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Ring in the new!

It's that time of the year again when we look forward to a new year with renewed hope, energy and enthusiasm. It's also the time to look back with gratitude and introspection. Yes, there have been some misses and some hits. But for me, the hits outweigh the misses by a large margin.

The year 2018 truly reflected the return of Indian manufacturing in a slow but steady and solid manner. India's PMI and IIP numbers are consistently showing positive growth. The economy has stabilised from the after-effects of demonetisation and GST. Given the complexity, the geographic spread and the social as well as cultural diversity of our nation, the vision of 'One nation, one market and one tax' is definitely an ambitious one. However, it is no more just a vision or a dream; it is getting realised.

"THE YEAR 2018 TRULY REFLECTED THE RETURN OF INDIAN MANUFACTURING IN A SLOW BUT STEADY AND SOLID MANNER."

Similarly, India's position on the 'Ease of Doing Business' rankings continues to rise. The Swachh Bharat campaign is bearing good fruits. The 'Make in India' initiative along with 'Skill India' and 'Digital India' is gaining momentum.

I have these strong reasons to believe that we are entering the year 2019 much stronger than what we were at the beginning of 2018. So, even though 2019 is election year, I believe that the economy is on a strong ground.

By the way, the New Industrial Policy should be out soon – after a long wait of 27 years. Definitely something to look forward to!

"Ring out the old, ring in the new,
Ring, happy bells, across the snow;
The year is going, let him go;
Ring out the false, ring in the true."
From 'In Memoriam', by Lord Alfred Tennyson

Editor & Chief Community Officer

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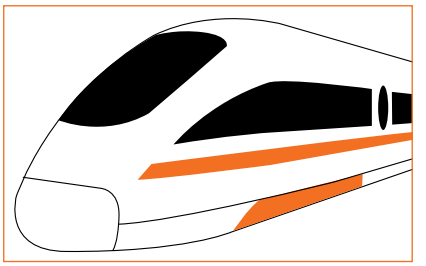

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HAL subsidiary Naini Aerospace Limited (NAeL) delivers helicopter structures

THE HAL'S HELICOPTER DIVISION in Bengaluru received the first batch of helicopter structures and sub-assemblies manufactured from HAL subsidiary Naini Aerospace Limited (NAeL), Prayagraj for Advanced Light Helicopter (Dhruv). The 'Certificate of Conformity' of sub-assemblies and bottom structure assembly was formally handed over recently at a function in Naini. R. Madhavan, CMD, HAL had recently launched the state-of-the-art structural assembly shop for production of helicopter structures. A robust quality management system is in place cleared by the joint audit team of

DGAQA and HAL for manufacturing of aircraft loom and structural assembly, he says.

Speaking on the occasion, V.M. Chamola, Director (HR)-HAL and Chairman (NAeL) hailed the efforts of NAeL employees in acquiring skills in the difficult domain of manufacturing of aero-structures. With the handing-over of helicopter structures, NAeL has now developed capabilities in the field of aero-structures apart from aircraft loom manufacturing, he added.

V. Natarajan, Executive Director, Helicopter Division-HAL received the documents from R.K Mishra, CEO (NAeL). Jig-out of bottom structure of ALH was performed by GVS Bhaskar, CEO-HC and Shekhar Shrivastava, CEO-BC, HAL inaugurated the Gate Complex of NAeL in separate events. Currently, the NAeL is executing the HAL order for five sets of ALH (Dhruv) structural assemblies.

Kia Motors India signs MoU with Andhra Pradesh Government

Kia Motors India has signed a Memorandum of Understanding (MoU) with the state of Andhra Pradesh to collaborate on the 'Partnership for Future Eco Mobility', The partnership reinforces Kia's commitment to support the Andhra Pradesh government in growing the uptake of electric vehicles (EV) and the development of a local EV infrastructure.

The memorandum was signed in the presence of the Chief Minister of Andhra Pradesh, N. Chandrababu Naidu and Kookhyun Shim, Managing Director and CEO of Kia Motors India. As part of the agreement, Kia Motors has provided the government with three examples of its global bestselling eco car – a Niro Hybrid, Niro Plug-in Hybrid and a Niro EV. Kia is also installing a vehicle charging station at Vijayawada, for representatives from the regional government to charge their new environmentally-friendly fleet.

The partnership signifies Kia's long-term commitment to build eco-friendly vehicles at its new Anantapur plant in Andhra Pradesh, an important step for the future of clean mobility in the rapidly expanding Indian market.

United Technologies Corp. to split into three independent companies

UNITED TECHNOLOGIES CORP. (NYSE: UTX) has recently announced the completion of its acquisition of Rockwell Collins (NYSE: COL) and the company's intention to separate its commercial businesses, Otis and Carrier (formerly CCS), into independent entities.

The separation will result in three global, industry-leading companies:

1. United Technologies, comprised of Collins Aerospace Systems and Pratt & Whitney, will be the preeminent systems supplier to the aerospace and defense industry; Collins Aerospace was formed through the combination of UTC Aerospace Systems and Rockwell Collins;
2. Otis, the world's leading manufacturer of elevators, escalators and moving walkways; and
3. Carrier, a global provider of HVAC, refrigeration, building automation, fire safety and security products with leadership positions across its portfolio.

"Our decision to separate United Technologies is a pivotal moment in our history and will best position each independent company to drive sustained growth, lead its industry in innovation and customer focus, and maximize value creation," said United Technologies Chairman & CEO Gregory Hayes.

"Our products make modern life possible for billions of people. I'm confident that each company will continue our proud history of performance, excellence and innovation while building an even brighter future. As standalone companies, United Technologies, Otis and Carrier will be ready to solve our customers' biggest challenges, provide rewarding career opportunities, and contribute positively to communities around the world," he says.

Power Cable Alliance launched in Mumbai

INDIA WITNESSED the start of a movement for quality infrastructure with the launch of Power Cable Alliance (PCA). Two copper rod manufacturers, eight Indian leading power cable manufacturers & one international power cable entity – have come together to form PCA. PCA is an association of organizations and individuals which will work together to push for the creation of safe, reliable and efficient electrical infrastructure in the country.

PCA was formally launched in Mumbai in the august presence of Subhash Desai, Mining & Industries Minister, corporate leaders from across industries. Stressing on the need for a strong power infrastructure in the country, Subhash Desai, Mining & Industries Minister, Government of Maharashtra said, "I appreciate the initiative taken by the organizers. We, the government of Maharashtra are equally concerned about the issue of electrical safety and would be hosting a conference where government and private sector can get together to build a program and have a better control of the situation. I would like to invite all the key members of the industry present here to join us and enrich our deliberation."

India-China DTAA protocol amended in November

THE GOVERNMENT OF THE REPUBLIC OF INDIA and the Government of the People's Republic of China have amended the Double Taxation Avoidance Agreement (DTAA) for the avoidance of double taxation and for the prevention of fiscal evasion with respect to taxes on income, by signing a Protocol on 26/11/2018.

Besides other changes, the Protocol updates the existing provisions for exchange of information to the latest international standards. Further, the Protocol incorporates changes required to implement treaty related minimum standards under the Action reports of Base Erosion & Profit shifting (BEPS) Project, in which India had participated on an equal footing. Besides minimum standards, the Protocol brings in changes as per BEPS Action reports as agreed upon by the two sides.

Supply chain must extend value chain: KPMG-ASCP report

KPMG in India and Association of Supply Chain Professionals (ASCP) released a new report today titled 'Supply chains in India: A reality check – Here to where and How'. The report highlights challenges faced by supply chains in India in each of the planning, sourcing, make and delivery stages, impact of key initiatives undertaken to overcome these challenges, the mindsets creating roadblocks in benefits realization, level of technology adoption and key emerging themes for supply chains of the future. KPMG in India also shares its perspective on how to effectively build supply chains for the digital world in the report.

The report suggests that the supply chain function in India is in a good position to create value and drive transformation across extended value chain from supplier's supplier to customer's customer.

The report is based on an online survey conducted among 76 leaders across manufacturing sectors like automotive, auto ancillaries, consumer goods and durables, pharmaceuticals and engineering in India to get their views on the current supply chain challenges, key focus areas and future aspirations.

Commenting on the future of supply chain, Ravind Mithe, Partner - Management Consulting, KPMG in India said, "Supply chain function is at a crossroads, where it has to surpass its traditional focus of transactional processing and driving efficiency to a leadership role that can make organisations ready for the digital world. The journey cannot be linear journey for the organisations. All the functions and processes must work in a frictionless manner to realise enterprise-wide transformation."

BEML wins order for Mumbai Metro

BEML has bagged a contract for Rs.3,015 crore for Mumbai Metro Corridor. Ministry of Housing & Urban Affairs has contributed to this one of the biggest success stories under Make in India initiatives of the Government. The order includes manufacturing of 378 Metro cars (63 Metro trains of 6 cars each) for Mumbai Metro Corridor 2A, 2B & 7. BEML was the lowest among seven bidders. The state-of-the-art, driverless trains will be manufactured indigenously by BEML. Supply of trains will begin from October 2020 & completed by December 2022. Earlier, BEML has supplied metro coaches along with its international JV partner. Now, BEML carry out the contract individually with some design work being sub-contracted to Hitachi. The coaches will be manufactured in the BEML's factory in Bengaluru. Some of the salient features are:

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• MARK YOUR DIARY •

A list of key events happening between January to December 2019, both nationally and internationally.

IMTEX 2019
January 24–30, 2019
Bengaluru, India
www.imtex.in

Taipei International Machine Tool Show
March 4–9, 2019
Taipei, Taiwan
www.timtos.com.tw

International Engineering Sourcing Show (IESS)
March 14–16, 2019
Chennai, India'
www.iesshow.in

Hannover Messe
April 1–5, 2019
Hannover, Germany
www.hannovermesse.de

Bauma
April 8–14, 2019
Munich, Germany
www.bauma.de

BLECH India 2019
April 25–27, 2019
Mumbai, India
www.blechindia.com

intec Coimbatore
June 6–10, 2019
Coimbatore, India
www.intec.codissia.com

Automotive Engineering Show India 2019 (Chennai)
July 4–6, 2019
Chennai, India
www.automotive-engineering-show.in

AgriTech India 2019
August 30–September 1, 2019
Bangalore, India
www.agritechindia.com

EMO Hannover 2019
September 16–21, 2019
Hannover, Germany
www.emo-hannover.de

Automation Expo 2019
September 25–28, 2019
Mumbai, India
www.automationindiaexpo.com

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December 10–14, 2019
Bengaluru, India
www.excon.in

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MASAKAZU YOSHIMURA TO BE TOYOTA KIRLOSKAR MOTOR'S MD

As a part of its management restructuring in India, Toyota Kirloskar Motor Pvt. Ltd. (TKM) recently announced the repatriation of Akito Tachibana, present Managing Director of Toyota Kirloskar Motor and proposed appointment of Masakazu Yoshimura as Managing Director. The formal appointment of the new Managing Director will be made at the meeting of Board of Directors scheduled on January 22, 2019.

Masakazu Yoshimura will be responsible for broad leadership and strategic direction of Toyota's business operations in India. He comes with over 25 years of rich automobile experience in diverse areas covering Product Planning, Pricing, Sales & Marketing, etc., and is equipped to further contribute to the overall success of Toyota's brand in the region.

Prior to this appointment*, Yoshimura was General Manager at Toyota Motor Corporation [East Asia & Oceania Division].

As a keen follower of Toyota's global best practices and continuous improvement of operations, Yoshimura will continue to guide the company's vision and values of building the brand synonymous with Quality, Dependability and Reliability - QDR Philosophy.

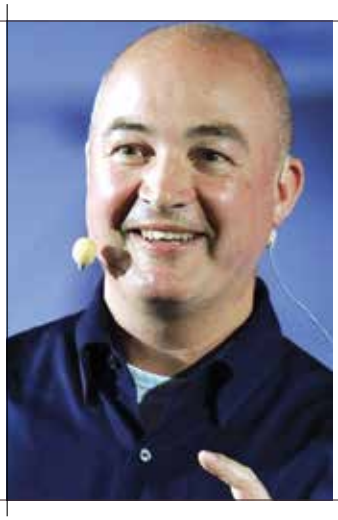
A.M. NAIK APPOINTED AS NSDC'S CHAIRMAN

The Ministry of Skill Development and Entrepreneurship has appointed A.M. Naik, Group Chairman of Larsen & Toubro, as the Chairman of National Skill Development Corporation India (NSDC).

Announcing this, Dharmendra Pradhan, Minister of Petroleum & Natural Gas and Skill Development & Entrepreneurship, said, "Naik epitomizes the core values of a successful leader - strength, innovation, ingenuity, knowledge and foresight – values that are imperative to the success of any development initiatives in today's economy. I strongly believe that he will strengthen the existing system and create a framework that offers everyone equitable opportunities to acquire skills and secure a better livelihood."

The appointment of Naik as Chairman of NSDC underscores the importance attached by the Hon'ble Prime Minister of India, Narendra Modi to skill development. As the Prime Minister has repeatedly stressed 'skilling brings a sense of self-confidence to the poor. Matching job creation with industry demand is the key to end unemployment. It is envisaged that, in the future, India will be the biggest supplier of workforce to the world.'

ALAN JOPE TO SUCCEED PAUL POLMAN AS UNILEVER CEO



Unilever has announced yesterday (November 29, 2018) that CEO Paul Polman has decided to retire from the company. Alan Jope, currently President, Beauty & Personal Care, has been appointed to the position, effective January 1, 2019, with Polman supporting the transition process during the first half of the year.

Paul Polman has been Unilever CEO for over 10 years and has worked in the consumer goods industry for almost four decades. Alan Jope, 54, has led Beauty & Personal Care, Unilever's largest Division, since 2014 and has been on the company's Leadership Executive since 2011. Alan joined the company as a graduate marketing trainee in 1985.

Unilever Chairman Marijn Dekkers said: "Paul is an exceptional business leader who has transformed Unilever, making it one of the best-performing companies in its sector, and one of the most admired businesses in the world. His role in helping to define a new era of responsible capitalism, embodied in the Unilever Sustainable Living Plan, marks him out as one of the most far-sighted business leaders of his generation.

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VOLKSWAGEN GROUP RESTRUCTURES MANAGEMENT IN INDIA

As part of the 'India 2.0' project, the Volkswagen Group plans to sustainably strengthen its position in the Indian market. The Volkswagen Group in India is restructuring its management in order to use the existing synergies more efficiently in the development of this important growth market.

Gurpratap Boparai, currently Managing Director of Škoda Auto India Pvt. Ltd., will also become Managing Director of the Volkswagen India Pvt. Ltd. (VWIPL) with effect from January 1, 2019. In the future, all Group brands will continue their operations under the leadership of Gurpratap Boparai with a common strategy in the Indian Market. The restructuring of the Volkswagen Group companies in India is planned for next year, subject to regulatory approvals.

The Volkswagen Group is placing the responsibility for implementing the 'India 2.0' project in the hands of the newly formed management team. The aim of this measure is to make more efficient use of existing synergies and to establish more agile coordination processes so that decisions can be made more quickly and flexibly.

Pavel Richter, Technical Director of Production in the 'India 2.0' project will lead production responsibility for the Group in India. As part of the restructuring Dr. Andreas Lauermann will be moving to the Volkswagen Group by end of the year to take on new responsibilities.

AIRBUS DEFENCE AND SPACE APPOINTS NEW HEAD OF OPERATIONS

Airbus Defence and Space has appointed Barbara Bergmeier, 50, as Head of Operations and Member of the Executive Committee, effective December 1, 2018. She succeeds André-Hubert Roussel, 53, who will become Chief Executive Officer (CEO) of ArianeGroup, a 50-50 joint venture between Airbus and Safran, effective January 1, 2019.

