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RNI No 71129/98

Volume 16 Issue 2 • February 2021 • Rs 75

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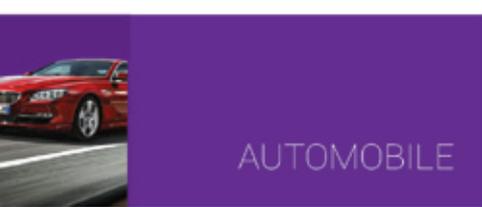
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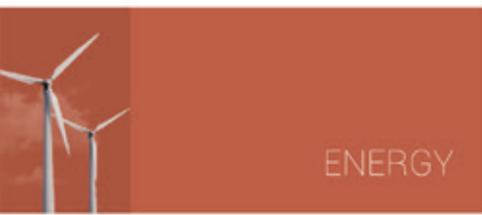
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NEW DESTINATIONS NEED NEW ROADS

If you want to reach a new destination, then you cannot keep travelling on the same road. Of course, when you choose a new road, it will come with its new challenges and new obstacles. And adapting to these difficult changes requires courage, open mindedness, adaptability, agility and creativity. Importantly, the focus needs to be on accomplishing the new rather than getting stuck with the old. You got to tear down the blindfold of negativity and envisage the positive possibilities.

In the context of an organisation or an industry or a nation, progress and growth can be achieved only by proactively embracing change. In fact, the successful ones always plan, design, execute and sustain this change at will.

**“IN THE CONTEXT OF AN ORGANISATION OR AN
INDUSTRY OR A NATION, PROGRESS AND GROWTH
CAN BE ACHIEVED ONLY BY PROACTIVELY
EMBRACING CHANGE.”**

They are the torch bearers of all that is good and great about the human race. And the ones that are happy with the status quo; the ones that prefer to live in the false security of their comfort zones, let them be. They will be relegated to the dustbins of ordinariness!

Friends, we live in the VUCA (volatile, uncertain, complex & ambiguous) Normal where disruptions happen even before we blink our eyes. In these times, businesses live and die by their ability to change. “Well, we are constantly changing” one might say. Don’t trivialise change by thinking that it is something extrinsic. Change must be intrinsic; if it has to have a positive impact. It must help to us get to the defined destination. Well, the destination (and the destiny) is ours. And it all depends on the choices we make. Hope, we all make the right ones in 2021.

Niranján M

Editor & Chief Community Officer

THE ULTIMATE GUIDE TO PROFITABLE MANUFACTURING
MACHINIST

Volume 16 Issue 2 February 2021



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Printed and published by Joji Varghese for and on behalf of owners Worldwide Media Pvt Ltd (CIN:U22120MH2003PTC142239), The Times of India Building, Dr DN Road, Mumbai 400001. Printed at JRD Printpack Private Limited, 78, Resham Bhavan, 7th Floor, Veer Nariman Road, Churchgate, Mumbai - 400 020. Editor: Niranján Mudholkar. Published for February 2021.

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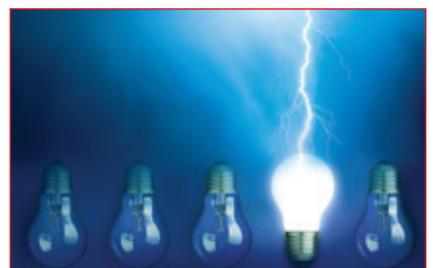
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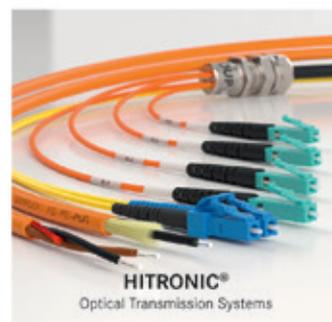
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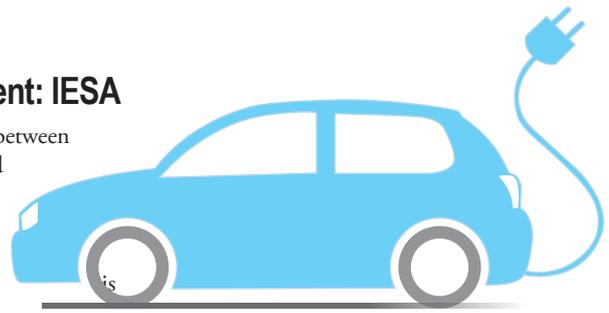
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India's EV market to grow at CAGR of 44 percent: IESA

INDIA ENERGY STORAGE ALLIANCE (IESA) released its 2nd annual "India Electric Vehicle Market Overview Report 2020-2027" for the India Market. The report covers the present scenario and forecast of electric vehicle (EV), EV batteries and the public charging infrastructure market in the country. According to the report, the EV sales in India stood at 3,80,000 in 2019-20, and the EV battery market stood at 5.4GWh during the year. In the base case scenario, the EV market is expected to grow at

CAGR of 44 percent between 2020-2027 is expected to hit 6.34-million-unit annual sales by 2027. The annual battery demand forecasted to grow at 32 percent to hit 50GWh by 2027, of this, 40+GWh will be on lithium-ion batteries. The estimated battery market potential is \$580 million in 2019 and is forecasted to grow to \$14.9 billion by 2027. The electric bus market in India



is expected to be driven with subsidy support from the Central Government in phase-1 (2023-24) due to high upfront cost. Going forward, expansion is likely based on viability and access to financing.

EESL signs MoU with NHAI

ENERGY EFFICIENCY SERVICES LIMITED (EESL) has signed a

Memorandum of Understanding (MoU) with the National Highway Authority of India (NHAI) for the development, maintenance, and management of national highways, to establish various clean energy and energy efficiency interventions at NHAI structures. EESL and NHAI have agreed to enter into a special relationship for implementation of energy efficiency projects, renewable energy projects and e-mobility services as a part of Clean Development Mechanism (CDM) to reduce dependence on fossil fuel, reduce emissions and achieve sustainable development all across Toll



Plazas and other NHAI establishments. As part of the MoU, NHAI will avail PMC services of EESL as on required basis. NHAI will also provide site related information to EESL, which is required for undertaking the jobs and will support it during the feasibility assessment, along with helping in providing all relevant data as and when required by EESL.

IAF to procure 83 LCA Tejas aircrafts from HAL

The Cabinet under the Chairmanship of Prime Minister has approved procurement of 73 LCA Tejas Mk-1A fighter aircrafts and 10 LCA Tejas Mk-1 Trainer aircrafts at the cost of Rs. 45,696 Crore along with Design and Development of Infrastructure sanctions worth Rs.1,202 Crore. Light Combat Aircraft Mk-1A variant is an indigenously designed, developed and manufactured state-of-the-art modern 4+ generation fighter aircraft. This aircraft is equipped with critical operational capabilities of Active Electronically Scanned Array (AESA) Radar, Beyond Visual Range (BVR) Missile, Electronic Warfare (EW) Suite and Air to Air Refuelling (AAR) and would be a potent platform to meet the operational requirements of Indian Air Force, IAF.

ACC starts new cement manufacturing facility at Sindri

ACC LIMITED has announced the successful commissioning of its new Grinding Unit (GU) at Sindri in Jharkhand effective January 2, 2021. The new facility will add an additional capacity of 1.4 MTPA cement to the existing 3.0 MTPA unit, taking the total capacity at Sindri to 4.4 MTPA. This facility will manufacture low CO₂, environment friendly, cement products. "Strong ambition aimed at deliverance of high performance, is what guided ACC to establish the commissioning of the Sindri GU-Phase-II within a record period of nine months despite numerous challenges. I am proud of the flexibility and agility demonstrated by the team," said Neeraj Akhoury, CEO LafargeHolcim India and Non-Executive Director ACC Limited. Sridhar Balakrishnan, MD & CEO, ACC Limited commented, "The commitment, meticulous planning, and collaborative approach by the Project Sindri team in these unprecedented times and commencing the cement production in a record time have set a new benchmark for ACC."

ASEAN & Oceania key to Act East Policy

RIVA GANGULY DAS, Secretary (East), Ministry of External Affairs recently emphasised on the importance of India's relations with ASEAN and Oceania countries for enhancing collaboration. Addressing the session 'India's Engagement with World's Growth Centre - ASEAN and Oceania Region', organized by FICCI, Das highlighted the centrality of these two regions in terms of India's vision for Indo-pacific and urged the industry to explore opportunities in emerging areas of cooperation like Blue economy, disaster management and so on. Key principles of Act East Policy are promotion of economic cooperation, cultural ties, and development of strategic relationship with countries in Indo-pacific region, added Das. Uday Shankar, President, FICCI highlighted that in order to build resilient supply chains, we must upgrade the skilling, improve logistics services, and strengthen the infrastructure connectivity.



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India sends 40th expedition to Antarctica

THE 40TH INDIAN SCIENTIFIC EXPEDITION recently departed for Antarctica from Mormugao Port, Goa, recently, with 43 members onboard. After about 22 years, the Antarctica expedition is procuring fuel from Indian Oil. Highlighting the pivotal role of National Centre for Polar and Ocean Research (NCPOR) in this vital mission, Dr. M. Ravichandran, Director, said, "Polar regions are crucially important in answering key questions about the global climate change, its contribution towards global sea-level rise, the background aerosol properties, variability in the sea ice cover and phenomenon like Antarctic haze and ozone concentrations. Attempts to address some of these issues are helping in mitigating several



important problems concerning human life and well-being. The 40th ISEA has a 43-member team of scientists, engineers, doctors, and technicians, led by three polar veterans - Dr. Yogesh Ray from National Centre for Polar & Ocean Research; Atul Suresh Kulkarni from Indian Institute of Geomagnetism; and Ravindra Santosh More from India Meteorological Department.

