular connectors offers a number of advantages for modern industrial applications. They provide a secure and reliable connection for power and signal transmission, with high resistance to environmental factors such as dust, moisture, and vibration.

In addition, their compact design allows for easy installation and maintenance, making them a popular choice for a wide range of industrial machinery and equipment.

The new size 21.21 metal hood with angled M25 cable entry can accommodate large diameter cables or wire bundles while eliminating torsional stress on the locking lever



of the mating enclosure. They are available in four different versions: a standard version for heavy-duty applications, a DESINA® version with a bonded gasket, a W-type

version with improved corrosion resistance for aggressive environments, and an EMC version with a conductive surface for optimum electromagnetic shielding.

These are fully compatible with the existing range of “21.21” enclosures and they are particularly suitable for CQ series inserts with a high number of individual conductors. When installed with the sealing kit (CKR-65 or CKR-65D), they provide IP66/67/69 degrees of protection.

No grease, please!

Metal out, plastics in - save lubrication, money and maintenance

Decrease
downtime ...

igubal® spherical
insert bearings can
be installed quickly
and easily in just a few
minutes

... increase
service life

igubal® spherical insert
bearings prolong
service life by up to
eight times compared
to ball bearings

Triple savings ...

- 1 Cost-effective
purchasing price
- 2 No lubricants
- 3 No maintenance
costs



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