"I am happy that Barbara Bergmeier joins us at this exciting time for Airbus Defence and Space. Barbara is a seasoned leader in complex industrial ecosystems. She brings extensive experience in Manufacturing-Operations, Digital Transformation, Supply Chain Management, Production Restructuring, Design and Set-up of assembly lines and a strong international background – all assets which are of paramount importance for the further implementation of our growth strategy in the coming years," said Dirk Hoke, CEO of Airbus Defence and Space.

Barbara Bergmeier joins Airbus Defence and Space from Vilsbiburg, Germany-based Dräxlmaier Group, where she has been Chief Operating Officer and an Executive Board Member since 2014. In that capacity, she has been in charge of 50 production sites in 20 countries and has been instrumental in expanding the company's industrial footprint in Asia and in the Americas.

ADB APPOINTS SHIXIN CHEN AS NEW VICE-PRESIDENT

The Asian Development Bank (ADB) has appointed Shixin Chen as Vice-President for Operations. Chen will be responsible for operations in the South Asia Department and the Central and West Asia Department.

Chen currently heads the Department of International Economic and Financial Cooperation at the Ministry of Finance of the People's Republic of China (PRC). Since 1998, Chen has held senior positions in the Ministry of Finance, overseeing areas of public finance and partnerships with multilateral development banks.

He was World Bank's Executive Director for the PRC from 2013 to 2016 and has been a Board Director for the PRC in the New Development Bank and the Asian Infrastructure Investment Bank since 2016. From 2012 to 2014, he was a Board Director in the Credit Guarantee and Investment Facility.

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The MG brand with its global recognition as a famous British sports car brand of the yesteryears, is sure to gain resonance and relevance in India, says **P Balendran,** Executive Director, MG Motor India

By Niranjan Mudholkar

Q MG Motor India is the youngest player in the Indian automotive industry in terms of having a full-fledged presence. How's been the journey so far for the team?

It has been a roller coaster of a ride for MG in India although the company was incorporated only in February 2017. To build a strong foundation, we brought on board the crème de la crème of talent to bolster our ranks. We took over the plant on September 22 last year and the construction is now in full swing. We have also appointed 45 quality dealer partners, including the top dealers in the automotive business and have built a strong company culture on the core pillars of innovation, diversity, and safety. We will continue augmenting our existing talent pool in the future and expanding our employee base in India from 300 to around 1,000 by next year. We are all set for the launch of our first vehicle, a C-segment SUV, in Q2 next year.

Q MG Motor India started operations at its plant at Halol in Gujarat, which was earlier GM India's manufacturing facility. What kind of changes and additions have you done to the plant to make it suitable for your requirements?

We are getting the plant completely refurbished. The construction is in full swing and the first vehicle is set to roll out from the Halol facility in Q2 next year, with a high degree of localisation. There are some captive vendors too. Innovation, Safety and Diversity are the fundamental pillars upon which the brand MG has been built, and this is what guides our long-term vision in the Indian market.

"We will continue augmenting our existing talent pool in the future and expanding our employee base in India from 300 to around 1,000 by next year."

Q What is the overall capacity of this plant?

At present, the manufacturing capacity of our Halol facility is 80,000 units per year. But there is provision to ramp it up to 200,000 units per annum depending upon the requirements, which we will examine and cater to in due course of time.

Q What kind of investments have been made so far? What is the further investment roadmap for next 3-4 years?

So far, we have invested over Rs.2,200 crore and we have plans to make more investments going forward depending upon the requirements.

Q MG is all set to launch its first vehicle, an SUV, in India in Q2, 2019. What is the strategy behind the plans to start with an SUV?

MG, as a premier British auto brand that represents sheer class, performance and exclusivity, aims to provide Indian customers with a one-of-its-kind automotive experience. Our first SUV to be launched in India will live up to the MG legacy. We believe that no other brand within the C-SUV segment will offer the kind of features and technological integration that

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our vehicle will provide, making it a breakthrough product in this space. Also, in terms of market segmentation and growth, we believe that there is room in the C-segment for us to grow and expand the premium SUV.

How will this SUV be positioned in the market in terms of segment and pricing? How would you differentiate it in the market?

While the dimensions of our soon-to-be-launched SUV will be the best in the segment, we also aim to create differentiation in terms of size, looks, features and safety. We want to create an overall value proposition that will help our first India product to stand out against the competition in the market. More details of the SUV including price will be announced closer to the launch of the product due to competitive reasons.

What kind of localisation can we expect in the first vehicle of MG Motor in India? Tell us something about your supply chain.

With our focus on owning the end-to-end supply chain for our vehicles, we aim to achieve over 75 percent localisation for our vehicles produced at the Halol manufacturing facility. We have also established a dedicated vendor park in the state of Gujarat, with some captive vendors setting up shops at our facility. In the longer term, we aim to ramp up manufacturing activities in India and the vendor eco-system will support our expansion.

I understand that the first SUV has been primarily designed in UK and China. Do you foresee MG Motor India having design and engineering capabilities soon?

All our vehicles will be designed and engineered in UK and China with the support of Indian engineers, with deep localization and manufacturing in India. We believe that having a local R&D setup is crucial to ensuring the long-term success of

"We plan to leverage our parent company's in-depth expertise to launch state-of-the-art EVs in India & have already marked our global electric SUV to be introduced as our second product in India in 2020."

MG Motor India. It will provide us with a deeper understanding of the current and future market dynamics and demands, as well as the specific requirements and expectations of Indian consumers. This, in turn, will lead to more relevant products, competitive pricing of spare parts, service and logistics.

The Indian Government is pushing for the growth of the electric vehicles in the country. What can we expect from MG Motor India on this front?

As a global leader in the EV space, our parent organisation SAIC has already built extensive capabilities when it comes to manufacturing environment-friendly mobility solutions. It is currently one of the few automobile manufacturers in the world which is capable of producing all three types of new-energy vehicles, be it plug-in hybrid, pure electric, or fuel cell. We do plan to leverage our parent company's in-depth expertise to launch state-of-the-art EVs in India and have already marked our global electric SUV to be introduced as our second product in India in 2020. However, we are also closely tracking all developments within the domain – be it in terms of policies/regulations or market demand – to gauge the readiness level of the country's EV ecosystem. The success of EVs in India will depend upon the creation of a dedicated pan-India infrastructure for EVs & related technologies, as well as the acceptance levels from the end-users.

China-based SAIC Motor Corp., the parent of MG Motor India, also owns the Roewe brand. Will MG Motor India consider launching vehicles under this brand in India?

We have no plans to launch the Roewe brand to the Indian market. The MG brand with its global recognition as a famous British sports car brand of the yesteryears, is sure to gain resonance and relevance in India.

What kind of portfolio is MG Motor India envisioning by 2022?

At present, we are mainly focusing on the fast-growing SUV market. That being said, we will continue to monitor emerging trends across different categories, with a view of tapping into any future market demand with our range of innovative offerings.

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Being **future ready!**

One of the pioneers of Industry 4.0 has been the global automotive industry, deploying smart technologies to develop production equipment, smart products and modern manufacturing techniques.

By Shaju S

Industry 4.0 is a term that has been attracting eyeballs from all across the globe. This technology-driven phenomenon is expected to transform production and manufacturing systems across industries, especially with respect to the automotive sector. It majorly involves the acceleration of production services and engineering solutions with the use of smart technologies such as Artificial Intelligence, Internet of Things, Cloud Computing, Big Data and Machine Learning.

One of the pioneers of Industry 4.0 has been the global automotive industry, deploying smart technologies to develop production equipment, smart products and modern manufacturing techniques. The Indian automotive industry is one of the largest in the world and is also in line with these advancements. It is expected to be the third largest automotive market by volume in the world (from: India's Readiness for Industry 4.0 – A focus on Automotive Sector). Industry 4.0 is based on connectedness; where machines interact with each other and also with humans providing real-time data which can be accessed from anywhere at any point of time. Although the complete connected state is not ready, the automotive industry here is readily adopting these technologies. Implementation of industrial internet of things, 3-D printing, advanced robotics, and immersive technologies such AR, VR and MR and other such technological advancements are also bringing about significant breakthroughs in the Indian automotive industry.

> "Industry 4.0 is based on connectedness; where machines interact with each other and also with humans providing real-time data."

The three mega-trends that will contribute the most to the automotive industry's transition are:

1. ***Cloud-based services:*** In order to branch out & maximise internal capabilities, automotive OEMs will begin to work with cloud-based systems to manage services, maximise real-time computational power & reduce licensing costs
2. ***Cyber-security services:*** In addition to connected vehicles, OEMs will work towards creating a holistically connected ecosystem that includes security as the core element of every process. Moving in line with the speed at which the industry is transforming, OEMs will have to integrate security protocols at all touch-points and new technologies and services such as V2X communication that strengthens the vehicle as well as the infrastructure.
3. ***Use of Big Data and Analytics:*** Management of risks, improvement of processes, analysing consumer behaviour and needs, and optimisation of resources will be carried out effectively using existing data. This would help automotive OEMs in gaining deeper insights into upcoming trends and direct their business processes accordingly. Additionally, everyday technology in the automotive sector will be integrated with newer innovations such as video analytics and voice recognition

The Indian consumer is also asking for more and more connected features in automobiles, giving the industry more reason to embrace the shift. Additionally, warming up to new technologies and ensuring end-to-end digitisation of processes will also make India a preferred market for manufacturing for other countries. Indian OEMs such as Bajaj Auto, Maruti Suzuki and Tata Motors have been taking significant steps towards implementation of Industry 4.0 leading to increased profitability. Having said this, some challenges that need to be addressed by OEMs for seamless and secure production systems are integration of contractors into the supply chain, vulnerability to cyber-security threats that rise from openly accessible data and efficient use and management of Big Data, cloud storage and analytics. It is important for key players to overcome these to continue their journey towards complete autonomy.

Given its massive potential to contribute to the country's economy, the Indian government is also creating enabling policies and better infrastructure. The Make in India programme is one of the biggest announcements by the India government that strives to promote manufacturing in India. Such initiatives by the government will give the required push to MNCs to develop their products and services in India.

The author is General Manager & Head of Automotive Business Unit, Tata Elxsi.

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Roadmap for change!

Automotive major Ford Motor Company is undergoing a major transformation and the company says that it is well aligned with its strategy for the same.

Ford has been working intensively and taking action to transform its business over the past 18 months. As Ford redesign and restructure its global business, Ford will build on its areas of strength; smartly and strategically address underperforming products and regions; and invest in the future by designing smart vehicles for a smart world. The key action points in this plan include the following:

Updated footprint: Ford announced in July that restructuring activities could have potential EBIT charges of $11 billion, with cash-related effects of $7 billion, over the next five years. These actions will come largely outside of North America.

Transforming Product Development: Ford announced nine months ago that it is shifting to five flexible architectures for its vehicles -- driving a 20 percent savings in time from sketch to showroom and yielding significant efficiencies. As part of this, Ford has also identified ways to manage up to 70 percent of each vehicle's value through increased component sharing. Ford also formed a new Enterprise Product Line Management group, which establishes 10 cross-functional teams that will manage distinct product lines as end-to-end businesses and leverage Ford's human-centered design, advanced product marketing and user experience teams to create breakthrough products and customer experiences.

Shifting Vehicle Portfolio: Ford has already taken actions to shift its vehicle portfolio to better meet its customers' needs going forward and strengthen its business, improving returns. This includes moving approximately 90 percent of its North American vehicle line-up volume to SUVs, pickup trucks and commercial vehicles between 2018 and by the end of 2020. The company is phasing out slow-selling traditional sedans to free up capital for new entries in growing segments.

Signing of MoU with Mahindra. Ford is in talks with both Volkswagen and Mahindra about potential collaborations and it remains upbeat about both.

File pic of Ford's Kentucky Truck Plant. Ford has the best manufacturing capacity utilization in North America based on the aggressive restructuring it completed a decade ago

Strong investments in Autonomous and Electrified Vehicles: Ford's fitness actions are freeing up capital to invest in emerging businesses. Ford expects to invest $4 billion in its AV efforts through 2023, including its $1 billion investment in Argo AI. In addition, Ford is investing $11 billion in electrification from 2015 to 2022 to deliver a total of 40 vehicles globally. The company remains on track to deliver a full battery electric performance SUV that offers at least a 300-mile range in 2020.

Capacity Utilization: Ford has the best manufacturing capacity utilization in North America based on the aggressive restructuring it completed a decade ago, including its use of industry-leading three-crew operating patterns and its continued discipline around balancing capacity with consumer demand, as Ford has for years.

Organization Redesign: Ford is in the early stages of reorganizing its global salaried workforce to support the company's strategic objectives, create a more dynamic and empowering work environment and become more fit as a business. The reorganization will result in headcount reduction over time, and this will vary based on team and location.

Strategic Alliances: Ford is in talks with both Volkswagen and Mahindra about potential collaborations across a number of areas of its business. Ford is encouraged by both sets of talks and continue working to ensure these alliances help it better serve customers globally.

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Vehicle to future!

Recently, the Indian government had stated that Advanced Driver Assistance Systems (ADAS) would be made a mandatory feature in upcoming vehicles, with total implementation to be completed by early 2022. Let's understand the challenges in achieving this goal.

By Jeff Phillips

According to the World Health Organization, traffic accidents account for more than 1.25 million lives lost each year, with almost three percent of the GDP of every government being necessary to address these problems. Within this context, the lives that autonomous driving could save stand out as the most important consequence of the adoption of autonomous technology, amongst its other potential impacts extending into the personal, economic, and political domains.

Advanced Driver Assistance Systems (ADAS) are a convergence of sensors, processors, and software to improve safety and ultimately deliver self-driving capability. Most of these systems today use a single sensor, such as radar or camera to build a real-time view of the vehicle's surroundings and collect data to be analyzed before a decision can be made. Recently, the Indian government had stated that ADAS would be made a mandatory feature in upcoming vehicles, with total implementation to be completed by early 2022. However, to move from driver-assist to Level 4 or 5 autonomy, where a driver is no longer necessary, the auto industry must first overcome increasingly complicated challenges. For example, there is a requirement for sensor fusion i.e. the combining of measurement data from many sensors to drive outcomes which consequently demands synchronization, high-power processing, and the continued evolution of the sensors themselves. For automotive manufacturers, solving these challenges means finding the appropriate balance across three critical trade-offs: cost, technology, and strategy.

> "The ultimate goal of processing sensor data, is to create a fail-safe representation of the environment surrounding the car in a way that can be fed into decision-making algorithms and that can keep costs down so the final product is profitable."

Lidar adds redundancy

Cost: Redundant Versus Complementary Sensors

The standard for Level 3 autonomy states that the driver's inputs are not required if the vehicle operate with a predefined set of circumstances. The 2019 Audi A8 will be the world's first production car to offer Level 3 autonomy. Equipped with six cameras, five radar devices, one lidar device, and 12 ultrasonic sensors, the vehicle will allow for the limitation of one type of sensor to be compensated by another set. For example, the radar would show the speed of the object but not its location, thereby creating the need for sensor fusion as both these data points are critical in anticipating the behaviour of the object.

The ultimate goal of processing sensor data, hence, is to create a fail-safe representation of the environment surrounding the car in a way that can be fed into decision-making algorithms and that can keep costs down so the final product is profitable. Choosing the right software is one of the most significant challenges in accomplishing this. Consider the following examples: tightly synchronizing measurements, maintaining data traceability, and testing the software against the infinite number of real-world scenarios. Each of these is uniquely challenging; autonomous driving will require all

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three, but at what cost?