Ajax Engineering to build a new manufacturing plant



AJAX ENGINEERING has recently earmarked Rs.100 crore for the allotment of 20 acres of land in Bangalore from Karnataka Industrial Areas Development Board (KIADB), as well as, for building a new manufacturing facility. This investment was done to expand its robust business operations to meet the demands of the construction industry in the future.

The new factory will be equipped to design and manufacture the recently introduced products, such as concrete slip-form pavers, boom pumps and the self-propelled boom pumps. The annual production capacity for boom pumps and concrete slip-form pavers would be 100+ units and 50+ units respectively. A further investment of Rs.

40 crore is being done at Gowribidanur plant to expand its existing facility that produces batching plants and transit mixers. Jagadish Bhat, MD & CEO, Ajax Engineering, "We are positive that this investment will further strengthen the 'Atmanirbhar Bharat' initiative and create employment opportunities for talented youth of the country."

Tata Power to develop 110 MW Solar Project

TATA POWER has announced that the Company has received a Letter of Award from Kerala State Electricity Board Limited (KSEBL) on 6th January 2021 to develop a 110 MW solar project. The energy will be supplied to KSEBL under a Power Purchase Agreement (PPA), valid for a period of 25 years from scheduled commercial operation date. The Company has won this capacity in a bid announced by KSEBL in September

2020. The project has to be commissioned within 18 months from the date of execution of the PPA. The Plant is expected to generate about 274 MUs of energy per year and will annually offset approximately 274 Million Kg of CO₂. With this, Tata Power's renewable capacity will increase to 4,032 MW, out of which 2,667 MW is operational and 1365 MW is under implementation including 110 MW won under this LOA.

Jaykay Enterprises forms JV with EOS

JAYKAY ENTERPRISES has entered into a strategic partnership with EOS, Germany. The JV will operate through a new subsidiary called NeuMesh Labs headquartered out of Bangalore. The new JV will be lean and agile structured, with technical knowledge from EOS. Jaykay Enterprises also aims to invest in a print farm where the infrastructure and assets will be owned by Jaykay Enterprises. Further, Jaykay Enterprises will invest in a print farm with options of both onsite and offsite capabilities. This Centre of Excellence will not only support Indian customers but would also look to provide support in the global market. Abhishek Singhania, Additional Director, Jaykay Enterprises, said, "The JV will address the growing need of metal printing in defence, aerospace & healthcare industry. A huge component of metal 3D market in our country remains unaddressed. Due to the ever-changing technology and limitation in the size and deposition rate in printing, companies are reluctant to invest in the technology. With EOS as our partner, we hope to overcome these limitations and make India self-reliant."

JSHL to merge into JSL

The Board of Directors of Jindal Stainless Limited (JSL) and Jindal Stainless (Hisar) Limited (JSHL) has accepted the recommendations of the respective Board Committees and approved the merger of JSHL into JSL. As per the approved share swap ratio, 195 equity shares of JSL will be issued for every 100 equity shares of JSHL. MD, JSL & JSHL, Abhyuday Jindal said, "The proposed merger of JSHL into JSL will enhance value to shareholders of both the Companies. The consolidation will enable harnessing of the complementing strengths of the individual Companies. Seamless integration of infrastructure, processes and operational synergies, along with a strengthened balance sheet, would improve financial flexibility. The merger of JSL and JSHL will also induce a simplified capital structure, expanding the turnover of the merged business to ~Rs 20,000 crore. With 1.9 MTPA melt capacity, the merged entity will be the only Indian Company in the league of top 10 stainless steel companies in the world."



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New head of connected car networking at Continental



Jean-François Tarabbia took over the Connected Car Networking (CCN) business unit within the Vehicle Networking and Information (VNI) business area at Continental on January 1, 2021. The computer engineering and business administration graduate follows Johann Hiebl (59), who assumed his new role as head of product transformation VNI on the same date. Hiebl headed the Infotainment & Connectivity and Body & Security business units of the Interior division throughout the organizational realignment of the company, whereupon these business units were merged into Connected Car Networking within Vehicle Networking and Information business area. In his new role, Hiebl is continuously working to improve the existing expertise for the products and services needed to implement new vehicle architectures. In particular, the experience gained from the development of the high-performance computer, the so-called In-Car Application Server 1 (ICAS1), for Volkswagen's ID series forms the foundation for future mobility projects.

Thomas Ulbrich to succeed Frank Welsch at Volkswagen



Thomas Ulbrich, member of the Board of Management for Mobility at Volkswagen Passenger Cars, is to become member of the Board of Management for Development as of February 1. He will succeed Frank Welsch in this role, who is taking over as Head of the realigned Group Quality Assurance. Following the successful market entry of the first MEB-based vehicles, the tasks of the board-level management function for electric mobility managed by Thomas Ulbrich will be transferred back to the areas of responsibility of the respective divisions. Ralf Brandstätter, CEO of Volkswagen Passenger Cars, said: "Thomas Ulbrich has emphasized important points on the topic of electric mobility for our brand. He saw the ID.3 and ID.4 from sketch to street in record time and made significant contributions to making electric mobility suitable for widespread use. An exceptional performance under special conditions. We see the fact that Thomas Ulbrich is available as Board member for Development after accomplishing this great task as a clear commitment to the brand and to our future strategy."

Jaya Jamrani appointed VP – marketing at Castrol India



Castrol India Limited has announced the appointment of Jaya Jamrani as vice president – marketing effective from 1 January 2021 to lead Castrol's marketing function for India. Jaya, an alumnus of IIM Lucknow, has spent over a decade across various verticals in Castrol both in India and globally, after a stint with Unilever. Her broad-based experience and understanding of changing consumer needs has helped her lead some iconic campaigns for Castrol as well as steer strategic associations like the Castrol-3M collaboration. Sandeep Sangwan, MD, Castrol India, congratulated Jaya on her appointment, and said, "I am delighted to welcome Jaya as the vice president - marketing for the India business. Along with her strong knowledge of our business and proven ability to drive results, Jaya can be credited with some of our successful purpose-led marketing and influencer-advocacy campaigns in the recent past." In her new role, Jaya will lead the marketing strategy for India across business segments, including forging strategic partnerships for growth.

Sterlite Power appoints Amitabh Prasad as Brazil CEO



Sterlite Power has announced the appointment of Amitabh Prasad as CEO, Sterlite Power Brazil. After two years of association with the company in various leadership positions, Ricardo Cleber Zangirolami has decided to step down from the CEO position due to personal reasons. He will continue to support the company in his capacity as member of the Advisory Board with focus on M&A, Regulatory and Legal. These changes are effective February 1st, 2021 subject to necessary approvals. Amitabh is a seasoned industry professional with over 25 years of experience in leadership positions across power and infrastructure sectors. Over the last three years, Amitabh has successfully led the Global Supply Chain function for Sterlite Power across India and Brazil, including his role as Board advisor for Sterlite Power Brazil. Given his leadership acumen and strong project execution expertise, Amitabh will play a key role to further strengthen the company's operations in Brazil, together with the strong Brazil leadership team.

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By Niranjan Mudholkar

MOBILITY FOR URBAN INDIA

The e-mobility sector will grow very rapidly as the transition toward electric drivetrain is happening much faster than anticipated, says **Rahil Rupawala**, Founder and Director at LightSpeed Mobility

Tell us something about the origin of LightSpeed Mobility

We started LightSpeed to solve the urban mobility problems. We envision electric bicycles as ideal mobility solutions for urban India; they help reduce pollution, are environmentally friendly and keep the rider healthy. The idea is to develop an electric bicycle for all types of mobility requirements. Since our launch in 2016, we have launched six models and sold electric bicycles across the length and breadth of India.

What kind of manufacturing set-up does LightSpeed have?

We assemble our bicycle at our workshop in Ahmedabad, Gujarat. We offer a high degree of customisation on our bicycle and most bicycles are manufactured once the customer places an order. We also give colour customisation options across our entire range. We can manufacture 500 bicycles a month.

How much do you focus on product innovation?

We take an evolutionary approach to product development; our team constantly takes feedback and interacts closely with customers, their issues, suggestions and problems are analysed to deliver products and features that the customer requires. We have a dedicated team of engineers and designers that work on improving the product. We put forward the need of the customer at



the forefront for all our innovation.

How has the Covid-19 pandemic affected your organisation and how are you dealing with the same?

We had to completely shut our operations due to the strict lockdown but once we started operation there was an unprecedented surge in the demand for electric bicycles. This higher than usual demand was a challenge but we were able to meet the demand. The supplies were hit initially but we have now been able to normalise it. We are glad that we were able to retain all our staff and now are looking forward to scale production and enter foreign markets.

What is your analysis of the e-mobility sector in India?

The e-mobility sector will grow very rapidly as the transition toward electric drivetrain is happening much faster than anticipated. The consumer willingness to adopt e-mobility has seen an upsurge in the past year due to various reasons. By the end of decade majority of two wheelers sold in India will be electric, electric bicycle is on the way of becoming a preferred mode of transport in urban and semi urban areas in India.

At present, what are the key challenges faced by the



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e-mobility industry in India and how are you dealing with them?

The electric bicycle is a new concept in India at present and not everyone has heard nor knows the benefits of an electric bicycle at present. Moreover electric bicycles are expensive compared to other similar modes of transport. The market has just started shifting to electric vehicles. We are targeting the top of the pyramid at present and will progressively move to the bottom.