Technology: Distributed Versus Centralized Architectures

Currently, ADAS processing capabilities are based on data obtained from multiple isolated control units, a fact that sensor fusion is changing with the rise in popularity of a singular centralized processor. Taking the example of the Audi A8 2019 model, the vehicle combines the required sensors, function portfolio, electronic hardware, and software architecture into a single central system. This central driver assistance controller computes an entire model of the vehicle's surroundings and activates all assistance systems. Thus, its processing power exceeds that of all the systems in the previous model of the Audi A8 combined.

"The achievement of Level 5 autonomy requires the processing capabilities in the microprocessor for autonomous vehicles to be augmented by a factor of 2000 compared to the current microprocessors on controllers."

A centralized architecture, however, also creates a high-power processing cost, which is exacerbated by the need for a secondary fusion controller elsewhere in the car as a safety-critical backup. Preferences will likely alternate between distributed and centralized architectural design over time as the controller and its processing capabilities evolve, which means a software-defined tester design will be critical in keeping up with that evolution.

Strategy: In-House Versus Off-the-Shelf Technology

The achievement of Level 5 autonomy requires the processing capabilities in the microprocessor for autonomous vehicles to be augmented by a factor of 2000 compared to the current microprocessors on controllers. Such a requirement would make these components more expensive than RF components in mmWave radar sensor systems. But as a capability in high demand increases in price, leaders from adjacent markets tend to enter the space, driving competition among market incumbents.

As an illustration of this trend, UBS estimates that the Chevrolet Bolt electric powertrain has 6X to 10X more semiconductor content than an equivalent internal combustion engine car. The semiconductor content will only continue to increase, and market adjacencies will provide invaluable off-the-shelf technology improvements. For instance, NVIDIA has adapted its Tegra platform, initially developed for consumer electronics, to target ADAS applications in automotive systems. Alternatively, DENSO has started designing and fabricating its own artificial intelligence microprocessor to reduce cost and energy consumption, and NSITEXE, Inc., a subsidiary of DENSO, has plans to release a dataflow processor, a next-generation processor IP called DFP in 2022.

"The lives that autonomous driving could save stand out as the most important consequence of the adoption of autonomous technology, amongst its other potential impacts extending into the personal, economic, and political domains."

Optimizing the Trade-Offs

The decisions taken by organizations today on these trade-offs will heavily impact time to market and differentiating capabilities throughout the supply chain. Testers will now be required to be quickly reconfigured in order to minimize validation and production test costs and times, making flexibility through software a vital ask. In an interview excerpt published on March 4, 2018, on bloomberg.com, Dr. James Kuffner, CEO of the Toyota Research Institute-Advanced Development, said, "We're not just doubling down but quadrupling down in terms of the budget. We have nearly $4 billion US$ to really have Toyota become a new mobility company that is world-class in software." There's no clear answer on these trade-offs yet, but, just like past industrial revolutions empowered people to afford new technologies through a higher productivity gain, increasing efficiency in software development will be integral to the autonomous driving revolution.

Redundant versus complementary sensor considerations

The author is National Instruments' Head of Automotive Marketing

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Electrified transport

The automotive industry talks about EVs benefits and challenges at the manufacturing level

By Swati Deshpande

Electric vehicles (EVs) are believed to be future of transportation. Giving an overview of the situation, Nishant Arya, Executive Director, JBM Group says, "According to a report by Bloomberg New Energy Finance (BNEF), India will have better progress on electric two-wheelers, rickshaws and electric buses over the next 10 years. The BNEF study also says that the annual sales of EVs will reach 30,000 units in 2022 as opposed to 2,000 units in 2017."

"The rising number of government initiatives such as the recently draft EV policy are also factors that will propel an upward growth of the market," he adds.

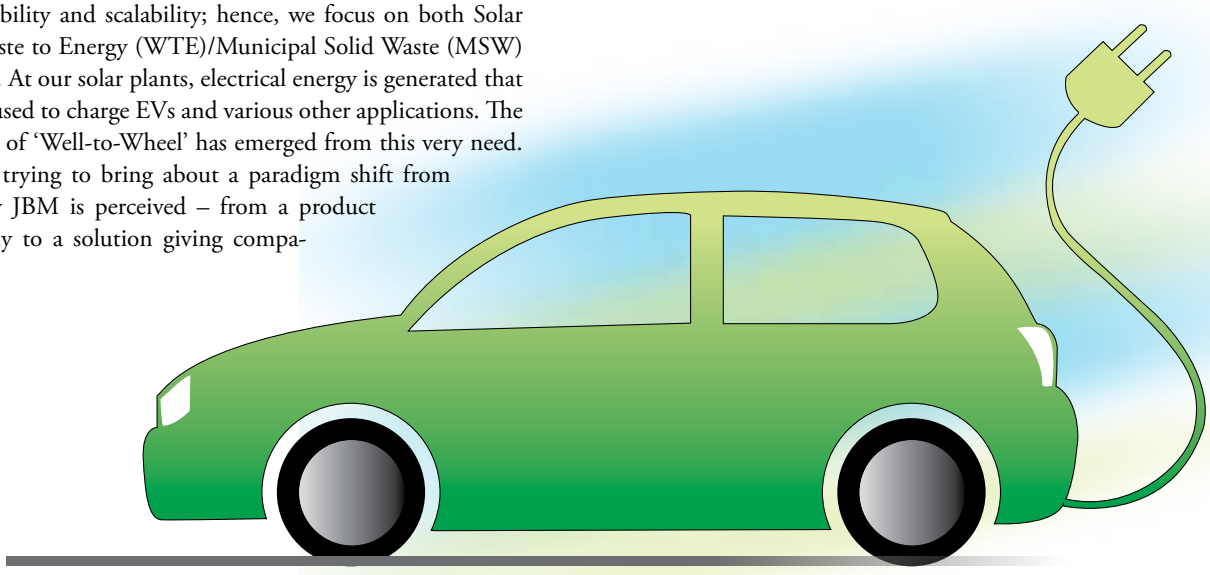
Offering a differnt perspective, Karthick Athmanathan, Head – EV & eMobility solutions, Ashok Leyland says "We are planning for significant numbers to start only in 2022. Till such time, while there might be a lot of talk in the media and government and conferences, we do not see them translating into a number of EVs. The start of significant numbers are expected in 2022 but the significant market penetration for EVs will be only in 2024 and that too in select segments like Buses, Last Mile Connectivity Vehicles, Delivery Trucks, maybe mofussil bus and truck routes, etc."

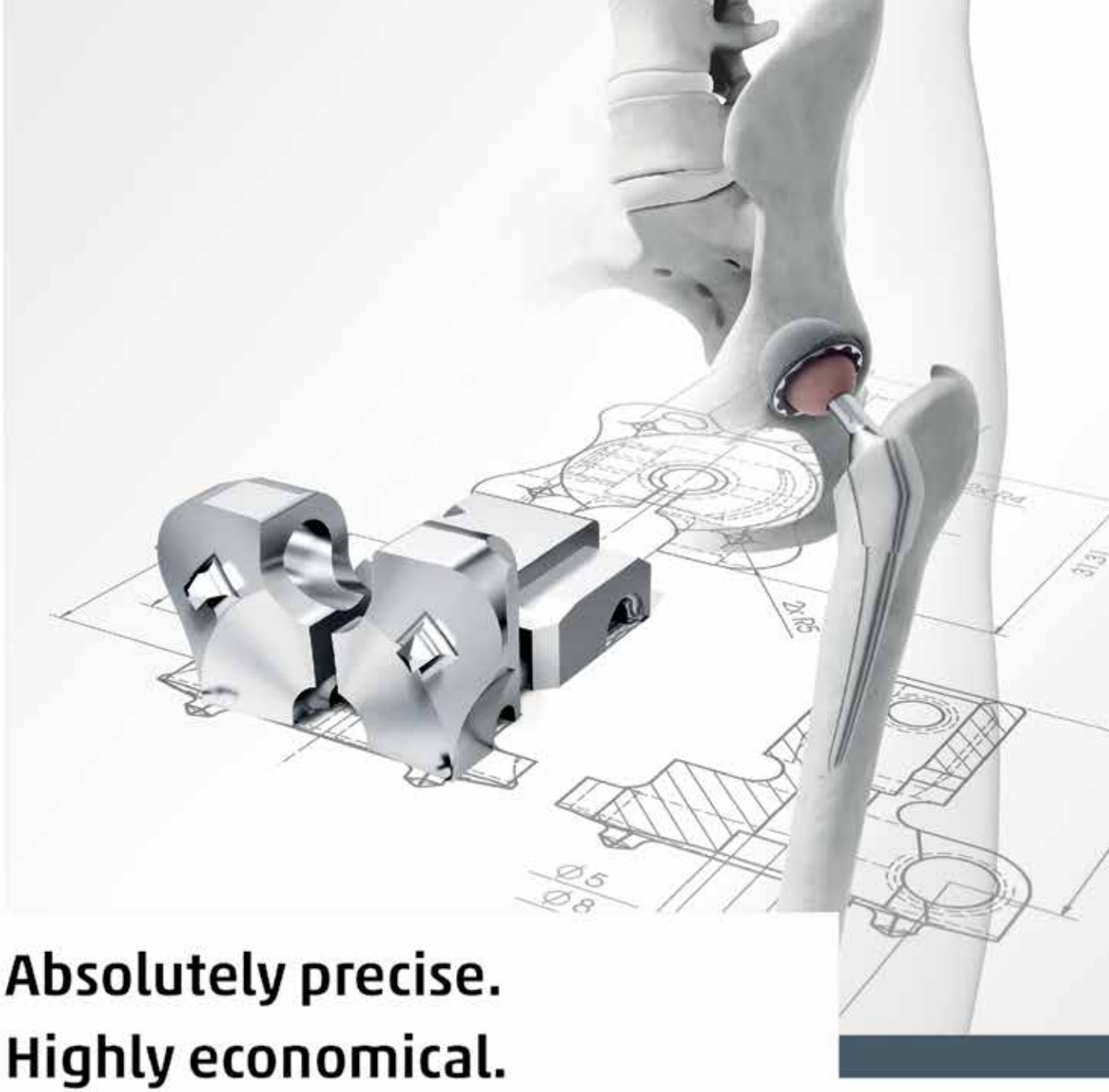
Arya further belives, "There is no doubt that Electric Vehicles are the next revolution in the mobility market. We at JBM strongly believe in a viable and robust business model and feel that it is important to integrate different business segments for sustainability and scalability; hence, we focus on both Solar and Waste to Energy (WTE)/Municipal Solid Waste (MSW) systems. At our solar plants, electrical energy is generated that can be used to charge EVs and various other applications. The concept of 'Well-to-Wheel' has emerged from this very need. We are trying to bring about a paradigm shift from the way JBM is perceived – from a product company to a solution giving company. JBM is consciously working towards providing 'Well to Wheel' solutions, wherein, we have developed in-house, end to end capabilities in the e-mobility domain right from generation to consumption of green energy in powering e-vehicles."

> It is very clear that, if the costs are comparable to diesel at a Total Cost of Ownership level, the market is very eager and ready to buy and use EVs in the Commercial Vehicle segment.
>
> **Karthick Athmanathan,**
> Head – EV & eMobility solutions, Ashok Leyland

Acceptance in the market

Speaking about the level of acceptance of EVs in the market, Athmanathan explains, "It is very clear that, if the costs are comparable to diesel at a Total Cost of Ownership level, the





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The initial investment one makes in an electric vehicle can be recovered in the form of cost saving in a limited period. If production of electric vehicles is promoted well, there will be benefits of economy of scale and the initial cost will come down for the end user.

Nishant Arya, Executive Director, JBM Group

market is very eager and ready to buy and use EV's in the Commercial Vehicle segment. The important part is that we will need to not just sell EVs but a solution that includes the chargers, Annual Maintenance, etc. so that the customer is able to readily build them into his fleets. As far as the "Feasible Technology" front is concerned, Ashok Leyland has been developing and quietly running reliability and safety trials for various products and solutions for nearly the last one year. There is no doubt or problem in terms of having the required technology and supply chain. Most of the key technology requirements to suit the drastic Indian Commercial Vehicle segment is generated and validated by AL internally and in partnership with various experts, consultants and alliance partners."

Arya futher elaborated on other limitations that the EV enthusiasts are facing. Talking about it, he says, "As on date, there are two limitations - one is financial and the other is operational. Financially, EV CV's are not competitive when compared to diesel unless they run for about 800km per day. So there is, as on date, no business case for the customers. Operationally, there are two main issues (i) customers still want to load a lot of batteries in the vehicle and keep running for the entire day after charging in the night- this further destroys the business case due to high initial investments (ii) the quality and strength of the grid to charge the vehicles is suspect and we need to put up special transformer and other equipment at additional cost and time to enable charging- and most of the DISSCOM's being cash-starved Govt. entities, these are proving to be a challenge to start running EV's."

Continuing he also narrated the benefits that EVs offer, "Electric has more advantages than limitations when comparted to conventional mode of transport. There is zero guilt factor to start with as you are not damaging the environment and simultaneously you are saving a lot of money in transportation cost. The initial investment one makes in an electric vehicle can be recovered in the form of cost saving in a limited period. If production of electric vehicles is promoted well, there will be benefits of economy of scale and the initial cost will come down for the end user. Talking about our product, we are offering a bigger space in ECOLIFE buses than traditional buses. Passenger information system (PIS), vehicle health monitoring system, electronic braking system, wheelchair ramp, and kneeling mechanism are other features of the bus. These features will make public transportation a very safe and pleasant experience."

Manufacturing

Apart from market penetration, EVs face challenges at the manufacturing stage as well. Un-established eco-system tops the list. Elaborating on it, Athmanathan says, "As on date, for CV's, there is negligible supply chain inside India but a lot of the ACMA suppliers are in the process of getting into this business and it will improve once the volumes start going up with decreasing costs. There is no doubt about it and it is only a matter of time and not willingness. It is also a bit stressful for the suppliers to invest and develop EV aggregates when quite a few of them are doing the same for BS6 - there is a lack of bandwidth and capacity for management, engineering and investments due to the BS VI part as well. But all this is likely to go away as issues by 2022 when the volumes will really happen. Infrastructure - already explained above - for CV EVs, it is not about charging infrastructure (which is one of the issues in passenger vehicles) but about the Grid strength and quality. For now, we work with people abroad for supply chain and a lot of them are start-ups. We know that some of them are in the process of putting up facilities in India but the action in the supply chain will hot up once the ACMA members start entering the fray with partners."

"With effects from the regulatory challenges – demonetisation, transition to BS IV and GST, things have returned to normalcy for the automobile sector. This is evident from the volume growth being registered by OEMs.

There are challenges in the form of higher capital cost for manufacturing and expensive batteries. The cost of batteries is huge as currently batteries are being imported. A robust ecosystem that supports the usage of electric vehicles needs to be put in place along with a strong government policy on setting up of charging stations. These charging points can be in the form of pantograph and plug-in charging. The government can be the largest buyer of electric vehicles which will lead to economies of scale for the industry. This will, in turn, also lead to setting up of charging stations across the country," Arya explains.

"These challenges will soon become opportunities as the Indian market has already started gaining momentum in this direction. According to the recently announced EV Draft Policy 2018, India aims to be a 25% electric vehicle nation by 2023. I am sure that with all big OEMs working towards this cause in tandem with the government, we should see signs of tremendous growth by 2020 itself," he concludes.

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Nurturing the **right culture**

Joseph Panakkal Jackson, VP – Human Resources, WABCO India Ltd. speaks to The Machinist about the way the organisation deals with today's dynamic workforce.

By Swati Deshpande

In any organisation, workforce management plays a vital role. What is your take on it?