Have you made any new announcements in the market recently?

We have introduced regular bicycles on popular demand as a lot of customers were interested to own a manual bicycle at present and upgrade to an electric bicycle in the future. We have introduced four models. They have had an overwhelming success and have sold like hot cakes. We look forward to scale our manual bicycle sales in the coming year.

How happy are you with your existing product portfolio and are you looking to enhance the same in the



near future?

We currently have five electric bicycles in our portfolio. We are in the process of refreshing our entire range with a new generation of models across the entire range. The feedback from existing customers and advancement in technology and indigenous components will be the focus areas for updating our models range. We are very excited about our new generation of models and are planning to introduce them in the market by the end of the year.

How much are you dependent on imports and what are your plans to localise the supply chain further?

The initial lot used to be heavily dependent on imports but over the last couple of years we have seen many Indian vendors supplying the components. We have progressively mitigated our dependencies on imports with every batch we have manufactured and our confidence to completely localise our sourcing by the time to introduce our next generation of electric bicycles.

Battery technology is a major aspect of this market. How are you differentiating on this front?

Batteries are core to an electric bicycle. We use the 18650 lithium ion batteries in our bicycle. These batteries give a range of 35 km to 100 km on a single charge depending on various configurations. These batteries can be charged by a household three-pin plug. We have put emphasis on the robustness and longevity of the batteries; they have been predominantly designed to work in the high Indian temperatures and performance for optimal range efficiency.

Lightspeed mobility has designed a special e-bicycle which is made up of bamboo sticks. That's quite an interesting innovation. Tell us more about it.

The Bamboochi is a custom made bicycle. The frame is handmade by Captain Shashishekhar Pathak with a combination of bamboo and carbon fibre. The bicycle is completely custom made as per the specification given by the customer from its size and colour. It costs upward of Rs150,000/- 



The market has just started shifting to electric vehicles. We are targeting the top of the pyramid at present and will progressively move to the bottom.

The passionate cyclist

Rahil Rupawala, Founder and Director at LightSpeed Mobility is a passionate cyclist and engineer, with a vision to build a cleaner, greener India that is healthier and more active. After securing his post-graduate degree in Design & Transport from Coventry University, Rahil moved back to his hometown Ahmedabad, and started thinking of ways to introduce to the country, practical commute options that run on alternative energy.

After returning from the UK, Rahil Rupawala, who is also a winner of the prestigious Red Dot Award, started working on prototypes of practical, good looking electric bicycles, that would easily be adopted by the masses. Along the way, LightSpeed Mobility was incorporated, and more likeminded individuals joined the company to bring Rahil's vision to fruition.

LightSpeed Electric Bicycles was incubated and seed funded at Venture Studio, and supported by a grant under the start-up policy of the Government of Gujarat. The company has grown at a CAGR of almost 80 percent over three years.



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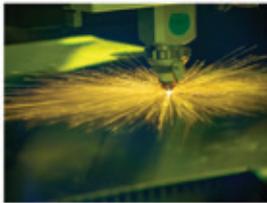
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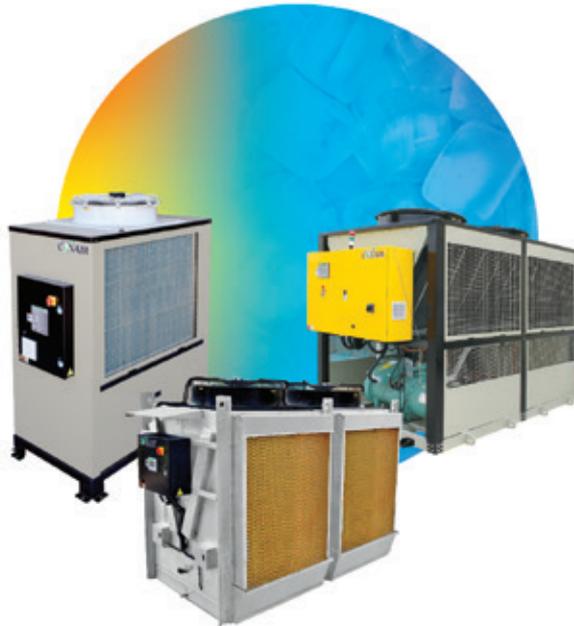
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ZF to build digital manufacturing platform

ZF, Microsoft and PwC Germany will jointly transform processes at the ZF Diepholz plant in northern Germany and use the insights ZF wide. The project enables ZF to reduce conversion costs, improve inventory, performance and quality, and to make their workforce more efficient. As all companies are member of the Open Manufacturing Platform other customers in the automotive industry will also benefit from ZF's improvements gained in Diepholz. The ZF Diepholz plant in northern Germany



ZF, Microsoft and PwC Germany jointly build a Digital Manufacturing Platform. Photo: ZF

was selected for a pilot project where ZF, and PwC Germany will transform processes and workflows using Microsoft Azure to build the future Digital Manufacturing Platform (DMP) of ZF. "The world is changing, and so is manufacturing," says Gabriel González-Alonso, Head of ZF Corporate Production Management. "In these very turbulent times, it was especially important to us that we implement new digital solutions that enable our manufacturing to achieve higher flexibility and efficiency."

Production of Tata Safari starts at the Pune plant



Tata Motors has formally unveiled the new avatar of the iconic Tata Safari. In a flag-off ceremony held recently, the first Safari rolled out of the line from the plant in Pune. The new Safari is based on the Impact 2.0 design language. Unveiling the first official look of the new Tata Safari, Guenter Butschek, CEO & MD, Tata Motors said, "The Safari is our flagship offering to connect the aspirations of the discerning and evolved Indian customer. It had introduced India to the SUV lifestyle and in its new avatar, will carry forward this rich idea to build further its legacy. We look forward to making the Safari rule the Indian roads once again."

Volkswagen Finance buys majority stake in KUYW

Volkswagen Finance Pvt. Ltd. (VWFPL) has increased its shareholding in KUYW Technology Service Pvt Ltd. by picking up a majority equity stake in the latter. This comes in succession to the first 25% equity stake investment, from September 2019. KUYW Technology is one of India's leading instant lending digital platform and through this acquisition, which came into effect on January 5, 2021, Volkswagen Finance Pvt Ltd will grow its New & Used Car Business through KUYW's PAN India network on car financing. The acquisition is also in line with the Volkswagen Group's - India 2.0 strategy of VWFPL in its quest to offer added value to its consumers through digital channels. Speaking on the development, Aashish Deshpande, MD and CEO of Volkswagen Finance Pvt. Ltd. said, "Our investment in KUYW is strategic in nature as we intend to make KUYW an important part of our India strategy. With this acquisition, we aim to enhance the synergies with KUYW Technology and make KUYW the face of VWFPL in India for retail financing business."

Hyundai exports 125 cars to Nepal through Railways

Hyundai Motor India Ltd. (HMIL) has announced the commencement of its first-ever eco-friendly Exports operations through railway mode, with the dispatch of the first consignment of 125 cars to Nepal. The first export consignment was flagged-off by Ganesh Mani S, Director-Production, Hyundai Motor India Ltd, and S Subramanian, Additional Divisional Railway Manager of Southern Railway, from the Walajabad Railway Hub near the Irungattukkottai-based HMIL Production facility outside Chennai. The train will reach the India-Nepal border at Nautanwa near the border town of Sonauli, from where the last-mile delivery will be through the roadways owing to the topography of Nepal. The overall on-road movement time is expected to reduce from eight days to five days, bringing the cars faster and more eco-friendly manner to the customers.



Commenting on this latest initiative in the field of Outbound Logistics, Ganesh Mani S, Director-Production, Hyundai Motor India Ltd said, "To further enhance our initiatives following global direction of 'Progress For Humanity', we have commenced our first-ever eco-friendly Exports operations through Railways by dispatching 125 cars in 25 rakes in this first consignment to Nepal, reducing Carbon footprint by 20260 tons."

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Daicel to set up plant at CapitaLand's OneHub Chennai

Daicel Corporation, headquartered in Osaka, Japan, will be setting up an airbag inflator manufacturing plant at CapitaLand's OneHub Chennai, an industrial township located on Old Mahabalipuram Road, Chennai. It will be Daicel Corporation's first airbag inflator manufacturing plant in India with a planned investment of about Rs.230 crore in phase 1. Takase Yoshifumi, MD, India Operations, Daicel Corporation, said: "Until now, we have been supplying products to the Indian market from our production site in Thailand and other countries. However, due to the growth potential of the Indian automobile market, and the need to strengthen automobile manufacturer and airbag module manufacturer supply chains in India, we have decided to establish a local production site at OneHub Chennai. We will further strengthen our presence in the Indian market through stable production and supply of products, contributing to the development of the Indian economy through both inflator production and parts' procurement in the country." Daicel is scheduled



to start operations by December 2023. Earlier during October 2018, in response to growth in the Indian automobile market and the tightening of safety regulations, Daicel established a sales base (Daicel Safety Systems India Pvt. Ltd., DSSI, Gurugram, Haryana.

Faurecia Manesar starts production of new seat recliners

Faurecia Automotive Seating (FAS) has introduced new product range seat recliner D83/S3U and started local assembly of those recliners at Manesar's facility. FAS inaugurated the new assembly line recently. FAS has decided



to enhance the localisation activities in India with two stage strategic plan. The first stage of localisation has started with the assembly of components imported from its plant in France and China. The local production of components is targeted to start in 2022 as the second stage which is driven by the 'Make in India' strategy. The facility replicates the production line in its European plant to ensure the best quality is delivered at the competitive price to the Indian car manufacturers. This dedicated seat mechanism manufacturing facility is producing 4CB tracks for many domestic programs. The long-term plan is focusing on further localisation of mechanism for Power seats and innovative products for comfort and wellness.

MeitY to establish Quantum Computing Applications Lab

The Ministry of Electronics and Information Technology (MeitY) in India will establish a Quantum Computing Applications Lab in the country, in collaboration with AWS, to accelerate quantum computing-led research and development and enable new scientific discoveries. The MeitY Quantum Computing Applications Lab will provide quantum computing as a service to government ministries and departments, researchers, scientists, academia, and developers, to enable advances in areas such as manufacturing, healthcare, agriculture, and aerospace engineering. AWS will provide hosting with technical and programmatic support for the Lab. This MeitY initiative will provide scientific, academic, and developer communities access to a quantum computing development environment aligned with the government's science and technology priorities. Quantum computing is an emerging field that harnesses the laws of quantum mechanics to build powerful tools to process information.

BKT Bhuj Plant is SQEP Gold Certified by Caterpillar

Caterpillar has awarded BKT's Bhuj plant SQEP (Supplier Quality Excellence Process) Gold certification, an important acknowledgement reserved for suppliers who have stood out during the year for achieving the highest levels in terms of quality and control over processes.

Opened in 2015, Bhuj is one of the Group's most innovative factories: an autonomous, cutting-edge plant in terms both of its manufacturing assets and its infrastructure to support its employees. BKT Bhuj manufactures



and development."

radial tires for CAT vehicles. "This certification really means a great deal to BKT – says Arvind Poddar, Chairman and Managing Director of BKT – we are proud of receiving this prestigious recognition from Caterpillar and we hope in future years not only to maintain our high standards and performance with our customers, but to even go further by continuously improving; BKT's journey is one marked by continuous evolution



»» Are you in this list?

The Industry

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STRENGTHENING AIR DEFENCE

Thales and Bharat Dynamics Limited (BDL), a Government of India enterprise, have signed a Teaming Agreement to work in partnership on the STARStreak Air Defence system with the support of both the Governments of India and the United Kingdom.

Thales and Bharat Dynamics Limited (BDL), a Government of India enterprise, have signed a Teaming Agreement to work in partnership on the STARStreak Air Defence system with the support of both the Governments of India and the United Kingdom. The agreement was signed by Thales and BDL in the presence of UK and Indian Government representatives in a virtual ceremony recently.

Jeremy Quin (Minister for Defence Procurement) and Mark Goldsack (Head of UK Defence & Security Exports) witnessed the signing ceremony in the UK. From India, the ceremony was witnessed by both the Director General of Army Air Defence and a representative from the Army Design Bureau. N P Diwakar, Director (Technical), BDL, Alex Cresswell, CEO Thales in the UK and Emmanuel de Roquefeuil, VP and Country Director, Thales in India, signed the agreement in the presence of Commodore Siddharth Mishra (Retd), Chairman and Managing Director, BDL. UK Defence Minister Jeremy Quin said: "Co-operation between the UK and India continues to develop at pace with much closer ties within our defence equipment programmes and systems. This signing marks the start of the next-generation of missile systems for the Indian Army and reinforces our commitment to work with international partners."

Through the agreement, BDL will become a part of the STARStreak global supply chain, providing the opportunity for export of Indian manufactured components to existing and future STARStreak Air Defence customers, including the UK Armed Forces. In 2017, Thales and BDL had signed a Memorandum of Understanding to assess the opportunity for the transfer of technology for STARStreak. The signing of this teaming agreement confirms a positive outcome from that exploration process.

This agreement will also provide the opportunity for BDL to offer a 'Make in India' STARStreak solution to the Indian Government, with a capability that will match the immediate air defence needs of the Indian Army and Air force, and with 60 percent of the system manufactured in India. It also represents an opportuni-



The fastest missile in its category, STARStreak is unique due to its three laser-guided darts, which cannot be jammed by any known countermeasure.

ty for further UK and Indian Industrial co-operation and will cement the ambition for closer collaboration and co-development between our two nations, supporting the ambitions of our governments' recently signed Defence Technology and Industrial Capability Cooperation MoU.

Alex Cresswell, CEO of Thales in the UK said: "This is good news for our business in Belfast in Northern Ireland, for the strong supply chain of UK SMEs with whom we work and for our teams in India. The UK and India have a strong tradition of industrial partnership in defence, innovation and sharing technology and we are thankful to both the Governments for their strong support to this excellent initiative."

Commodore Siddharth Mishra (Retd), CMD, Bharat Dynamics Limited, in his address stated that "partnership between Thales and BDL in this project with Transfer of Technology for STARStreak will create a new business opportunity for BDL and its Supply Chain Partners in India. BDL will be able to enhance its footprints in the export market in addition to domestic market with this new business opportunity. The Government of India's 'Make in India' programme, the 'ease of doing business' and recent 'Atmanirbhar Bharat' initiatives have created a congenial ecosystem for the foreign OEMs to tie up with Indian Industries like BDL to establish the production facility in India," he added.

The STARStreak missile system is in service in the British Army and has been procured by defence forces worldwide. 

Source: Thales

MISSION SKILL DEVELOPMENT

As an identified Industrial Training Provider, an automotive OEM will focus on developing students at its technical training institute to develop skilled human resources for manufacturing companies and first-time entrepreneurs.

Toyota Kirloskar Motor (TKM) has announced the signing of a Memorandum of Understanding (MoU) with the Directorate General of Training (DGT), Ministry of Skill Development and Entrepreneurship to develop skills among youth under the Flexi-MoU Scheme of the Government of India.

ALL ABOUT KOUSHALYA (SKILL)

The program titled Toyota Koushalya will take forward the MoU by focusing on developing students at the Toyota Technical Training Institute (TTTI). The institute imparts world-class skills training to youth from economically weaker sections of the society from rural areas of Karnataka. Under the Flexi-MoU scheme, TKM is identified as Industrial Training Provider (ITP) to develop skilled human resources for manufacturing companies and first-time entrepreneurs.

Neelam Shami Rao, Director, Directorate General of Training, Government of India, says, "The Flexi-MoU scheme is designed to cater to the needs of both the industry and the trainees. The scheme allows industries to train candidates as per their skill set requirements and provides trainees with an industry environment aligned with the market demand and latest technology. We are glad to partner with Toyota to develop youth as skilled and industry-ready employable technicians."

LEARN AND EARN

Toyota Koushalya provides an opportunity for the youth to acquire skills relevant to the manufacturing industry and improve their employment potential through a 'Learn and Earn' approach consisting a mix of theoretical and On-the-Job Training (OJT). These youth will be trained by supervisors who are Master Trainers in the world-renowned Toyota Production System (TPS). Upon completion of the training, trainees need to take up an exam jointly conducted by DGT



and TKM as per DGT guidelines and Craftsman Training Scheme (CTS) to get certified. The program aims at skilling youth who have passed their 10th standard and facing difficulty in affording higher education. Admissions to the program have already commenced. The two-year training program will be imparted in four trades - automobile welding, automobile assembly, automobile painting and mechatronics.

BEACON FOR PEOPLE DEVELOPMENT

Apart from the Toyota Koushalya program, Toyota has been imparting 'Lifelong Learning' to its employees to help them achieve their fullest potential. 'Toyota Way' focuses on becoming better by sharpening the skills of every person and continue the quest for improvement by encouraging both incremental and breakthrough innovative thinking. "To manufacture quality products, any company can establish good processes, best-in-class equipment and infrastructure. But what makes Toyota unique is its philosophy of developing quality people. Toyota focuses on developing its people, who in turn establish good processes, offer ever-better products and services, thereby achieving customer delight," says G Shankara, VP, HR and Services, TKM.

DEVELOPING PEOPLE

TKM has invested heavily in TTTI and Gurukul skill development centre. Training centres at Toyota have developed globally certified master trainers who hone the skills of employees as they move up their career ladder. "We believe that the success of Toyota comes from our people," says Shankara. 



The two-year training program will be imparted in four trades - automobile welding, automobile assembly, automobile painting and mechatronics.

By Aditya Vazirani

TRENDS FOR 2021

There is an urgent need to identify and address the existing vulnerabilities at the core of Logistics and Supply chain networks that are the backbone of a strong economy.

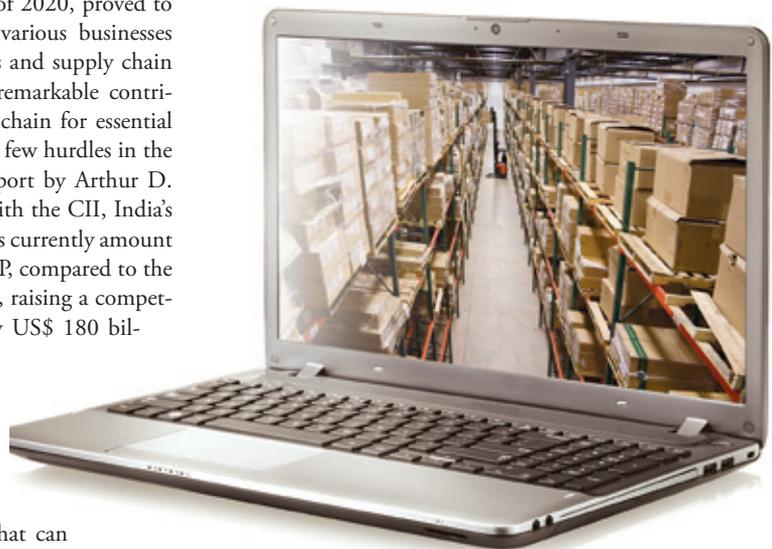
The pandemic and the lockdown that lasted for major part of 2020, proved to be testing times for various businesses including the logistics and supply chain sector of India which had a remarkable contribution in keeping the supply chain for essential items, functional, albeit with a few hurdles in the beginning. As per a recent report by Arthur D. Little India in collaboration with the CII, India's Logistics and supply chain costs currently amount to up to 14 percent of the GDP, compared to the global average of eight percent, raising a competitiveness gap of approximately US\$ 180 billion.