WABCO India has a very strong Total Employee Involvement (TEI) culture that has been carefully nurtured over three decades and which forms an integral part of our workforce management strategy. Our TEI vehicles like Employee suggestions, Quality Control Circles (QCC), Supervisory Improvement Teams (SIT), Cross Functional Teams (CFT) and task forces, helps in process improvements across functions through enhanced employee collaboration. The TEI culture helps to promote creative thinking among employees, which results in material, labour and capital productivity. For example, capital productivity is improved through better utilisation of machine capacity and upgrading old machines to industry 4.0 standards. Similarly, material productivity is enhanced through Value Analysis, Value Engineering (VAVE) and alternate sourcing practices.

"On the shopfloor, where meticulousness is required, we have seen women employees showcase required quality & exhibit expertise."

Skills Development is one of the major challenges that the manufacturing industry currently is facing. What are your thoughts on the same?

It is the responsibility of any industry to upgrade their workforce to bridge the gap between meeting customer requirements and their employees' existing skill sets. To develop a competent workforce, we impart need based trainings to the operators, with emphasis on quality for multi skills and involve all employees for the improvements through suggestions scheme and QCC projects. Structured training on specialization & analytical skills is regularly conducted and Total Productive Maintenance (TPM) is leveraged as an effective tool to improve overall productivity. TPM helps to avoid wastage in a quickly changing environment, reduce manufacturing cost, produce a low batch quantity within the shortest possible time & ensures that products sent to customers meet required quality standards. We use Quick Response Six Sigma (QR6S), QC story & Six Sigma DMAIC (Define, Measure, Analyze, Improve, Control) approaches as tools to help improve the problem solving skills of our employees.

What steps do you take to enhance employees' knolwedge to keep them updated with the latest trends/ technologies?

At WABCO India, we constantly anticipate and track the evolving industry trends both in India & globally and through our structured talent management program, we are able to build a strong talent pipeline with the required skill sets. Talent management is done in every function with a view to identify top talents, prepare a succession plan & formulate developmental action for the identified talent. As a part of the talent management process, we regularly implement talent and skill development actions like benchmark visits to customers, suppliers and other manufacturing organizations to learn best practices, structured job rotation, short term training programs, higher education programs, participation in industry forums conducted by industry bodies like ACMA & CII, Six Sigma green belt programs and short term assignments at other global WABCO locations. To help employees keep abreast of the latest digital trends like Industry 4.0, we have established an internal digital taskforce, which comprises of a young team of Gen Y and Gen Z talents under the guidance of the senior leadership team. This team works on smart manufacturing projects like Robotic Process Automation, efficiency improvement & traceability through IoT & low cost automation. Other significant training development initiatives we conduct, are–Next Gen leadership program, 'Inspire and Win' program for middle level managers, short term programs conducted by industry bodies like CII, ACMA, QCFI, SAE, NIQR, Doctoral Program at IIT, Chennai, value engineering workshops, QR6S problem solving methodology, quality and safety awareness training.

Tell us about the involvement of women at your plant.

WABCO is an equal opportunity employer. On the shopfloor assembly product line, where meticulousness on the job is required, we have seen women employees exhibit their expertise. Women empowerment is the key for WABCO to provide opportunities for women across all levels.

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Enabling **technology adaption**

V. Anbu, Director General and CEO, IMTMA talks to The Machinist about Industry 4.0 and its benefits for the Indian manufacturing industry.

By Swati Deshpande

Q Please tell us about your experience with regard to implementation of Industry 4.0. What benefits do technologies/solutions pertaining to Industry 4.0 offer?

Industry 4.0 is a boon for manufacturing sector to ramp up their shopfloor activities and manufacture high precision products. From users' perspective especially industry sectors such as automotive, power, defence, railways, aerospace, and many others, Industry 4.0 application has helped streamline operations by establishing connectivity between humans and machines to work seamlessly for the end product. Operators however need to learn and understand machine language for deriving optimum results.

Using Industry 4.0 enables OEMs and suppliers get an agility to quickly adapt manufacturing specifications and respond well to the changing standards. Plants which are enabled with Industry 4.0 will have robust monitoring systems for identifying potential maintenance issues before they cause downtime. Often customers seek to personalize the configuration of their products. Traditional manufacturing processes have limitations but with Industry 4.0 manufacturers can customize products as per individual needs besides shortening the delivery time.

IMTMA is celebrating 50 years of IMTEX, is holding a pavilion on Industry 4.0 during the exhibition. The expo on Industry 4.0 will serve as a platform to see and experience all facets of implementation of Industry 4.0 including sensors, analytics, connectivity, automation, smart machines, digitization, internet of things, cyber security, and so on. Large companies will be showcasing their innovations in the Industry 4.0 pavilion.

Using Industry 4.0 enables OEMs and suppliers get an agility to quickly adapt manufacturing specifications and respond well to the changing standards.

Q Technology upgradation calls for disruption as well. What disruption does Industry 4.0 cause at the operations level & how to deal with it?

Technology upgradation can cause disruptions. Many of the erstwhile manual functions are becoming digitalized/automated. Organisations build technologies in-house by hiring and training the right staff and undertaking solution development. IMTMA's training facilities are continuously upgraded to facilitate new programmes such as Internet of Things, 3D printing, and other technologies useful in the realm of digital manufacturing. This helps engineers to deal with technology disruption.

Technology upgradation can cause disruptions. Many of the erstwhile manual functions are becoming digitalized / automated.

Q Any technology upgradation calls for new skills set. How to deal with the challenge of skill upgradation?

India's manufacturing industry certainly needs to compete globally and this is not possible without a skilled workforce. There is a mismatch between the requirements of industry and what engineers learn in academic institutions. IMTMA to address this gap in skill sets has set up Technology Centres at its offices in Bengaluru, Pune and Gurugram. The centres are equipped with state-of-the-art training facilities including CNC turning and machining centres, metal forming presses, CAD/CAM/CAE, CMM and Metrology equipment, cutting tools and other accessories for imparting hands-on training. The training imparted at these centres makes fresh engineers and new recruits to be industry ready with practical knowledge to take on production responsibilities.

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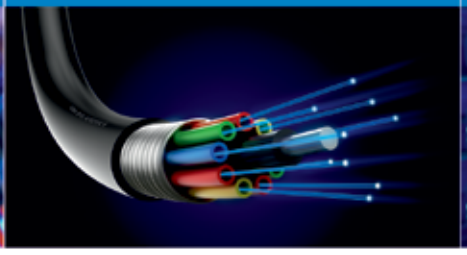

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A-axis

B-axis

High productivity

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- Spindle acceleration time

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The fourth edition of The Machinist Global Manufacturing Summit was a great success. A quick report...

The Machinist Hall of Fame 2018 Kevin Flynn of Fiat Chrysler Automobiles India giving his acceptance speech

> Make in India is just not about making it in India for domestic consumption but it is way beyond that. It is about manufacturing products in the India, with global standards, that can be sold globally with pride and confidence.
>
> **Kevin Flynn,** Managing Director & President, Fiat Chrysler Automobiles India

The fourth edition of The Machinist Global Manufacturing Summit (GMS2018) took place in Pune on December 5, 2018. This platform has been conceptualised with the aim of creating a forum to discuss trends, opportunities and challenges in the manufacturing industry. After the three successful editions in Bengaluru (2015), Delhi (2016) and Indore (2017), this year GMS was held in Pune – the manufacturing hub of Western India.

Apart from disseminating knowledge, this forum recognises and honours industry stalwart's contribution towards the manufacturing industry. This year, Kevin Flynn, Managing Director & President, Fiat Chrysler Automobiles India became the fourth industry leader to be inducted in to The Machinist Hall of Fame. Previously, Baba Kalyani, Chairman & Managing Director, Bharat Forge (2015); (Late) Rajan Nanda, (then) Chairman, Escorts Ltd. (2016) and Dr. Mahesh Gupta, Founder & CMD, Kent RO (2017) were inducted into The Machinist Hall of Fame.

While accepting the recognition, Flynn said, "Thank you for this honour. I am humbled to be inducted into The Machinist Hall of Fame 2018. However, this recognition is not mine alone. My team & my people are equally part of it.

Also, I want to highlight here that Make in India is a great initiative by the Government of India and we wanted to support it. On the other hand, we also wanted to redefine the brand Jeep. Jeep Compass is the finest example of amalgamation of these thoughts." He further added, "Make in India is just not about making it in India for the domestic consumption but it is way beyond that. It is about manufacturing products in the India with global standards those can be sold globally with pride and confidence. Here, I am proud to say that we export cars from Ranjangaon to UK, South Africa, Australia, New Zealand and many other parts of the world. We have proven that we can manufacture a world-class product here that can be sold even in the developed markets. For me, this is an accolade for India not just for me or FCA India. I think it is the most amazing turnaround."

After The Machinist Hall of Fame ceremony, a high profile power-packed CEO Panel Discussion took place. It revolved

It was the first time in the four year old history of Global Manufacturing Summit that delegates visited a plant. The destination was Mahindra's vehicle plant at Chakan, Pune.

Lamp lighting ceremony at The Machinist Global Manufacturing Summit 2018

around the theme of the event - Inspire, Integrate, Innovate! The industry stalwarts from different sectors of manufacturing like Diego Graffi, Managing Director & CEO, Piaggio Vehicles Pvt. Ltd.; Dharmesh Arora, CEO, Schaeffler India; Aravind Melligeri, Chairman & CEO, Aequs; Avneet Singh Marwah, Director and CEO, Super Plastronics Pvt Ltd; Parag Satpute, Managing Director, Bridgestone India Pvt. Ltd.; Wu Song, Managing Director, LiuGong India and Srinivas KP, Managing Director, Paama Agrico Pvt Ltd. brainstormed on how the management is driving the quest of profitability .

Yet another highlight of this knowledge sharing platform was a panel discussion on "Technology Disruption – How to deal with it?" Here, industry experts such as S. S. Agarkar, Head of Manufacturing, Godrej Precision Engineering, Nishit Behera, Executive Director, RSB Group, T. K. Ramesh, CEO, Micromatic Machine Tools Pvt. Ltd. and Yatendra Kumar, Business Head, MotulTech India threw light on how technology disruption is affecting the manufacturing industry. Also, they showed the ways to tackle with it.

GMS 2018 delegates paying attention to the event's proceedings

Green & Digital

In addition to panel discussions, audience applauded for couple of presentations. Sunil Joshi, Vice President Digital Machining - South & East Asia, Sandvik Coromant presented on Connected Coroplus solutions for Digital Machining. He emphasized on the future of manufacturing in the digital era.

Dheeraj Anand, Head – Business Development (West India), CleanMax Solar presented case studies on Capex free Solar Solutions for Manufacturing Companies to reduce energy bills. This helped delegates understand ways to use solar energy in a cost effective manner.

Plant Visit

This was the first time in the history of The Machinist Global Manufacturing Summit that delegates attended a plant tour. They visited Mahindra & Mahindra's world-class facility in Chakan, Pune. The delegates found this visit extremely insightful.

With power packed sessions and insightful plant visit, Global Manufacturing Summit 2018 concluded on a positive note.

Investing in the future

Sunjay Kapur, CEO, Sona Group talks to The Machinist about implementation of Industry 4.0 technologies in the company's plants.

By Swati Deshpande

Q Please tell us about your experience with regard to implementation of Industry 4.0.

We are in a very early stage of transitioning to Industry 4.0. We are in the midst of steps, which consist of (1) general awareness at all the levels, (2) identifying the areas that offer quick returns on the investments and present opportunities of creating early success stories, and (3) identifying and bridging the skill gaps that exist for running a digital enterprise.

Q What results do you expect solutions pertaining to Industry 4.0 to offer?

Industry 4.0 covers the four groups of technologies: (1) Human-machine interaction, (2) IoT and machine-to-machine connectivity, (3) Predictive Analytics, and (4) Additive manufacturing. These clearly can provide benefits through improved labor efficiency, asset utilization, quality, and value proposition to the customer. At the minimum, transitioning to Industry 4.0 can result into:

1. Removal of inaccuracies in data capture so that data-based decisions can be taken confidently,
2. Real-time access, analysis, and diagnosis of problems when they occur so that the same can be fixed quickly and efficiently,
3. Predicting abnormalities in advance, impacting positively to the quality, delivery, and cost of our products and services.

Q What benefits does Industry 4.0 offer at the operations level?

The technology of the smart factory offers speed, transparency, and accuracy of information transfer. Application of the related technology will automate both manual and knowledge work. The entire organization will be connected, so the transfer of information and knowledge will take place quickly and comprehensively. This will result in new definitions of job roles and the need for new skill sets. This will be a significant disruption at the operation level.

Q Implementation of these technologies will cause disruption. How do you plan to deal with it?

Like any other successful transformation, implementing Industry 4.0 will require these seven steps:

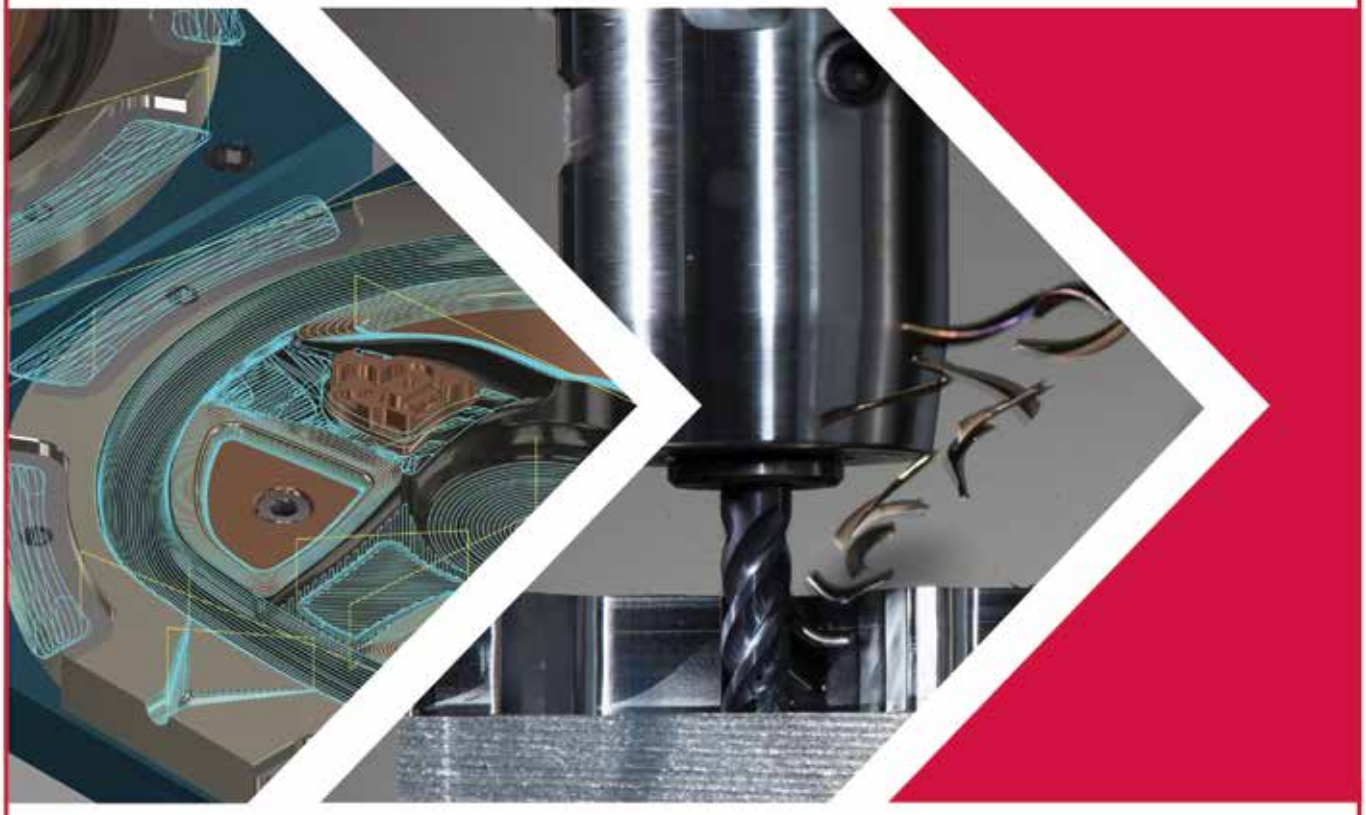
1. Clear Goal Statement that is widely communicated in the organization.
2. Organisational Setting consisting of identifying and making available necessary resources.
3. Training and Educating employees to develop necessary skills.
4. Widely communicating the need for the transformation and keeping employees informed of the status of the progress of implementation.
5. Sharing of success stories and valuable lessons learned across the organization even while the implementation is in progress.
6. Rewards and recognition of deserving employees.
7. Frequent diagnosis and monitoring of the transitioning activity.