Further, the challenges experienced by the sector during the pandemic have highlighted the urgent need for building a stronger and more relevant infrastructure that can not only withstand the unexpected disruptions of this scale but is also agile enough to help adopt and bounce back to efficiency almost immediately in the face of future conflicts.

Listed here are some of the key trends in the Indian Logistics and Supply Chain sector that are set to dominate 2021:

1. EMPHASIS ON COLD SUPPLY CHAIN

As per 'Indian Cold Chain Industry Outlook 2022', the Indian cold supply chain sector is set to grow at a CAGR of 17-18 percent, till 2022, due to demand for cold storage, primarily driven by the pharma sector, especially the vaccine supply chain in early 2021, followed by requirements from seafood, meat and similar industries. While growth will be driven by introduction of a government led COVID immuni-



zation program, the growing e-commerce market for FMCG, dairy, meat and fish, will also help prop the sector significantly, given the ongoing virus threat. At present, healthcare products hold a 3.6 percent share in the overall Indian cold chain market that is expected to grow around 6 percent by end of 2021 as per IMARC services.

2. GROWTH IN 3PL AND 4PL PROVIDERS AS MANUFACTURING GROWS

Agility, speed and mobility are set to be the key goals for a robust supply chain network and preference of 3 and 4PL service providers is going to set the tone for development, in 2021. While manufacturing has been one of the early adopters of 3PL and 4PL service providers, soon other sectors are also likely to benefit from outsourcing their supply chain management to experts, so they could focus on re-building and strengthening the core business, especially in the aftermath of the pandemic. Further, the evolution of these service providers into key partners, offering expert, end to end solutions ranging from documentation, tracking, warehousing, legal compliance and even kitting in some cases at competitive rates, has



The Indian 3PL market is expected to register a growth rate of over 11.5 percent during the forecast period of 2020-2025, with strong focus on value driven services that enhance customer satisfaction and delight.



“As per a recent report by Arthur D. Little India in collaboration with the CII, India’s Logistics and supply chain costs currently amount to up to 14 percent of the GDP, compared to the global average of eight percent, raising a competitiveness gap of approximately US\$ 180 billion.”

made them a lucrative choice for most businesses that are currently working on bouncing back from the financial crisis. The Indian 3PL market is expected to register a growth rate of over 11.5 percent during the forecast period of 2020-2025, with strong focus on value driven services that enhance customer satisfaction and delight.

3. AFFORDABLE ROAD TRANSPORT

GoI plans to build massive road network in future, emphasis will be given to develop infrastructure like dedicated freight corridors, container freight stations etc. India needs to come up with intermodal and multimodal transport system to reduce the transportation and storage cost which in today’s time is relatively high. Unfortunately, current poor road infrastructure decreases the maximum distance that can be covered by the heavy transport vehicles on highways. To combat such challenges, Government of India has decided to cut down on the current logistics cost of India’s GDP in next two years with help of Ministries of Railways, Transport, Shipping and Aviation in order to achieve this goal.

4. SUSTAINABLE PRACTICES WILL BE IMPLEMENTED

Green logistics is going to be the key aspect of the supply chain evolution in the year 2021. Sustainable practices have already become a norm amongst interna-

adopting sustainable practices. Apart from protecting the environment and helping the society overall, sustainable practices are also becoming cost-effective, thanks to the fast paced technology evolution in the sector and are becoming instrumental in gaining consumer loyalty and endorsement for the socially and environmentally responsible millennial population. From adopting eco-friendly business models that follow environmentally conscious choices to e-commerce giants opting for zero plastic packaging or reducing packaging waste through recycling, to a more sophisticated use of solar panels for cold storage and temperature regulation. A gradual shift of electronic trucks for transportation, recycling waste and systematic disposal of the chemical and other harmful waste, etc., are soon becoming popular green practices among Indian logistics and supply chain players.

5. ADOPTION OF TECHNOLOGY

This is another major trend that is set to make considerable impact on the sector. With businesses adopting the emerging technologies like AI, ML, Big Data etc., supply chain industry is no exception to adapting automation in processes and operations. Embracing artificial intelligence has only eased the making of processes more efficient, advantageous and dependable. Technology such as internet of things (IoT) helps maintain a transparent supply chain network, in turn helping to bring visibility, build customer loyalty and trust. From modern WMS and Automated Guided Vehicles (AGV) to AI driven robotics and use of data analytics, technology adoption is going to be at the centre of the growth and development of the Indian logistics and Supply Chain sector, in 2021.

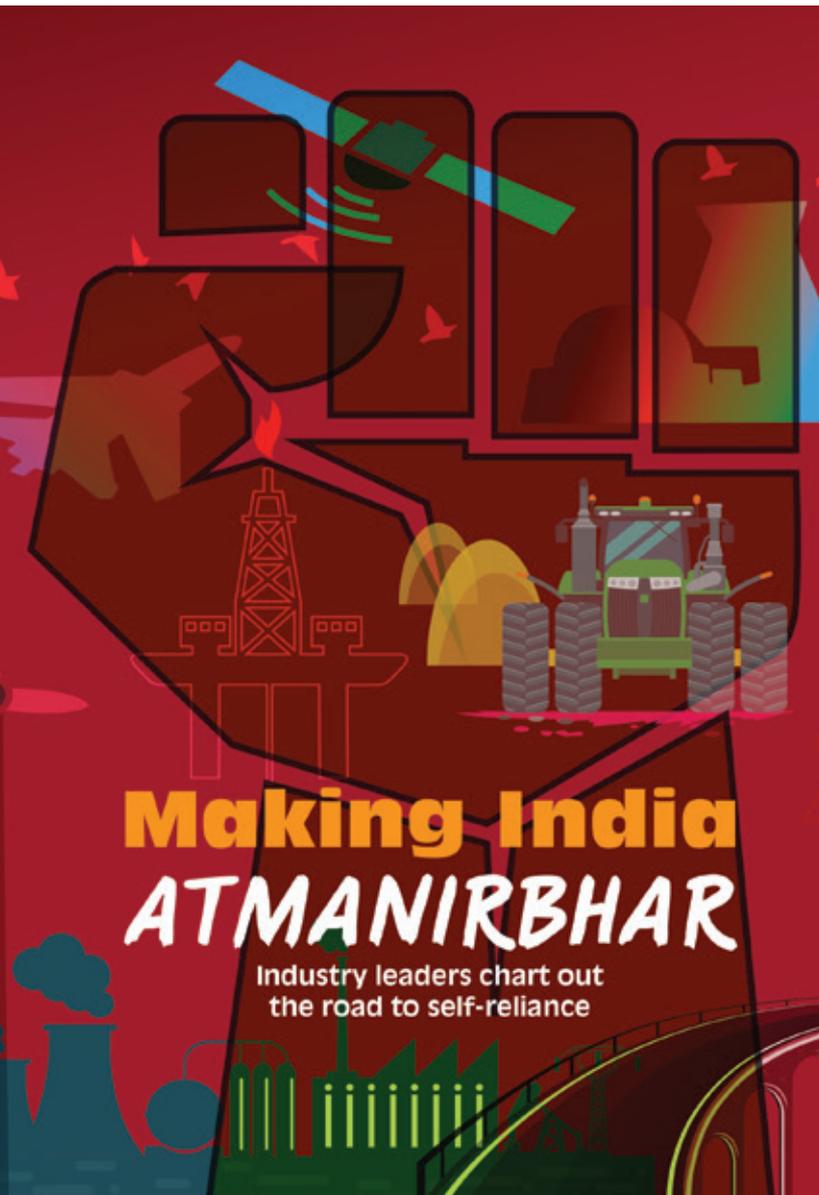
Given the goals and growth opportunities envisioned by the government: from making India a global manufacturing hub to focus on strengthening the local businesses with ‘Atmanirbhar Bharat’, ‘Vocal for Local’ and the ‘Start Up India’ powered by a wide spread technology adoption, there is an urgent need to identify and address the existing vulnerabilities at the core of Logistics and Supply chain networks that are the backbone of a strong economy. 

The author is CEO – Robinsons Global Logistics Solutions

“

It is essential to build a stronger and more relevant infrastructure that can not only withstand the unexpected disruptions but is also agile enough to help adopt and bounce back to efficiency almost immediately in the face of future conflicts.”

tional logistics and supply chain players as well as businesses. They view the green supply chains as responsible and sometimes even a mandatory criterion when selecting a logistics partner. With the influx of international manufacturing and e-commerce players, the Indian green Logistics and supply chain is set to get a boost, thanks to encouraging business opportunities for those



By Niranjan Mudholkar

The Covid-19 pandemic has made a strong case for encouraging and empowering local manufacturing in India. PM Modi's clarion call for an 'Atmanirbhar Bharat' or Self-reliant India is certainly a step ahead in the right direction with the emphasis on going 'vocal for local'. This call, which is a logical extension of the Make in India initiative, will go a long way in positively transforming India's domestic manufacturing capabilities and capacities. Importantly, it is a much needed measure to inspire and strengthen the MSME segment in the country.