The entire organization will be connected, so the transfer of information and knowledge will take place quickly and comprehensively. This will result in new definitions of job roles and the need for new skill sets. This will be a significant disruption at the operation level.

Q Any technology upgradation calls for new skills set. How are you dealing with this challenge?

Job descriptions in a smart factory will drastically change. As a result, the skills required by every player will undergo a significant shift. Today, a production worker typically carries out production task that consists of a large share of manual chores. In a smart factory, he or she will have to handle exceptions in production. A maintenance expert in a conventional shopfloor

THE FUTURE STARTS HERE



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is an exception handler who troubleshoots problems. In the new scenario, this role will change to one of overseeing predictive maintenance, and planning and implementing actions based on data-driven analyses. The same kind of transformations will occur in the jobs of the professionals in the field of quality, production planning, logistics, as well as the team leaders. So all of them will have to be reskilled in the transformed organization.

Skill up-gradation takes time, so it is the biggest bottleneck in the implementation of Industry 4.0. However, companies must begin this slow process as quickly as possible if they wish to reap the benefits of this new revolution. There are no shortcuts.

In addition to upgrading skills of existing employees, another challenge that companies will face is the emergence of new roles, hitherto unknown or ignored. Plants will need data analysts who can carry out relevant statistical analyses, IT integrators who will work for optimizing IT infrastructure and manage interfaces and communications, and experts in additive manufacturing. Automotive companies will be at a disadvantage while attracting the best talent in these new domains since the competing players are the digital giants who offer attractive opportunities to the recruits. Innovative strategies such as a differential pay structure, the freedom to operate from remote locations, and providing opportunities to grow not only financially, but also intellectually will have to be devised to face this challenge.

Skill up-gradation takes time, so it is the biggest bottleneck in the implementation of Industry 4.0. However, companies must begin this slow process as quickly as possible if they wish to reap the benefits of this new revolution. There are no shortcuts.

As with any transformation, making the transition to Industry 4.0 will require companies to reinvent themselves and a comprehensive vision that such paradigm shifts demand.

UPDATE

LAPP expands its manufacturing facility in Bhopal

LAPP has announced its investment of Rs. 220 million in their manufacturing facility in Pilukhedi, Bhopal. The investment aims to strengthen LAPP's foothold in India towards its vision of Rs. 10 billion by 2020.

LAPP's Bhopal manufacturing facility was established in the year 2012 and with an initial investment of Rs. 450 million which now grows to a total of Rs. 810 million. Currently, the facility is spread across 60,000 Sq. Ft. with the capacity to produce 216,000 kms of single core wires catering to the fast-expanding Building and Panel Builders sector as well as 36,000 kms of multicore cables. With this investment, the facility has been expanded by an additional 30,000 Sq. ft. The company has installed new state-of-the-art, high-end machineries like Rosendahl Insulation line and Tubular Stranding Line for doubling its production capacity. These additions will help serve the OEMs, Automation, Machine Tools, Panel Builders, and Residential and Commercial building markets. LAPP India has procured braiding machines to support the growing demand for shielded multicore cables and data communication cables for the process industries such as Food &Beverage.

"Our Bhopal plant is a major contributor to our growth in India. Due to its geographical advantage, it helps us deliver the products faster across India and fully contribute to the delightful purchase experience of our customers."

Marc Jarrault, Managing Director, LAPP India Pvt. Ltd.

The extended facility was inaugurated in the presence of Georg Stawowy, Chief Technology Officer and Member of the Board of Directors, LAPP Holding AG, Dr. Hilmar Doering, Chief Human Resource Officer and Member of Supervisory Board, and Hyungeon Park, Chief Technology Officer, Lapp Asia Pacific. The event was also graced by LAPP's channel partners and the customers.

"Bhopal plant is the most productive factory of LAPP. This year investment will not only double de facto Bhopal's production capacity in power and control cables under our ÖLFLEX® brand, but also allow LAPP to expand in the growing market of communication cables with the production of our UNITRONIC® brand and meet the demands of our rapidly growing and evolving customers," said Gorge Stowowy.

The facility will now have an extended warehouse capacity and will serve as a mother warehouse to deliver products to customers located across India.

"Our Bhopal plant is a major contributor to our growth in India. Due to its geographical advantage, it helps us deliver the products faster across India and fully contribute to the delightful purchase experience of our customers," says Marc Jarrault, Managing Director, LAPP India Pvt. Ltd.

Source: LAPP India

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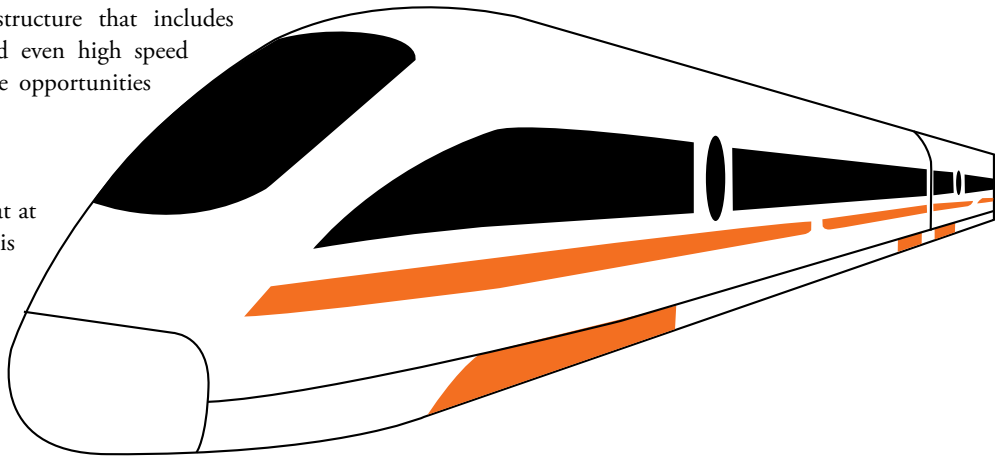
Growing opportunities in **railways manufacturing**

Railways manufacturing has picked up the pace in India owing to new projects. Here is an overview of the same.

India is creating new infrastructure that includes metros, freight corridors and even high speed rails. Here is overview of the opportunities that these sectors are creating:



Metro Projects

The government data says that at present, around 324 km of metro rail is operational in Delhi and NCR, Gurgaon, Kolkata, Chennai, Bengaluru, Jaipur and Mumbai. Around 550 km is under construction in various cities, including Delhi and NCR, Kolkata, Chennai, Jaipur, Mumbai, Kochi, Ahmedabad, Nagpur and Lucknow. Around 3,500 metro cars have been ordered by domestic metro operators across 13 cities. Nearly 3,000 metro cars are likely to be procured over the next five years across cities with Mumbai and Delhi ordering major quantities, said sources.

The union government is encouraging cities with population above two million to develop mass transit systems; it is expected that around 50 cities will have population over two million by 2050. These cities will evaluate to adopt metro, monorail or light rail vehicle-based transit system in the coming years. For metros alone, a strong demand will be created with Indian metro rail operators procuring more than 3000 metro cars in the next five years.

While policy measures such as a streamlined tender/bids process, one window investment portals from the state governments and the Ministry of Urban Development's (MoUD) push for metro suppliers to 'Make in India' have phenomenally improved the ease of operating businesses.

The demand for metro coach is seeing very good growth in the Indian market. In fact, new players such as ICF want to grab a decent share in the growing metro coach market, which is currently dominated by multinational companies such as Alstom and Bombardier, a couple of Chinese companies and the state-owned BEML.

ICF entry into the metro railway system is taking time as most of them in the country operate in standard gauge (SG). ICF had never built an SG coach as it operates predominantly in the broad gauge space (it, however, supplies coaches to Kolkata Metro which operates in broad gauge). There is a big difference in design for SG (1,435 mm) and BG coaches (1,676 mm). They believe that they can bring down price by ₹3–4 crore per coach (each is priced at around ₹10 crore currently) without affecting the quality.

While policy measures such as a streamlined tender/bids process, one window investment portals from the state governments and the Ministry of Urban Development's (MoUD) push for metro suppliers to 'Make in India' have phenomenally improved the ease of operating businesses. The new taxation regime has done much to clean up outdated taxation policies.

India is emerging as a key region for manufacturing coaches. As a market, rapid modernisation, adoption of newer, safer and more sustainable technology, rapid urbanisation places India high on the market potential index. Location-wise, having a base in India also helps companies assuredly deliver projects across Asia, the Middle East and even beyond. Companies have been able to tap into the large, skilled talent pool available in the country- young talent pool can help in developing solutions for projects worldwide.

FDI is permitted in the following activities of the Railway Transport sector:

- Suburban corridor projects through PPP
- High speed train projects
- Dedicated freight lines

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- Mass Rapid Transport Systems

Dedicated freight corridors

Railways is ramping up its freight carrying capacity by 1100 million tonne in the next two years as it is hoping to complete the construction of 3,300km-long dedicated freight corridors by 2020.

Indian Railways is set to put out its largest tender for 22,000 wagons at a cost of at least ₹7,000 crore in the current financial year that could see big orders for Texmaco Rail and Engineering, Titagarh Wagons, Jindal Rail and Jupiter Wagons among other wagon makers. The orders would be through the reverse e-auction model, and if the lowest bidder isn't able to serve the entire order, the second-lowest bidder would get a chance without a fresh tendering process.

The railways ministry hopes the bulk tender would help it reduce the cost of wagons by at least 15-20 percent. On an average, the ministry procures 8,000 wagons a year.

High speed rail

The Mumbai-Ahmedabad high-speed rail corridor is an under-construction high-speed rail line connecting the cities of Ahmedabad, Gujarat, and India's economic hub Mumbai, Maharashtra. It will be India's first high-speed rail line.

The construction of the corridor began in August 2018 by acquiring land for Sabarmati terminus, and the first high-speed train is scheduled to leave for its first run on 15 August 2022. The corridor will use Japan Railways Shinkansen E5 Series Electric multiple unit for its rolling stock.

Most of the corridor will be elevated, except for a 21-km underground tunnel between Thane and Virar, of which 7 km will be under the sea. The undersea tunnel was chosen to avoid damaging the thick vegetation present in the area. The corridor will begin at the underground station in the Bandra-Kurla Complex in Mumbai, and then traverse 21 km underground before emerging above the ground at Thane.

The Mumbai-Ahmedabad corridor, along with five other high-speed rail corridors, was introduced for a feasibility study in the 2009–2010 rail budget. A 650-km long high-speed rail corridor was proposed to run from the Pune railway station to Ahmedabad railway station via Mumbai. The point at which this route would touch Mumbai was to be decided when the feasibility report was prepared.

Source: BDB India

FACILITY UPDATE

Groupe PSA & CK Birla Group open JV plant

Groupe PSA and AVTEC Ltd (a CK Birla Group Co.) recently hosted the inauguration ceremony of their greenfield plant in Hosur, Tamil Nadu. This marks the formal start of industrial set up of this site, which will manufacture and supply technologically advanced and eco-friendly powertrain for the Global and Domestic Automotive market, in-line with the future industry norms and customer expectations. The historic ceremony has been graced by Carlos Tavares, Chairman of the Managing Board, Groupe PSA and CK Birla, Chairman, the CK Birla Group.

The initial manufacturing capacity of this state-of-the-art plant will be about 300,000 units per year for the transmissions and 200,000 units for the BS-VI compliant engines. The manufacturing set up has been completed in a record time of less than two years. The plant will manufacture gearboxes in Phase I to support both the India project as well as supplying Groupe PSA needs.

The initial manufacturing capacity of this state-of-the-art plant will be about 300,000 units per year for the transmissions and 200,000 units for the BS-VI compliant engines.

The peak investment in this manufacturing set up would go up to Rs. 600 Crore (circa 73 M€) and it will generate a direct employment of around 800 people. Additionally, the performance of the industrial set-up will be supported by a significant level of localization to reach the necessary cost competitiveness.

Carlos Tavares, Chairman of the Managing Board Groupe PSA said, "We want to be Indian in India. With this inauguration, we have taken another critical step towards the execution of our Push to Pass strategic plan and commitment towards the Indian customers. The quality of the relation with our partner, the CK Birla Group, is paramount to the success of our common project, with the creation of a complete ecosystem in India."

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Driving the quest for **excellence**

Power packed CEO Panel at GMS 2018 agrees that the best of Indian manufacturing is yet to come!

The CEO Panel Discussion during the fourth edition of The Machinist Global Manufacturing Summit (GMS2018) revolved around the theme of the event - Inspire, Integrate, Innovate! During the discussion moderated by Niranjan Mudholka, Editor, The Machinist, the speakers spoke about ever changing consumer behaviour and its effect on the manufacturing process. Avneet Singh Marwah, Director & CEO, Super Plastronics mentioned, "Having a strong brand name such as Kodak at our side, helped us focussing on backward integration and manufacturing process rather than marketing efforts." Speaking on the Piaggio legacy, Diego Graffi, MD & CEO, Piaggio Vehicles said, "Legacy is a double edged sword. It had been a challenge for us to combine our heritage of premium products with Indian expectations." Adding to it Wu Song, MD, LiuGong India said, "Branding is an important aspect for any business. It depicts values that the organisation follows. We at LiuGong make continuous efforts to offer reliable products and let our consumers talk about it."

The top notch panellists also discussed about the role of technology transformation in manufacturing. "It is important to understand what changes are forthcoming and invest into the future. Any transformation is difficult and may give slow returns at an early phase," said Dharmesh Arora, CEO, Schaeffler India. Agreeing, Parag Satpute, MD, Bridgestone India mentioned that transformation should be seen as opportunity.

Speaking about farm equipment manufacturing, Srinivas KP, MD, Paama Agrico said, "Innovation is what drives us." Aravind Melligeri, Chairman & CEO, Aequs added that aerospace manufacturing is highly dependent on its supply chain. "It needs strong eco-system."

All CEOs collectively mentioned that the best is yet to come for the Indian manufacturing industry.

Aerospace manufacturing is highly dependent on its supply chain. In order for it to be successful, it needs strong eco-system.

Aravind Melligeri, Chairman & CEO, Aequs

Having a strong brand name such as Kodak at our side, helped us focussing on backward integration and manufacturing process rather than marketing efforts.

Avneet Singh Marwah, Director & CEO, Super Plastronics

It is important to understand what changes are forthcoming and invest into the future. Any transformation is difficult and may give slow returns at an early phase.

Dharmesh Arora, CEO, Schaeffler India

Legacy is a double edged sword. It had been a challenge for us to combine our heritage of premium products with Indian expectations.

Diego Graffi, MD & CEO, Piaggio Vehicles

As the transformation happens from combustion engine to EV, the nature of tyres being deployed will also change & we see it as a great opportunity.

Parag Satpute, MD, Bridgestone India

We wanted to manufacture is nothing but the best and make it available at reasonable price in India.

Srinivas KP, MD, Paama Agrico

Branding is very important. It depicts values that the organisation follows. We at LiuGong make continuous efforts to offer reliable products & let our consumers talk about it.

Wu Song, MD, LiuGong India

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Unlocking additive manufacturing possibilities with **multi-laser productivity**

Here is a case study on how additive manufacturing technique can help improve productivity

Two heads are better than one when it comes to creativity, but are four lasers better than one when it comes to metal additive manufacturing? The evidence speaks for itself. Here, Robin Weston, Marketing Manager at Renishaw's Additive Manufacturing Products Division, explains how the new Renishaw RenAM 500Q four-laser system is expected to significantly improve productivity in the most commonly used machine platform size.

By speeding up the process by up to four times, Renishaw expects the RenAM 500Q to broaden the market appeal of metal additive manufacturing. This will advance the technology into applications that are presently uneconomic, and potentially into new industries that have yet to embrace AM in production applications.

Innovative design enabled by additive manufacturing

The key driver for the RenAM 500Q is a new, innovative optical system. The system is a critical component within the AM system and was designed through a collaboration between Renishaw's dedicated control, software and mechanical engineering departments.

The ytterbium fibre laser beams enter the optical system and are guided by four pairs of mirrors driven by precision galvanometers (galvos) which rotate to steer the laser beams across the build plate. The optical system also focuses the lasers dynamically, continually adjusting their focal lengths to maintain a consistent spot size as the beam angles change across the flat working area. To deliver accuracy at the powder bed takes expert optical and control engineering, something Renishaw has spent years perfecting on products like its REVO® 5-axis measurement system for co-ordinate measuring machines.

Renishaw drew on its in-house additive manufacturing (AM) capabilities to produce the RenAM 500Q optical system. Using AM to produce this component has allowed Renishaw to achieve tighter packaging of the guiding mirrors and the incorporation of internal conformal cooling channels to maintain precise thermal stability. Enabling these innovations through the production use of AM has allowed Renishaw to produce a machine that addresses the challenges of improving productivity in the most widely used mid-sized machine class.

The optical system design is produced with a hybrid manufacturing technique – by incorporating the (normally sacrificial) processing plate as part of the final component, it reduced the volume of AM material to be printed and cut the processing step required to remove components from the plate. Renishaw's Additive Manufacturing Solutions Centre in Staffordshire further optimised the component, AM support structure and design for manufacture for series production.

> The new four-laser system improves productivity up to four times without increasing platform size. Larger systems face additional challenges including increased material inventory, mechanical handling of heavier substrates, shielding gas efficiency over a larger working area and the inevitable higher capital cost and factory footprint of larger systems.

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The new four-laser system improves productivity up to four

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times without increasing platform size. Larger systems face additional challenges including increased material inventory, mechanical handling of heavier substrates, shielding gas efficiency over a larger working area and the inevitable higher capital cost and factory footprint of larger systems. For larger parts these compromises must be accepted, but for a broader appeal, mid-sized machines tick more boxes and are presently mostly hampered by a lack of productivity due to a limited number of lasers.

Using four lasers efficiently requires more up-front programming and process engineering work. The easiest place to start is to assign each laser to an individual or group of independent parts. The lasers can then work in parallel.

The RenAM 500Q builds on the system architecture of Renishaw's RenAM 500M single-laser system for series production, but with some significant differences. The most obvious is four lasers but all subsystems must be re-engineered to cope with the additional throughput. Of high importance is the ability to deal with the additional process emissions generated by four lasers. Resolving this with a higher throughput of gas, and greater gas velocity, places an increased burden on other subsystems such as filtration, used to capture the process emissions. Here Renishaw has added an intercooler into the gas stream to maintain consistent processing temperatures and a pre-filter cyclone that separates smaller particles from larger particles to help preserve filter life and increase powder re-use.

Other areas that have been enhanced include improved gas flow consistency across the processing area, significantly reducing cleaning between builds. With four lasers that work over the entire build area, it is also vital to maintain a precise relationship between the optical system and the powder bed. A number of engineering advances contribute to achieving this, including precision kinematic mountings used to locate the re-coater, improving set-up time and repeatability.

Small footprint, big possibilities

Using four lasers efficiently requires more up-front programming and process engineering work. The easiest place to start is to assign each laser to an individual or group of independent parts. The lasers can then work in parallel. Initial findings suggest that some care is needed when processing adjacent parts simultaneously, where the emissions from one might affect the other. Results show some marginal differences in surface finish but overall this is the simplest processing scenario to manage and is the recommended start point for most users.

Beyond this the application plays a more significant role in the choices around multi-laser processing. It is clearly possible to use all four lasers to work on a single part and the ability of the Renishaw system to address the entire powder bed with each laser allows for the most optimised processing strategy.

One example is the Renishaw RenAM 500Q galvo mounting block, which is additively manufactured in 19 hours using four lasers. It is an ideal AM part and an application where the operational demands are focussed on thermal stability, leak proofing and geometrical repeatability. It is not under significant structural load and so component testing can be confined to verifying functional design requirements.

For more challenging structural parts, particularly those in safety critical applications such as aerospace, healthcare and motorsport, most users will want a detailed understanding of the effects of multi-laser interaction and this will require more testing and evaluation, something potential users can experience through the Renishaw Solutions Centre access programme.

Each user will have their own perspective on how to approach multi-laser technology, whether using it to enhance productivity for an already mature AM application, or to unlock new markets and applications that significant productivity gains allow.

Additive manufacturing is now a viable series production technology. The technology is moving towards applications where it is not just the technical benefits of AM that are attractive but also the production economics for high quality components.

What's more, the Renishaw RenAM 500Q system offers up to four times greater productivity but at a modest increase in initial capital investment – this translates into a reduction in piece part component cost which will both broaden the appeal of metal additive manufacturing and allow existing users to achieve more. To answer the original question, it seems four lasers really are better than one.

Source: Renishaw

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Dealing with **technology disruption**

An overview of the panel discussion on how to deal with technology disruption.

The Machinist Global Manufacturing Summit 2018 (GMS2018) witnessed a panel discussion which focussed on 'Technology Disruption – How to deal with it?' S. S. Agarkar, Head of Manufacturing, Godrej Precision Engineering; Nishit Behera, Executive Director, RSB Group; T. K. Ramesh, CEO, Micromatic Machine Tools Pvt. Ltd. and Yatendra Kumar, Business Head, MotulTech India participated in this panel discussion moderated by Swati Deshpande, Associate Editor, The Machinist.

The discussion covered various key points such as challenges in adapting new technologies, skill development and being future ready for market trends and technological changes. Ramesh said, "Whatever you call the situation - disruption or change - it is greatly influenced by the speed with which it comes along. And while it is taking place ability to change is what matters." Agarkar mentioned, "Generally, disruptions are not like volcanic eruptions that happen all of a sudden. You see them coming and as manufacturing heads, we should be careful while reacting to them."

Agreeing with him, Behra added, "Change has always been there. Move from mechanical NC machines to CNC machines was a big change in the manufacturing industry. Similarly, move towards new technologies is a change that the industry has to adapt. Once the acceptance of the change has taken place, implementation will follow." Yatendra Kumar seconded this thought noted, "When the change from NC to CNC machines happened, hardly any colleges taught it. However, as 3D printing is getting popular, lot of engineering colleges are teaching it as a part of the educational program. That's the speed of adaption today."

Future of **manufacturing**

At GMS 2018, industry presentations revealed a way forward towards sustainable and digital future of manufacturing.

Dheeraj Anand,
Head – Business Development (West India), CleanMax Solar

Dheeraj Anand, Head – Business Development (West India), CleanMax Solar presented on Capex free Solar Solutions for Manufacturing Companies to reduce energy bills. During his presentation, he highlighted relevant case studies where users have been able to save cost from solar panel installations. Highlighting the importance of renewable energy, he mentioned, "We should adapt renewable technologies now so that our future is secure." He also added that "Most of the corporates prefer Build-Own-Operate Model as it turns out to be an economical option."

Sunil Joshi,
Vice President Digital Machining - South & East Asia, Sandvik Coromant

Sunil Joshi, Vice President Digital Machining - South & East Asia, Sandvik Coromant presented on Connected Coroplus solutions for Digital Machining. Coroplus Solutions is a new platform that the company has launched. Speaking on the same he said, "Apart from regular cutting tools, the company is also developing digital machining solutions. With these solutions the company is aiming at providing users with a solution that can connect the different parts of the value chain. We believe that when users are provided with the right data, they are be able to take better decisions and thereby reduce waste, improve efficiency and hence save cost."

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Industry's tomorrow demands 'Industry 4.0' today

An overview of how the use of technology can make supply chains more effective and efficient

By Anil Lingayat

The average turnaround time of ships at Indian ports has improved from 4.01 days in FY15 to 3.44 days in FY17. However, this is still high in comparison with ports such as Singapore and Shanghai wherein turnaround time stands at between 1-2 days and 0-1 days respectively. The reason for this isn't only better loading and unloading infrastructure, such as material handling equipment, but also the reliance on advanced technologies.

As a nation, India enjoys many cost advantages vis-à-vis other nations due to lower labour costs and other overheads. However, the logistics cost in India, at 13–14 percent, is unfortunately much higher than the United States (9.5 percent) or Germany (8 percent). Such inefficiencies add to the cost of manufacturing local products thereby increasing final pricing and reducing our competitive edge in the global marketplace.

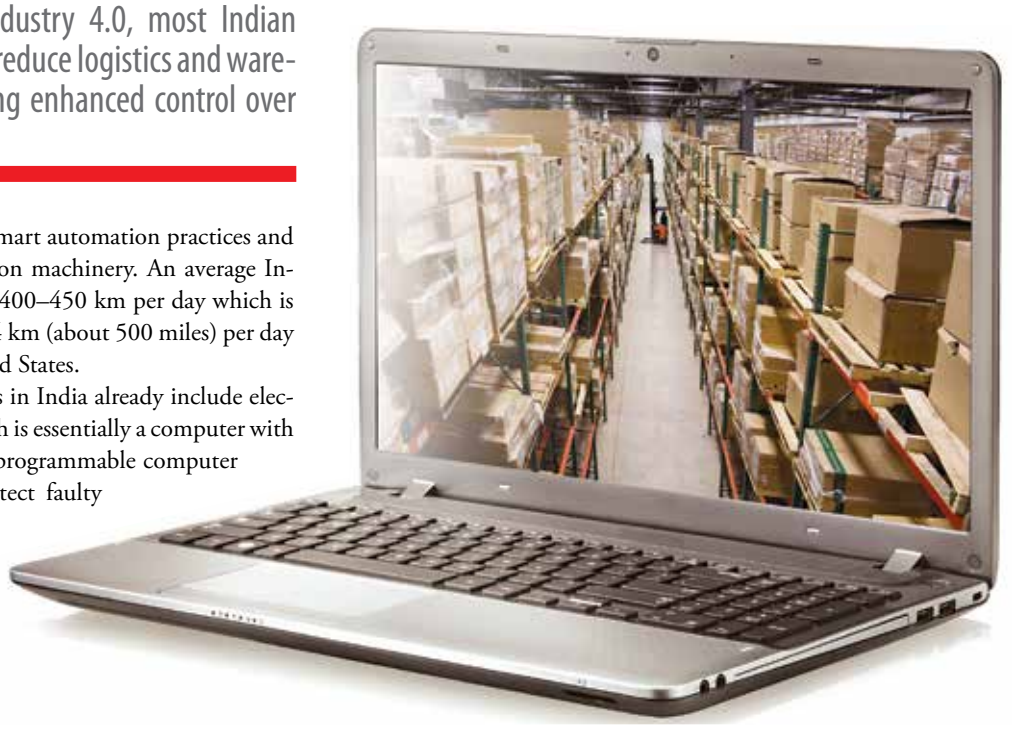
With the adaption of Industry 4.0, most Indian companies will be able to reduce logistics and warehousing costs while having enhanced control over deliveries and quality.

What we need is to adapt smart automation practices and not necessarily increase spend on machinery. An average Indian truck covers a distance of 400–450 km per day which is much lower than the nearly 804 km (about 500 miles) per day achieved by trucks in the United States.

Few premium truck models in India already include electronic control unit (ECU) which is essentially a computer with internal pre-programmed and programmable computer chip. This ECU can easily detect faulty components or parts in case of unforeseen break-downs thereby reducing down-time. This ensures that the time spent on diagnosis is minimized and immediate communication can be sent to the nearest service center for making identified spare parts available and for servicing.

The same principle could be applied to the logistics and warehousing scenario wherein material handling machines could be programmed to detect faults and timely remedial measures can be taken. In addition, new-age demand forecasting techniques could allow warehousing managers to plan out their stocking requirements. This would also allow warehousing managers to meet any sudden rise or fall in demand for particular products thereby ensuring optimum utilization of available space.

Many of us look towards mechanization in warehousing or logistics processes as a move towards labour cuts. However, mechanization without technological augmentation such as automation and data exchange, especially in warehousing and logistics technologies, is meaningless and will not yield optimum results.



This predicted technological revolution such as the ability of machines, devices, sensors, and people to connect and communicate with each other via cutting-edge technologies like the Internet of Things is also known as 'Industry 4.0'. Industry 4.0 is a communication led rejuvenation that could be optimally utilized in the warehousing and logistics industries. This could be achieved through reliable connectivity of data, people, processes, services, systems and IoT-enabled industrial assets or machines.

As part of this 'Industry 4.0' initiative, the vast multitude of vehicles or machines would be able to seamlessly transfer data or communicate with one another in real-time. This data could thereafter be quickly analyzed and having a decentralized decision making structure would enable remedial measures to be quickly initiated.

The most basic adoption of technology in everyday transportation could be that of using Google Maps to not only find the best available route but also to avoid congested and traffic clogged roads thereby saving both time and money.

Across the logistics and warehousing industry, there is a need to enhance automation by increasing the number of machines. However, the more important and pressing issue is to ensure that these machines work smartly aided by cutting-edge technologies.

With the adaption of Industry 4.0, most Indian companies will be able to reduce logistics and warehousing costs while having enhanced control over deliveries and quality. Furthermore, the robust data sharing between various logistics and warehousing modules will allow companies to prioritize deliveries and execute future plans flawlessly.

Many of us look towards mechanization in warehousing processes as a move towards labour cuts. However, mechanization without technological augmentation like automation and data exchange, is meaningless and will not yield optimum results.

In conclusion, it would be appropriate to point out that supply chain networks have increasingly become complicated today since operations and manufacturing happens across geographies. In addition, logistics and warehousing models have to quickly adapt to this new globalized way of conducting business. Hence, ecosystems such as Industry 4.0 remain more relevant today than ever before and have become a necessity for not only growth but also business continuity.

The author is the Executive Vice President & Business Head at Godrej Material Handling

UPDATE

Audi & Airbus testing flying taxi concept

At Drone Week in Amsterdam Audi, Airbus and Italdesign are presenting for the first time a flying and driving prototype of "Pop.Up Next".

This innovative concept for a flying taxi combines a self-driving electric car with a passenger drone. In the first public test flight, the flight module accurately placed a passenger capsule on the ground module, which then drove from the test grounds autonomously. This is still a 1:4 scale model. But as soon as the coming decade, Audi customers could use a convenient and efficient flying taxi service in large cities – in multi-modal operation, in the air and on the road. Without changing vehicles, passengers will enjoy their leisure time, relax, or work.