Atmanirbhar Bharat campaign also looks to transform challenges into an opportunity. For example, supply chain disruption has been one of the biggest challenges that came

to the fore because of the Covid-19 pandemic. But with Government's push on self-reliance, it has actually prompted the industry to reorient and restructure its ecosystems with strong focus on local sourcing.

Now, with the vaccination program progressing ahead steadily, the campaign is further going to provide a strong impetus to the manufacturing industry as well as the overall economy. However, there is a lot that the industry itself will have to do along with the required supporting measures from the Government. Industry captains too are emphasising on taking advantage of the favourable circumstances that are emerging on the economic scenario by taking a strong initiative. Dr. Deepak Kumar Hota, Chairman & Managing Director, BEML Limited, believes that the Indian economy is slowly getting back on track; and thankfully faster than anticipated. "We can expect the country to bounce back to its true potential logging incremental GDP growth. India's population dividend; of highly skilled working population and low labour cost would be instrumental in reviving the industry. For the manufacturing sector, government's clarion call for 'Atmanirbhar Bharat' is a big stimulus and could not have come at a better time. Going forward, Indian manufacturing industry should plan parallelly for modernisation of its facilities to run on lower inventories and higher flexibility," he strongly recommends.

Gurpratap Boparai, Managing Director, Škoda Auto Volkswagen India Private Limited, suggests that the barriers impeding growth are currently more to do with market sentiments and realignment to the consumer's changing needs. And he expects that overall the year 2021 will be a momentous year for the industry with continued policy support from the government to hasten the recovery of the automotive sector which contributes close to 10 percent of the country's GDP. "The industry and specifically the ancillary units



"The focus should be on innovation, quality and cost. Indian companies need to leverage every opportunity and become an integral part of the global supply chain."

Dr. Deepak Kumar Hota, Chairman & Managing Director, BEML Limited



"This could well be India's manufacturing moment, and we need to get it right by relooking at the big picture with elements of quality, cost, competitiveness, people, technology and holistic sustainability."

Kamal Bali, President & Managing Director, Volvo Group, India

should continue to focus on further modernization of infrastructure to be able to support the localisation ambition of OEMs," he says.

Kamal Bali, President & Managing Director, Volvo Group, India, thinks that the prime take away from the pandemic is re-affirmation of the compelling need for transparency, trust & collaboration, and care for our environment. "While it has caused unprecedented damage, it has also opened up new opportunities. With rebalancing of global value chains and thanks to a slew of other enablers, we are today at the cusp of socio-economic transformation not witnessed in a generation. Clearly, this pandemic has accelerated our opportunity to build India for a new world," he states.

Deepak Shetty, CEO and Managing Director, JCB India Limited, believes that infrastructure creation will continue to grow and will see a massive momentum in the coming years. "Thus, the opportunities envisaged for all allied industries are significant. The vision of an 'Atmanirbhar Bharat' will further open up manufacturing related opportunities in India. Thus, the future holds promise," he says.

Ashwath Ram, Managing Director- Cummins India and Tata Cummins Pvt. Ltd. Vice President- India Area Business Organization, says that the year gone by has created demanding challenges, generated tremendous opportunities and helped us to discover innovative ways of working. The manufacturing industry witnesses a gradual transition from crisis to recovery. But he also believes that our fundamentals are strong. "I am confident that by successfully leveraging these opportunities and learnings, we will tide over these challenges and emerge stronger towards building an Atmanirbhar Bharat. To support this initiative and ensure growth, the government should improve on ease of doing business, availability of capital at a lower rate, and globally competitive logistics and energy costs in the upcoming year. We also need to participate in Free Trade Agreements with

our global partners to ensure smooth flow of materials to and from multiple markets."

Kishore Jayaraman, President, Rolls-Royce India & South Asia, believes that the year 2020 taught us resilience and agility in the face of adversity. "The year 2021 will be about applying these learnings to gain long-term benefits. As we rise from the global pandemic, all eyes will be on India's self-reliance vision, and India Inc. must step forward to strengthen the local manufacturing sector to become a strong lever for economic growth. Large infrastructural programmes and appropriate reforms for improving ease of doing business will remain key growth drivers. At the same time, we must collaborate and build more partnerships for co-creation, create a qualified talent pool, adopt technology intelligently and keep moving up the manufacturing value chain to collectively contribute towards building an 'Atmanirbhar Bharat'," he says.

R. Madhavan, CMD, HAL, has a clear message for the industry: 'Let's synergise and collaborate for a win-win partnership'. "Emerging strong in the post-pandemic world of 2021 needs creative leadership and innovative partnerships with the grit to drive talent towards optimal solutions. Considering the very nature of the aerospace industry, umbrella organisations like HAL can act as the lead integrator, while the private industry partners collaborate as tiered supply chain partners. The success of Atmanirbhar Bharat entails synergistic partnerships across the industry, building on each other's strengths. Recent policies of the Government on promoting indigenous industries and encouraging usage of domestic products by Defence Services will further boost the manufacturing ecosystem."

Rajesh Jejurikar, Executive Director (Auto and Farm Sectors), Mahindra & Mahindra Ltd., points out that although the pandemic exposed the vulnerabilities of complex global supply chains, it was a blessing in disguise for India's manufacturing industry, for bringing in a sense of urgency, helmed by significant government reforms. "However, we will not get there by doing



"We need to be competitive, forward-looking and strong-willed to be able to compete with global manufacturing players and certainly have the potential to compete, and be at par with the world."

Deepak Shetty, CEO and MD, JCB India Limited.

what brought us here. The road to “Atmanirbhar” lies in our resolve and approach. While GOI plays an enabling role by continuing to improve ease of doing business, the responsibility for growth of manufacturing lies with us and we need to commit to actions. Jejurikar wants the industry to commit to three key points: 1. Adding greater value in India, 2. Global standards in technology and quality, and 3. Overcoming the structural disabilities due to our frugal mindset. “The need of the hour is for the GOI and the manufacturing industry to co-drive towards realising the vision of US\$ one trillion by 2025,” he insists.

Dr. Sudhir Mishra, CEO & MD, BrahMos Aerospace, remarks that leveraging on the Government’s clarion call for an ‘Atmanirbhar Bharat’, the Indian defence industry should collectively strive towards achieving excellence in new technological innovations. It should aim at establishing a robust mechanism of capability enhancement with optimum utilisation of all available resources at its disposal to realise indigenisation and self-reliance in defence production. “With necessary hand-holding by all major stakeholders, including the Armed Forces, the Indian defence industry should fast-track its efforts to become a global manufacturing hub and realise export potential with a highly sustainable growth trajectory in the foreseeable future,” he adds.

Vipin Sondhi, Managing Director & Chief Executive Officer, Ashok Leyland Limited, strongly suggests that the industry must focus on Design in India along with Make in India. “Unless we develop the skills and knowledge to design in India, we will not truly achieve our full potential as a Nation. We have the talent and resources to develop a healthy R&D culture, which in turn will help us to manufacture in India, for the World.”

William L. Blair, Vice President and Chief Executive, Lockheed Martin India Private Limited, acknowledges that the industry has seen many progressive steps being taken to achieve self-reliance and advance local industry by way of new reforms - increase in FDI to



“At the same time, we must collaborate and build more partnerships for co-creation, create a qualified talent pool, adopt technology intelligently and keep moving up the manufacturing value chain to collectively contribute towards building an ‘Atmanirbhar Bharat.’”

Kishore Jayaraman, President, Rolls-Royce India & South Asia

74 percent being one of them. “The DAP 2020 with Strategic Partner and Buy Global Make in India model will encourage OEMs to expand their investments and establish a much greater presence in India. We see tremendous opportunities for collaboration with Indian industry in Space and MRO. We expect closer collaborations with state governments and creation of working groups with industry to build talent and capability for the country. This is a win-win approach and will create value for all as well as much needed jobs and skill development in India.”

THE WAY AHEAD

The road to ‘Atmanirbhar Bharat’ will surely not be easy. But the good news is that we have already started walking on that road. Importantly, we also know how we can reach our destination with success. Hota of BEML believes that going ahead, the focus should be on innovation, quality and cost. Indian companies need to leverage every opportunity and become an integral part of the global supply chain. Jayaraman of Rolls-Royce emphasises on the need for collaboration. “We must collaborate and build more partnerships for co-creation, create a qualified talent pool, adopt technology intelligently and keep moving up the manufacturing value chain to collectively contribute towards building an ‘Atmanirbhar Bharat.’”

R. Madhavan, CMD, HAL, also underlines the significance of partnerships. He says: “The success of Atmanirbhar Bharat entails synergistic partnerships across the industry, building on each other’s strengths.”

JCB’s Shetty says that we need to be competitive, forward-looking and strong-willed to be able to compete with global manufacturing players and certainly have the potential to compete, and be at par with the world.

Bali of the Volvo Group says that now we need to raise our ambitions and position ourselves as one of the key epicenters for manufacturing. “This could well be India’s manufacturing moment, and we need to get it right by relooking at the big picture with elements of quality, cost, competitiveness, people, technology and holistic sustainability,” he says. 



“The success of Atmanirbhar Bharat entails synergistic partnerships across the industry, building on each other’s strengths.”

R. Madhavan, CMD, HAL

By Niranjan Mudholkar

READY FOR FUTURE

Solutions under Industry 4.0 will form the backbone of our future production ecosystem, says **Mojmír Hájek**, Technical Director, I-P Production and Logistics, Škoda Auto Volkswagen India (ŠAVWIPL)

What have been the key challenges faced by you as the Technical Director, I-P Production and Logistics in the last one year since the advent of the Covid-19 pandemic? How have you been overcoming them?