This innovative concept for a flying taxi combines a self-driving electric car with a passenger drone.

"Flying taxis are on the way. We at Audi are convinced of that," says Dr. Bernd Martens, Audi board member for sourcing and IT, and president of the Audi subsidiary Italdesign. "More and more people are moving to cities. And more and more people will be mobile thanks to automation. In future senior citizens, children, and people without a driver's license will want to use convenient robot taxis. If we succeed in making a smart allocation of traffic between roads and airspace, people and cities can benefit in equal measure."

To see what an on-demand service of this kind could be like, Audi is conducting tests in South America in cooperation with the Airbus subsidiary Voom. Customers book helicopter flights in Mexico City or Sao Paulo, while an Audi is at the ready for the journey to or from the landing site. Audi is also supporting the Urban Air Mobility flying taxi project in Ingolstadt. This initiative is preparing test operations for a flying taxi at Audi's site, and is part of a joint project of the European Union in the framework of the marketplace for the European Innovation Partnership on Smart Cities and Communities.

Visiting a **world class facility**

GMS 2018 delegates visited Mahindra & Mahindra's Chakan plant. Here is an overview of the same.

As a step towards offering a new way of learning for attendees, the fourth edition of The Machinist Global Manufacturing Summit (GMS 2018) organised a visit to Mahindra & Mahindra's Chakan plant.

Spread across 700 acres, Mahindra Vehicles Manufacturers Ltd.(MVML) plant at Chakan MIDC (Pune) is a state-of-the-art and eco-friendly manufacturing facility. It is the largest and the best in Mahindra Automotive Division in terms of its capacities and capabilities. Headed by Nachiket Kodkani, this plant integrates the best in technology, operational excellence, and green practices. The plant manufactures multiple products including commercial vehicles and passenger vehicles.

Speaking about history of the plant, Kodkani mentioned, "The plant started operations in 2008 and we rolled out the first vehicle in 2009." Stating the expanse of the plant, he said, "This plant caters to different industries and manufactures passenger vehicles and construction equipment, etc. Additionally, we have truck assembly as well." Globally, it is a rare scenario to find that all these varieties are being made at a single location.

Further he added that, "This plant produces almost 70% of what M&M makes in terms of varieties. We describe the Chakan plant as vibrant, versatile and future ready. Versatile means that we have full flexibility in manufacturing i.e. any model and any type can be made here."

The plant started operations in 2008 and rolled out the first vehicle in 2009. It primarily caters to industry segments like automotive and construction equipment.

Nachiket Kodkani,
Plant Head, MVML & VP,
Mahindra & Mahindra

Delegates speak

The tour was insightful for the delegates to have a look at the sophisticated ways of manufacturing.

While giving his feedback, Santosh Bandal, Sr. Manager – Director Quality Office, Bharat Forge Ltd. said, "We are really influenced by the plant visit to Mahindra & Mahindra's Chakan plant arranged during GMS 2018. There were various take aways during our talks with the Mahindra team such as JIPM recognised TPM plan, the best excellence practices, innovation and flexibility implementation, skill sets training plans and so on. I appreciate the plant selection and efforts taken by organisers. For us, it was an opportunity for getting together with leading industry experts, which helped us in learning through sharing. In all, it was a great networking platform."

Yet another delegate - K Siddheshwar from Godrej Appliances, Godrej & Boyce Mfg. Co. Ltd. said, "It was an awesome experience and the entire summit was truly global and quite fruitful for us. The second half of this summit - the plant vist - was well organized. Having a tour of the world-class facility was the best part of the day."

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The **manus award** goes into the ninth anniversary

Looking for spectacular solutions in plastic plain bearing applications

What do an exoskeleton, an electric manipulator arm and a research project on space junk have in common? Plastic plain bearings are used in all three applications and all were chosen as winning applications at the last manus award, which motion plastics specialist igus promotes every two years. Now the starting signal has been given for the application phase for the next edition. The winners will receive prize money of up to 5,000 euros.

The jury's biggest challenge at the last edition of the manus award two years ago was selecting three winners out of 541 entries from 35 countries. In addition to the three winners – an exoskeleton to facilitate assembly work, a manipulator arm that can be used underwater up to a depth of 500 metres and an ejection mechanism for a research object in space – there were many other exciting applications with plastic plain bearings. From 3D printers and sports equipment up to art sculptures. "This selection of different applications alone illustrates the versatile application potentials of plastic plain bearings," explains Tobias Vogel, Vice President and head of iglidur plain bearings & drylin linear technology, igus GmbH. He succeeds Gerhard Baus as a new member of the jury. Baus was involved in the last eight editions of the competition as the co-founder since its inception in 2003. Now the application phase for the 2019 manus has begun.

The manus award comes with prizes of up to 5,000 euros. Users must submit their entries no later than February 22, 2019 and present the design with a brief write-up as well as photos and videos to the jury. It does not matter whether it is series applications for the industry or just a single piece – the only condition is that there must be at least one built prototype of the presented application available. The winners will be selected by an expert jury composed of members from the fields of science, research and specialist media and will be awarded at the 2019 Hannover Messe.

"This selection of different applications alone illustrates the versatile application potentials of plastic plain bearings."

Tobias Vogel, Vice President and head of iglidur plain bearings & drylin linear technology, igus GmbH

For more information, contact:
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www.manus-award.com

FACILITY UPDATE

Continental opens two assembly lines for ABS & ESC

Continental has inaugurated two new lines for ABS and ESC assembly at its plant in Gurgaon. This capacity increase is to address the market requirements stemming from Government of India legislations for ABS entry in April 2019 for passenger cars and 2-Wheelers. This takes the company another step closer to its "Vision Zero" – a future with zero accidents.

Continental has been steadily investing in India to localize ABS/ESC. In 2016, Continental set up a line for ABS assembly, in addition to ESC systems, in Gurgaon, followed in 2018 by a new line in its Bangalore plant, for production and assembly of Electronic Control Units (ECU) for 2-Wheeler and passenger car ABS and ESC.

"We at Continental continue to drive safety technology toward our vision of zero accidents and therefore support making safety available to everyone. The good news about the India market is the increase in consumer awareness about vehicle safety, the seriousness with which the Government is approaching this topic, and the commitment of manufacturers. As a technology company, we will fully support this positive movement, and will continue to make investments where necessary," explained Prashanth Doreswamy, Head of Continental India.

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Faurecia & Hella sign strategic partnership

Hella & Faurecia will cooperate in a strategic partnership for the development of innovative interior lighting solutions. Within this cooperation, the companies will jointly develop lighting with high-technology content in the domain of surface-lighting & dynamic-lighting for a more personalized cockpit environment. Faurecia contributes its expertise as a complete system integrator for vehicle interiors & Hella supplies innovative products in interior lighting.

"In the rapidly changing automotive industry, we need to create value through innovations with rapid time to market. As a systems integrator in the vehicle interior, we have created partnerships to expand our technology expertise and become more agile. Our strategic collaboration with Hella is the latest example of this approach," said Patrick Koller, CEO of Faurecia. "Trends like autonomous driving & individualization will completely redefine vehicle interiors. The collaboration with Faurecia will provide us with additional opportunities to drive the development of innovative interior lighting solutions in a comprehensive manner," added Rolf Breidenbach, CEO of Hella.

Mahindra to deploy EVs in Thane

Mahindra & Mahindra (M&M) has signed a MoU with the Thane Municipal Corporation (TMC) to provide end-to-end last mile mobility solutions. This would be done through the deployment of Mahindra's electric vehicles for first and last mile connectivity across Thane, including its recently launched electric three-wheeler, Treo, as well as the mass passenger carrier, e-Supro, etc. In the initial phase of the project, Mahindra will deploy 100 EVs & the partnership would be active for a period of 5 years. With a clear focus on building a full-fledged ecosystem around sustainable mobility, Mahindra and TMC will jointly work toward building sustainable transportation for all, supported by the Eco-Cities Program of the International Finance Corporation (IFC). The MoU was signed between M&M and TMC.

Dr. Pawan Goenka, MD, M&M said, "As the pioneers of EVs & the EV mobility ecosystem catalyst in India, we are delighted to contribute to the sustainable development of Thane by deploying our electric vehicles for a greener, smarter future."

PRODUCT

Tool and cutter grinding machines

With present market trend and customer requirement Tool Grinding Technologies (TGT) has adapted latest technologies in present Machine Tool manufacturing by considering cost factor and versatility in tool manufacturing. With regular new developments, TGT has surprised users of tool and cutter grinding machines in the last two years by introducing several models in grinding application. Models Available are: (i)TGT Advanced V2 Maxima (5 Axes Tool and Grinding Machines – Double Spindle), (ii) TGT Advanced V2 Optima (5 Axes Tool & Grinding Machines – Single Spindle) (iii) TGT Advanced V2 Ventura (Long Flute Grinding Machine) and (iv) TGT Advanced V2 Microma (Cylindrical Blank Preparation Machine). These machines are optimized for grinding diameter range from 2 to 20mm solid carbide tools. The machine kinematics and selection of features are well balanced to achieve high precision and excellent surface finish on the tools produced. 'Direct drive torque motor' for the tool swivelling axis delivers high level of absolute accuracy with zero backlash. Highly balanced spindle ensures cutting edge stability while grinding precision end mills/form tools. Electrical elements are designed to reduce the electromagnetic interference & reduced emissions to make the machine environment friendly. Types of tools manufactured and reground include end mills, ball nose, CR end mill, drill & step drill, form tools, gun drill, inserts, thread mill, taps, form radial cutter, etc.

Software

User-friendly MTS – AG software helps to manufacture/regrind tools. Profile simulation, 3D simulation guides the operator to design the proper tool. 'Collision check' feature helps to decide tool length, collet system, etc. to ensure trouble free running of the machine. ISO programming with the help of user parameter is also possible.

Machine axes configuration

Roller type LM guide used on this machine will enhance rigidity. Optional linear scale & rotary encoder make this machine more accurate. Torque motor helps to achieve high level of form accuracy.

Source: Tool Grinding Technologies

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Modular connectors for energy chains

These connectors help reduce the associated construction and connection effort

The flexible and reliable supply for fast, linearly moving components of machines and systems is made possible by the Han-Modular® Flexbox – a novel interface in the modular plastic housing system from Harting. Longer, moving cable runs for machines and machine modules are easier to install and maintain.

The Han-Modular® Flexbox makes it possible to sub-divide energy chains into flexibly manageable and easily replaceable segments. The modular housing concept replaces the previous implementation consisting of multiple individual connections and offers a single plug-in and disconnection point as a compact overall solution. This reduces the associated construction and connection effort, and less space is needed. Fastening elements can be used to join the housings together in different constellations. As a result, the height and width of the interface can be flexibly designed. The Han-Modular® Flexbox thus fits the requirement profile of a wide variety of applications. The Han-Modular® Flexbox was developed in a co-engineering process with the partner igus.

The modular housing concept replaces the previous implementation consisting of multiple individual connections and offers a single plug-in and disconnection point as a compact overall solution.

The Flexbox's housing and other components are made of high-performance plastic and comply with the applicable standards in terms of fire protection and resistance to environmental influences. The seals on the cable glands are designed for easy handling and are available for cable diameters from 4 to 24 mm. The system is rounded out by integrated strain relief that can withstand forces in excess of 150 Newton. The Flexbox is a stand-alone solution that boasts all the features of housing for industrial connectors.

Harting has succeeded in continuing the modularity inside the housing as well. Nearly all of the Han-Modular® portfolio - which features more than 100 modules for transmitting currents, signals and data, as well as compressed air and fibre-optic signals - can be used in the Flexbox. This results in almost endless combination possibilities when it comes to implementing the right interface for every application. A plastic plastic frame enables integration of the Han-Modular® modules in the Flexbox. Currently, a maximum of four modules can fit in one frame.

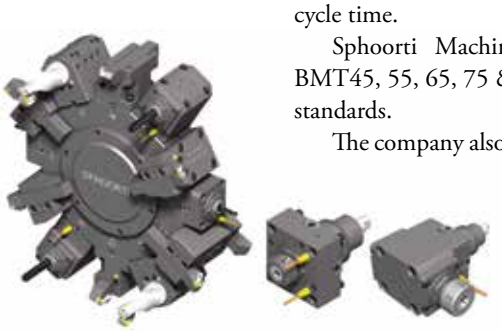
The connections in the Han-Modular® Flexbox are securely protected against environmental influences such as water and dust. Screw locks in different designs ensure tightness.

Source:
HARTING India Pvt Ltd, Delhi Branch India
Abhishek Bimal
Marketing Communications Manager
abhishek.bimal@HARTING.com

BMT tool disc & holders

BMT or the 'Base Mounted Turret' is often thought to be more rigid setup overall. Without any doubt it is one of the most stable turrets available on a lathe machine tool. The BMT holder will mount solidly to the face of tool disc and secured with 4 socket head cap screws which ensures stability on heavy duty machining operations.

The BMT tool holders that are mounted on the surface of a tool disc are located by 4 keys. These keys eliminate the need for indicating the tool holder to straighten it, which is often necessary with VDI tool holders. This decreases setup time thereby lessening the overall cycle time.



Sphoorti Machine Tools' BMT holders range from BMT45, 55, 65, 75 & 85 along and they comply to Japanese standards.

The company also offers driven tool holder axial and radial in all range from BMT45 to BMT85 as per the Japanese standard.

Source: Sphoorti Machine Tools

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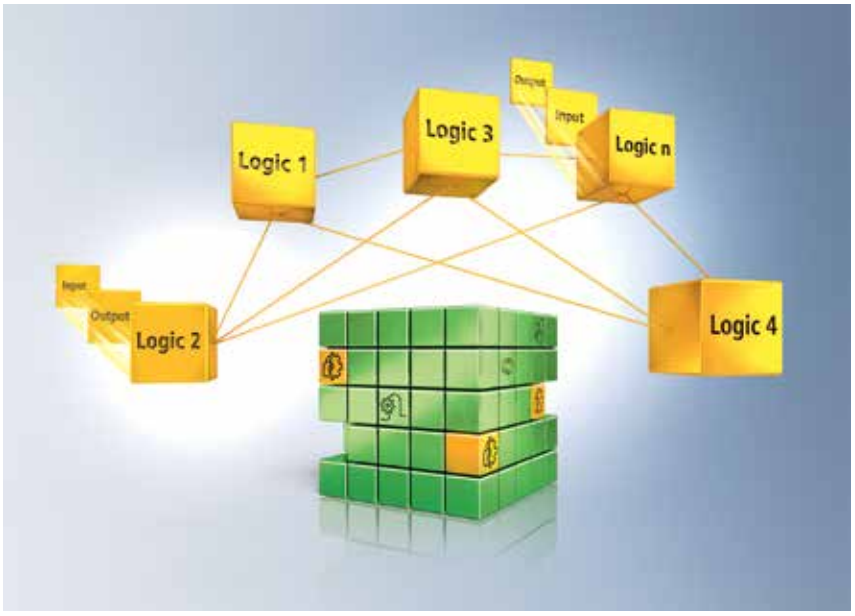
New generation of safety controllers

Consistently modular, scalable and distributed safety applications

With its focus on increased modularity and scalability, the new generation of Beckhoff safety controllers allows optimum adaptation to the specific safety requirements of individual machine concepts. The ability to distribute the intelligence of an entire safety application across multiple TwinSAFE Logic-capable I/O modules enables the flexible implementation of increasingly modular architectures that can be adapted to given system requirements even more effectively than before.



With the new safety controllers based on the EL6910 TwinSAFE Logic, it is possible to adapt the TwinSAFE system even more specifically to the individual requirements of a machine concept as well as to a broader spectrum of safety applications. The new I/O components include:

- TwinSAFE EtherCAT Terminal EL1918: digital terminal with eight safe inputs
- TwinSAFE EtherCAT Terminal EL2911: safe potential supply terminal with four safe inputs and one safe output
- TwinSAFE EtherCAT Box EP1957-0022: IP 67-protected digital combi module with eight safe inputs and four safe outputs

A special feature is their communication capability, because like a dedicated controller, the safety project to be executed on the corresponding I/O component can establish direct communication relationships with other safety-relevant devices and preprocess the data internally.

More options for distributed safety applications

Just like the TwinSAFE Logic-capable I/O and motion products that are already available, the three new I/O modules can be used as controllers for the direct execution of customer-specific safety projects. A special feature is their communication capability, because like a dedicated controller, the safety project to be executed on the corresponding I/O component can establish direct communication relationships with other safety-relevant devices and preprocess the data internally. This makes it possible to implement highly granular machine modules with distributed safety applications. The central safety controller, if it exists in the application scenario, only needs to process the data that has already been accumulated.

The consistent hardware and software modularity of the TwinSAFE system simplifies the implementation of even very complex safety applications, and the combination of I/O and TwinSAFE control functionalities in a single I/O component makes it easier to distribute safety tasks across individual machine modules. It also reduces hardware costs. In terms of engineering, the customizing function speeds up the process and makes it more convenient. It also ensures minimum validation effort, which in turn further reduces the development costs.

More efficiency through customizing

Safety projects can be modularly designed in TwinCAT as usual. However, with the new customizing function, the operating modes "temporary deactivation", "permanent deactivation" and "passivation" can now be configured for each of these modules. With the corresponding configuration of replacement values for the interfaces between the different modules, users can thus implement highly complex, modular and scalable architectures while reducing their development costs. For example, a single safety project can be used for an entire family of machines by simply deactivating any modules that may not be needed according to the given requirements.

Source: BECKHOFF Automation Pvt. Ltd.

As per the Advertisement in Deccan Herald on 05-10-2018 the last date for submission of Applications is extended upto 31-12-2018, 5.00 p.m.

Last date extended to 31-12-2018

TUMAKURU MACHINE TOOL PARK (TMTP)

(A Special Purpose Vehicle of GOI & GOK)

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Email: tmtp@kiadb.in Website www.kiadb.in

Date: 06.09.2018

NOTIFICATION

APPLICATIONS ARE INVITED FOR ALLOTMENT OF INDUSTRIAL PLOTS AT TMTP EXCLUSIVELY FOR MANUFACTURERS OF MACHINE TOOLS AND THEIR ANCILLARY UNITS

Government of Karnataka (Through SPV) is developing an Integrated Machine Tool Park with State-of-the-Art Industrial Infrastructure coupled with an eco-friendly layout in an extent of about 530 acres of land at Vasanthanarasapura, Tumakuru District, with assistance from Department of Heavy Industry, Government of India to attract investments in the machine tools sector. It is an integral part of Tumakuru Industrial Node on the proposed Chennai - Bengaluru-Chithradurga, Industrial corridor and is located adjacent to proposed Japan Industrial Park.

This is a golden opportunity for manufacturers of Machine Tools, accessories, attachments, sub-system assemblies, components and parts, dies and moulds, tools and tooling, consumables and others directly related to machine tool industry and service providers and units providing support to the machine tool industry to set up their units in TMTP.

The Karnataka State Industrial Policy 2014-19 intends to offer special impetus with incentives & concessions and special rate for industrial plots.

Applications from the prospective and interested entrepreneurs can be submitted online in the website of Karnataka Udyoga Mitra **(http://kum.karnataka.gov.in), (http://ebizkarnataka.gov.in)**. The filled in applications should be submitted by **5.00 p.m. on 06.10.2018.** Further details and detailed notification is available on the website. For any further guidance with respect to Machine Tool Park, the agencies may contact Sri Revannagowda, Managing Director, (Mobile : 9845521224), Karnataka Udyog Mitra, 3rd Floor, Khanija Bhavan #49, Race Course Road, Bengaluru-560001 or any of the following officers.

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Industries & Commerce
Mob: 9341966609

Sri. L.S.Harti
Chief Finance Officer
TMTP
Mob: 9845520837

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Sri. Anirudh Sravan P., IAS
Chief Executive Officer
TMTP

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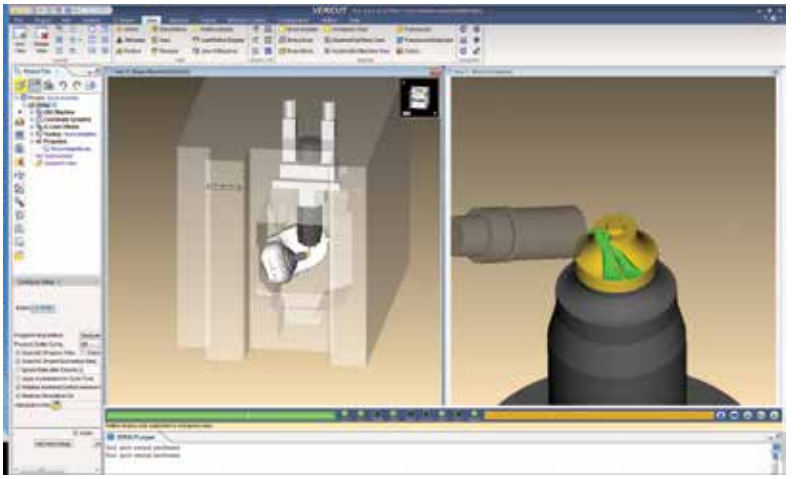
Sri. Darpan Jain, IAS
Commissioner for Industrial Development & Director
Department of Industries and Commerce, GoK

Maximizing the use of simulation software

Simulation software can be used to benefit shop in ways that others overlook, sometimes even in ways that were unintended by the software developer.

NC verification and simulation software has been used by aerospace manufacturers for more than 20 years, yet some NC programmers do not take advantage of the benefits it can offer. Given the expense of each part machined, NC simulation is generally regarded as an important step in the machining process. Simulation checks each machining operation as it is programmed, or as a final check after the programming is finished and post-processed for the specific machine. It's typically a quality checking process that ensures the part is cut as expected from the generated NC programs, without the risk of a machine collision.



VERICUT CNC machine simulation, verification and optimization software simulates all types of CNC machining. VERICUT Force™ is a physics-based optimization method that determines the maximum reliable feed rate for a given cutting condition based on the following three factors: maximum chip thickness, maximum allowable feed rate, and force on the cutter. The software operates independently, but can also be integrated with leading CAM systems.

These are valuable uses that justify software cost, often many times over. However, some resourceful companies have discovered that simulation software can be used to benefit their shop in ways that others overlook, sometimes even in ways that were unintended by the software developer.

Evolving strategies and techniques

One of the easiest ways to get more from simulation software is to simply use it. Test new, unproven, machining strategies virtually as an analysis laboratory. Other than the time required to virtually create and test new methods, there is no physical cost. An NC programmer can try and fine-tune radical new ideas several times over. A few hours spent trying out different methods could potentially save many hours of machine time, reducing tool and machine wear, wasted materials, energy costs, and human fatigue.

CAM vendors are developing new 5-axis strategies which are more complex; they are also developing new 5-axis roughing strategies that are improving the process of machining. New processes and new techniques must be employed and 5-axis machine simulation software that accurately represents each 5-axis machining cut in great detail will provide the necessary confidence to succeed. This also allows for new invention, experimentation and success with new techniques.

Removing the fear of multi-axis machining

CGTech, the developer of VERICUT software, has encouraged its customers to push the software to its limits. This can be well described using an example involving a creative NC programmer for a large aerospace engine manufacturer. They were looking for a faster way to make the leading edge of a titanium fan blade, and the NC programmer theorized that a new machining method could make the difference they needed.

Traditionally the process for making the part took many hours using a grinding technique. The NC programmer believed the part could be created using a 5-axis mill, but he knew he would need to convince his management before tying up the expensive machine for many hours cutting a test part. By using VERICUT to simulate the process, the programmer was able to create a video/review file to prove the process would work.

According to the Association for Manufacturing Technology, 5-axis mills and mill/turn machines have increasingly become popular, for a good reason. They enable the manufacturer to drastically reduce machining time and the number of set-ups required to complete a job. Simulation software takes the fear out of programming a multi-axis machine. When an NC program can be simulated, from the same code that will be sent to the machine, there is no excuse for not taking full advantage of a 5-axis machine's capabilities.

Machining before machine arrival

Even today, with ups and downs in machine tool sales, there is still considerable time between the date when the machine is ordered, and the date that it is installed and ready to cut the parts. With simulation software, the manufacturer can be ready to create parts on the first day the machine is installed.

CGTech has partnerships with many of the leading ma-

chine tool companies and they will often supply the CAD geometry for its joint customer's machines – before the machine is even shipped. The manufacturer can then be proving out programs right away. Some of the customers can discover the efficiency and suitability of the machine configuration ordered even before the machine is delivered. By catching the machine specification mistake early, the customer can change the order before the machine is delivered.

Opting for the right machine using virtual simulation

The aerospace manufacturer working on the leading edge took the idea a step further. After proving the 5-axis milling process could work, they were ready to order production machines. Rather than simply picking the machine from a catalog, they designed the machine in their simulation software, where they had already proven the process would work. These files were then sent to the machine tool builder who built the machine exactly to their specifications as described in a virtual machining simulation.

Another leading aerospace company created programs for more than 200 parts and proved them using virtual simulation software even before the arrival of machines on their shop floor. All the machines ordered were built using virtual simulation software and all NC programs were proved on a virtual machine. The machine loading plan was also prepared, thanks to accurate cycle times provided by simulation software. Once the machines arrived, they cut the parts without any further delay.

Summary

By maximizing the use of simulation software, shop floors don't need to wait for NC programs. There are always opportunities to improve an existing process, and simulation software can help by giving the NC programmer the freedom to try practically any machining technique in a virtual world. Only creativity and a good virtual platform are required to accomplish the job!

Source: CGTech

Quick-change pallet technology

Schunk, the competence leader for gripping systems and clamping technology, is introducing two premium quick-change pallet modules with unique features on the market: The VERO-S NSE3 138 quick-change pallet module and the VERO-S NSE-T3 138 tombstone module. Their most striking feature is an optional spring-actuated cone seal that automatically locks the module's changing interface as soon as the clamping pin is lifted. In combination with the integrated blow-out function, the quick lock prevents chips or dirt from lodging into the interface. Without changing the height, it locks the last gateway of the otherwise completely sealed modules.

Pull-down force and rigidity have been increased even further

Schunk has yet again boosted the performance characteristics of the VERO-S NSE3 138 as compared to previous top sellers. An enormous pull-down force of 8,000 N or 28,000 N with activated turbo function as well as increased dimensional stability for the module body have a positive impact on the rigidity of the clamping solutions. Thus, even the highest tilting moments and transverse forces can be reliably absorbed when parts are clamped at the base are machined on at height, for example. Clamping and positioning also occur via a short taper with a repeat accuracy of <0.005 mm with the premium modules. This ensures maximum precision even in the most demanding applications. Due to the conical fitting, the clamping pins can also be joined into the modules eccentrically, making this process incredibly easy. The actual clamping is done via spring force without any external energy supply; it is form-fit and self-locking. The workpieces remain safely clamped in case of a sudden pressure drop in the air system. A pneumatic system pressure of 6 bar is sufficient to open the clamping modules.

Convenient monitoring

For maximum process reliability, both clamping slide positions "open" and "closed" can be queried as standard using dynamic pressure. On option, a position sensor can be used, which additionally detects a locking process without pins. Depending on the thread diameter of the clamping pins have holding forces of 35,000 N (M10), 50,000 N (M12), or 75,000 N (M16). All components, such as base bodies, clamping pins, and clamping slide, are made of hardened stainless steel, making them absolutely corrosion-resistant and extremely long-lasting. Special support areas facilitate cleaning and ensure a perfectly flat contact surface for the clamping devices and workpieces. The new premium modules are fully compatible with the previous VERO-S modular system, which now consists of more than 1,000 possible combinations for highly efficient workpiece clamping.

For more information, contact:
Satish Sadasivan
SCHUNK INTEC India Pvt. Ltd.
Email: info@in.schunk.com, Web: www.in.schunk.com

The LOGIQ of Machining Intelligently in the Era of Industry 4.0

The new LOGIQ campaign introduces new standard in cutting tool excellence.

An industry leader and innovator in the world of metalworking, ISCAR has taken the IQ concept of machining intelligently even further by applying logical improvements to tool development. The result is the LOGIQ range of tooling solutions that both predicts and fulfils customer needs. LOGIQ represents a smart logical progression in a series of strategic moves to implement INDUSTRY 4.0 standards while ensuring continuity and stability.

INDUSTRY 4.0 directives - to integrate interoperability, technical task assistance and decentralized decision-making into factory practices - challenge machining centers to review their operations and adopt procedures to meet these objectives. Machining logically responds to this need. ISCAR provides the tools to make it happen.

INDUSTRY 4.0 directives - to integrate interoperability, technical task assistance and decentralized decision-making into factory practices - challenge machining centers to review their operations and adopt procedures to meet these objectives.

LOGIQ applications have created new tool families, upgraded existing lines, and inspired innovative product ranges to maximize equipment utilization and optimize performance. Listening to customer concerns and staying ahead of market developments, ISCAR's product managers, R&D engineers and designers have combined their expertise and experience to develop highly effective and logical tool solutions that meet today's machining center demands.

In an industry where every second makes a difference and every movement counts, logical strategic design and tactical enhancement of even the most basic cutting tool can contribute to increased productivity, less wastage and lower costs.

LOGIQ's unrivalled, out of the box tool innovations include new cutting geometries and locking mechanisms for stable, vibration free machining with higher repeatability. The indexable inserts are equipped with sophisticated chip formers and contain geometries that facilitate soft cuts at high feed rates.

Solid carbide tools are enriched with new designs that feature substantially increased anti-vibration strength – a key factor for boosting productivity in unfavorable cutting conditions. The latest cemented carbide grades reflect ISCAR's forward looking knowledge and know-how in powder metallurgy and coating technologies. The toolholding line includes new heat-shrink-fit and vibration-dampening devices, which significantly improve performance when tool rigidity is critical.

The new LOGIQ milling solutions include strong, durable inserts and milling heads with enhanced capabilities. The LOGIQ turning applications offer new solutions to decrease machining loads, produce thinner and wider chips, and resolve vibration issues and coolant flow capabilities.

The latest cemented carbide grades reflect ISCAR's forward looking knowledge and know-how in powder metallurgy and coating technologies.

The LOGIQ drilling tool concepts provide advanced productivity solutions for high accuracy and repeatability, to reduce machine cycle time and produce high-end machined components.

The LOGIQ lines feature LOGIQ3CAM to significantly improve drilling productivity; LOGIQ4TURN for enhanced performance in general-duty turning operations; LOGIQ-4FEED, which enables rough milling at high metal removal rates; LOGIQ8TANG, a new 90° square milling shoulder; LOGIQ5GRIP, a versatile and high-efficiency solution for parting and grooving, and other tool families comprising hundreds of new products; each designed and developed to perform essential tasks in the most efficient possible method.

From concept to realization, LOGIQ-inspired tools reflect ISCAR's commitment to create and deliver high quality products that contribute to increasing productivity and profitability.

The fourth generation of the Industrial Revolution has unveiled new standards and requirements for machining metals.

ISCAR is at the forefront of this important industry trend, developing relevant technologies and implementing methods of effective machining to reflect and respond to the dynamic needs of the metalworking industry.

Source: ISCAR

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