At Škoda Auto Volkswagen India (ŠAVWIPL), our employees come before business. At the onset of the pandemic, we had to establish new processes for work in the shops and in the offices to make the plant safe for our people and suppliers before we resumed operations. This was as essential as it was to reach our business goals.

The subsequent travel restrictions also hindered our operations and day-to-day business had to be re-invented. We had to be really creative as the situation continued to deteriorate and fast actions were required.

We had to adapt new communication standards; many face-to-face meetings moved to the virtual world of video conferencing on Zoom/Skype/Teams. The communication infrastructure of India helped a great deal.

Since our technology and equipment suppliers could not turn up in person, we had to find ways of remote online communication, not only with people but with the machines as well. Luckily, the Volkswagen Group is present in many parts of the world, so we could use help of our Group partners in meeting the foreign suppliers in their manufacturing locations, per-



form technology, equipment, and tool pre-acceptance checks before their dispatch to India under the group standards.

I must not forget the long hours of work by the whole team to make all this happen. It was a matter of an all company mind shift.

All this has helped us a great deal to continue our project India 2.0 and soon our customers in India will see the fruits of our efforts.

Supply chain disruption was one of the major impacts of the pandemic. How has ŠAVWIPL been dealing with the same?

As I mentioned the concerns regarding technology suppliers, the same applied to all our parts suppliers for the current production portfolio. We all remember the pandemic started in China; it is where our suppliers were struck first. The issues then gradually translated all around the world.

Our colleagues in logistics and purchasing spent days and nights tracking the situation with individual partners searching for ways to tackle the ongoing crisis. I am convinced they did a great job, as we were able to resume the production when the authorities allowed.

Because of the disruption, we had to postpone



“Increased automation, big data collection and analysis, standardized technology, ergonomic solutions, and predictive maintenance definitely contribute to mitigating the health and safety risks.”



some of the integration work for our new models under the India 2.0 project. Only some work was possible during the March and August 2020 shutdowns, so we had to make up for it during Diwali to catch up with the activities. Here I again need to point out the loyalty and dedication of our team and the suppliers.

We were in the middle of an important phase of our India 2.0 project when the pandemic gripped the world. Nevertheless, at Škoda Auto Volkswagen India we are resorted to continuously innovate in order to ensure continuity of supplies to production lines.

This project involved upgradation of our existing production line for which many of the required tools and components were imported from European and Asian countries. Fortunately, we managed these just before the major lockdowns happened in these countries. However, as cases of Covid-19 spread to the western

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We are introducing advanced production visualization systems, comprehensive production steering, data collection and analysis, production buffer management; and system managed multiproduct lines.

parts of the world, closure of factories in Europe started becoming a concern. Since complex supply chains create a dynamic sourcing footprint for global OEMs, the pandemic created a situation where serial lockdowns affected sourcing these components and getting them to our production facilities. Issues ranging from material shortage to extended freight timelines vastly disrupted supplies. This required us to continuously innovate to ensure continuity of supplies to production lines, by arranging special as well as looking for alternate sourcing of raw material or components.

Can manufacturing companies use AI, machine learning and data analytics to predict disruptions

and develop training simulations to mitigate risks related to the health and safety of their workforce to increase organisational resilience?

Absolutely! Increased automation, big data collection and analysis, standardized technology, ergonomic solutions, and predictive maintenance definitely contribute to mitigating the health and safety risks. We can plan work better; we see more things coming, avoid the surprises. We strive to offer our employees safe and healthy environment, therefore we put immense effort and investments into the design of our production equipment and solutions. We simulate the workload on the human body; look for ways to make the work less stressing and keep track of the total daily operator workload to make it more balanced by means of station/job rotations if required.

ŠAVWIPL has been one of the early adopters of digitalization. But do you think the Covid-19 pandemic has accelerated the adoption of digitization and Industry 4.0 in the Indian manufacturing industry?

It for sure has. From one day to the other, we continue to exercise a new unprecedented approach to commissioning new production equipment and technologies. We employed remote data access to the production line, live streaming of operators' actions, remote programming and system flashing over the last 6 months.

Solutions under Industry 4.0 will form the backbone of our future production ecosystem. We are introducing advanced production visualization systems, comprehensive production steering, data collection and analysis, production buffer management; and system managed multiproduct lines. We are also planning to increase cyber security for our production and products.

In the production planning we use digital simulations of production along with virtual part assembly feasibility solutions, manufacturability simulations, line balancing and timing all in virtual digital form before transforming it into the tangible assets.

ŠAVWIPL has been one of the pioneers in terms of introducing innovative and manufacturing processes. Can you throw light on some of the innovations that you have implemented on the shop floor in the recent times? Also, what has been the advantage of these innovations?

Yes of course, while integrating our new models, we have invested not only into automation of our technological processes, but also into new technologies and standards. To name a few, trifocal laser brazing of metal sheets, innovative rocker panel PVC protection using a flat stream nozzle (Pilot installation in the VW Group), are amongst the most interesting. Overall, we are trying



In the production planning we use digital simulations of production along with virtual part assembly feasibility solutions, manufacturability simulations, line balancing and timing all in virtual digital form before transforming it into the tangible assets.

to bring some of the “Simply clever” technologies that SKODA has been exercising in its products and factories for many years in Europe.

Those innovations enable us with material costs saving, ease the production process, reduce scrap and in fact help not only make the car at a good price and a great quality, but also contribute to the environment.

Developing the India specific platform MQB A0 IN is the key to the success of SAVWIPL's India 2.0 Project. What kind of efforts have gone into the making of this platform and what makes this platform so unique and special?

It has been developed to address the commuting needs of our Indian consumers. It offers a balanced mix of safety, quality, durability and affordability, exactly what we feel is right for the market. It reflects the values we see in our products and what we stand for here.

It offers versatility and allows us to bring a range of cars from small to medium size, with top technologies at an Indian price tag. Over 90 percent of parts will come from local suppliers, making it a true Indian car, which we hope people will enjoy driving. It has been made in India for India with a substantial participation of our locally established Technology Center.

The Technology Center, Pune (or TCP) that was inaugurated in January 2019 was an important cornerstone of the ‘India 2.0’ project and laid the foundation for the development of products based on the sub-compact MQB A0 IN platform. Several upgrades were made at our facilities to accommodate changes in the production lines for MQB A0 IN platform.

The vehicles based on the MQB A0 IN platform comply with the emission, safety and regulatory norms, deemed to be introduced in India, over the next few years. All models designed and produced locally in India in the future will be based on this platform. With the new MQB A0 IN platform, we will continue to build on capacity to serve domestic as well as India like markets worldwide and in turn continue to take India to the World. SKODA AUTO Volkswagen India has the responsibility for the AQB A0 IN MQB (Modular Transverse Matrix) platform which will enable us to respond faster to the local market requirement and offer a far wider range as expected by our customers.

What role will ‘Smart Factories’ play in the success of the ‘Atmanirbhar Bharat’ (Self-reliant India) campaign, which aims transform India into a global manufacturing power?

At SAVWIPL, we always make every effort to build a state-of-the-art manufacturing location for state-of-the-art products. I am convinced that what we have managed here in Pune speaks for itself.

We see our car plant not as a local production; we aim to serve similar markets out of our Pune plant. We are already a major export and continue to look into many more export markets for our cars. We are also looking into expanding our manufacturing capabilities and may bring some more products that would further underpin our role in the group and its position in India. So yes, our manufacturing operations in India compliment Volkswagen Group’s smart production and supply chain footprint. 

BUSINESSES NEED TO REORIENT TO SUCCEED: AJIT DOVAL

Businesses and trade in India will have to learn to change faster than the change itself if they want to succeed, stated Ajit Doval, National Security Advisor to the Prime Minister of India at the Swami Vivekanand Memorial Lecture 2021 organized by The Associated Chambers of Commerce and Industry of India (ASSOCHAM). He explained that it is important that to succeed Indian companies will have to remain a step ahead of others. “By 2030, 600 million people will be living and operating from their homes. The new urban complexes will have to ensure that the industrial economy from residential

centers can adjust. Also, many people are moving back to the villages. Can we ensure that these villages are developed into new hubs for economic activity? Can they be equipped with better connectivity and infrastructure,” he asked. Doval explained that India has besides geographical proximity to many markets, it has many natural advantages. “As a geostrategic environment, India’s growing multi-sectoral cooperation with the Middle East will provide several opportunities in the fields of infrastructure, tourism, and establishing a third country joint venture,” he said.

By Niranjan Mudholkar

TOWARDS MEANINGFUL INNOVATION

“The current pandemic has sparked a wave of innovation amongst a number of our customers and associates. One such customer is an entrepreneur who manufactures baby diapers and sanitary napkins using Kandui’s breathable film compound. This customer has developed an innovative PPE coat made from non-woven fabrics and a breathable film for the protective gear worn by doctors. Due to the breathable film used, heat escapes seamlessly and the doctors stay cool.” says [Ashwin Agarwal](#), Managing Director, Kandui Industries Pvt. Ltd.

Kandui Industries started its journey in 2006. Currently, a trusted name in the masterbatch sector, it caters across the globe with the state of art technology. Kandui’s holistic approach marks its significance in providing world class quality products and services.

How has the company evolved in the last 14 years?

Our initial focus was being cost effective but now the focus has shifted more towards meaningful innovation keeping the customer in mind and with the target to make benchmark products in the industry.

What have been the highlights of this journey?

Foraying into the challenging business of manufacturing master batches for man-made fibers, initially, we ventured into Black & White in 2011 & Colors in 2015. Since these masterbatches are extremely critical to produce & even small mistakes can prove to be very costly, this helped us in enhancing the overall quality of all our products. Our R&D facility got accredited by The Department of Scientific and Industrial Research (DSIR) in 2013. In 2017, we established a separate unit for Filler MB with 35000TPA capacity and in 2019 we donned the pride of being a BIS member, the only 2nd master batch company to be included in this elite group and in 2020 entered into a JV with Okeanos with focus to reduce the amount of plastics in packaging.

How has the Covid-19 pandemic affected Kandui



“Our initial focus was being cost effective but now the focus has shifted more towards meaningful innovation keeping the customer in mind and with the target to make benchmark products in the industry.”

Industries and overall the master batches segment in India?

Definitely, there was a dip. The pandemic had taken charge of the market by April and it was an unpleasant situation for everyone. But September onwards, positivity flew into the atmosphere and business started moving again. New sectors knocked new opportunities. By this time, the demand for masks and PPE kits were of importance, primarily made from PP non-woven. The current pandemic has sparked a wave of innovation amongst a number of our customers and associates. One such customer is an entrepreneur who manufactures baby diapers and sanitary napkins using Kandui’s breathable film compound. This customer has developed an innovative PPE coat made from non-woven fabrics and a breathable film for the protective gear worn by doctors. Due to the breathable film used, heat escapes seamlessly and the doctors stay cool.

You started off a partnership with Okeanos in the early part of 2020. What’s the progress on that front?

We have been working with some big brands but our trials got delayed due to the pandemic. We are expecting all the stages of trials to be complete by the end of 2021 and to launch products commercially by 2022.

Amongst the wide range of products that you have, which ones are the best sellers and why?

Techno Coat™: It’s special filler used to be designed in an extrusion coating layer. The end applications include: Composite cans, Drinking Cups, Flexible & Liquid packaging board.

Kandui Firefighter™: It’s RoHS compliant innovative Low Halogen fire retardant suitable for thin & thick PP applications such as Non-Woven, Fiber, Sheet, Film and Moldings. It passes stringent regulations even at dosage as low as four percent. This would find usage in automotive parts, electrical appliances, pipes, non-wo-



ven apparel and mats, etc.

Techno breath: It's a breathable film compound suitable for both blown and cast films. It is used in hygiene products like diapers, sanitary napkins and PPE suits.

Thermo chromic Master batches: This additive makes the articles change color with temperature. These find usage in toys, party shirts as well as in anti-counterfeiting applications.

Antimicrobial MB: This master batch contains ingredients, which kills microorganisms & stops their growth. This is used in a variety of daily use items such as commode covers, hygiene products (such as protective gear worn by doctors), etc.

Master batch for PET Bottles: We have a wide range of opaque, translucent and transparent colors master batch for PET Bottles including amber color for the pharma industry which are available in micro granule form.

UV for agriculture film application: It's a special type of UV additive, which does not lose its effectiveness by the insecticides and pesticides used in the agricultural process. It's mostly used in products like Shade net, Mulch Films and Green House Films.

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Tell us something about Kandui's overall manufacturing capacities and capabilities.

Kandui's best-in-class facilities, having a manufacturing capacity of 45,000 TPA based in Daman, India is spread across two units with a combined area of 2,00,000 sq. ft. Both facilities are equipped with automated machinery that helps minimize human errors during the production process. The company's cutting-edge global technology helps achieve high standards of quality in manufacturing and provides the customers with world-class products.

Kandui's finest products are manufactured on the best machinery from: Coperion (Germany), Farrel Pomini (USA), Krauss Maffei Berstorff (Germany), Mixaco (Germany) and Steer (India).

What does innovation mean to you? Tell us about your R&D activities.

By innovation we mean to create products where the customer is able to derive meaningful value. We are focusing on our R&D in two ways:

- 1) We work closely with the customer, wherein the customer shares a challenge that they are facing and we try to jointly find a solution.
- 2) Based on inputs gathered, attending conferences & exhibitions, we have a core team, which sets the focus without any compromise on standards and quality of the products. Simultaneously, we shall also concentrate on which are the products that we need to focus on in the next: a) one year, or b) three years. We monitor the progress of this on a monthly basis. We take help from academic institutions such as UICT (earlier known as UDCT) as and when required.

Our R&D facility includes testing machines like: TGA, DSC, FTIR, Laboratory spinning lines, Texturizing machines, Washing fastness tester, Filter Pressure tester, Melting point Apparatus, QUV Weatherometer, Color Spectrophotometer, Injection Moldings Machine, Blown film machine, Dart Impact tester, Two roll mill Hydraulic press, MFI Test Machine, Moisture Analyzer, Muffle Furnace, IV measurement apparatus.

What is your domestic to exports ratio?

Our domestic to exports sales ratio is 3:1.

Which customer sectors are giving you more business?

Value wise it's the textile industry and volume wise it's the raffia sector.

What is your take on the 'Atmanirbhar Bharat' campaign? Which aspects do Indian companies need to focus on to make this programme a big success?

It has started with the electronics and other sectors, but it is yet to come to the plastic and chemical sector. We are hopeful that the government will roll out some schemes for the plastics sector soon. Indian companies need to focus on quality to meet international standards and need to come out of the "jugaad" mentality."

We are almost at the end of the financial year. How do you see Kandui performing for this fiscal?

Keeping in mind the current situation, we shall keep our targets similar to last year's, whilst improving the margins.

Kandui is now in its 15th milestone year. Where do you see it heading in the next five years from now?

We expect to double our turnover in the coming five years by maintaining a CAGR of 15 percent. 

By Niranjana Mudholkar

TAKING FUN SERIOUSLY

We expect manufacturing activity to pick up in future thanks to the new initiatives from the government in promoting India as a hub for toys, says **R. Jeswant**, CEO, Funskool India

Although you have taken charge as the CEO of Funskool India rather recently, you have been associated with the organisation for almost two decades. How would you briefly analyse the evolution of Funskool in the last twenty years?

We have been operating since 1987. We started off as a joint venture with Hasbro Inc., a US multinational and remained so for nearly thirty years. We continue to represent several toy majors but over the last few years we have also successfully built many brands of our own. Our export business has also grown exponentially and while emerging as a major sourcing destination for many international companies we have also simultaneously been successful in establishing a presence for our own brands in several markets outside India as well.

What have been your priorities, after taking charge as the CEO? It must have been quite challenging to take up this responsibility at a disruptive time like we are going through right now!

Yes, it has been quite a challenge! With a complete lockdown in April and almost the whole of May, our peak selling summer vacation period ended up as a total wash out! However our team has successfully emerged out of the extremely trying period thanks basically to the exports business which has remained quite robust since June. The domestic business too has been picking up. From a disastrous start to the financial year, we can proudly say that the business is now firmly back on track! The experience gained in fighting the odds



should be valuable for our team in future.

How was the last fiscal in terms of business numbers, and what kind of target are you looking at for the ongoing financial year?

We could be below last year numbers in our domestic business but if the current trend is maintained in exports as well as the domestic business we should get closer to last year's turnover before the end of the year. We have grown substantially over last year in the July-September quarter and hope to maintain the trend for the rest of the year.

Give us an overview of Funskool India's overall manufacturing strength with regards to its geographical spread, capacity and capability.

We have three large manufacturing units, one in Goa and two in Ranipet, Tamil Nadu. We are now seriously considering a fourth plant adjacent to our third plant in Ranipet. We manufacture a wide range of products in wood for exports as well as for the domestic market in one of our plants in Ranipet. The second plant in Ranipet is almost totally dedicated to exports. The Goa plant is the largest and meets most of our domestic requirements while also catering to export needs. In addition to wooden toys, we manufacture plastic moulded toys, board games, puzzles, arts & crafts products and several others at our three plants. We expect manufac-



"We have three large manufacturing units, one in Goa and two in Ranipet, Tamil Nadu. We are now seriously considering a fourth plant adjacent to our third plant in Ranipet."

turing activity to pick up in future thanks to the new initiatives from the government in promoting India as a hub for toys!

How important is the role of innovation in toys manufacturing? Tell us something about Funskool's R&D activities and New Product Development?

The toy industry is entirely driven by innovation and we have a large team of product design and development professionals working out of our Chennai office as well as from our Goa factory. We churn out 50-60 new products every year during normal times but with recent curbs on imports likely to result in a dearth of imported products in the market we are planning to increase new product launches to over 100 from next fiscal. Many new products designed and developed in house by us have found good acceptance in overseas markets and that has given an added impetus to the new product development process.

Several Indian manufacturing segments like automotive and pharma are at the forefront when it comes to the implementation of Industry 4.0 tools like digitisation and automation. Where does the Indian toy manufacturing sector stand in this regard, and what is Funskool doing on this front?

Toy industry is clearly labour intensive and this gives us an advantage in exports due to lower labour costs in India. With a small domestic market, short production



Middle East. Our brands will have a stronger presence worldwide as the domestic market expands which will justify larger investments in design and development of new products which have world wide appeal.

Your Goa plant has recently received the BIS certification for electric toys. How important is this development, both from Funskool's perspective as well as from the overall industry's point of view?

Our Goa plant was the first in the country to receive BIS certification for both electric and non-electric toys. Our Ranipet plant was the first in South India to obtain the license for non-electric toys. Our products manufactured in all our plants were already compliant with all the stringent international quality standards. Acquiring the BIS certification is an extension of our commitment to manufacturing high quality toys in India.

Prime Minister Modi is probably the first Indian PM to highlight the significance of the Indian toys manufacturing industry. What is required to fulfil his vision of developing India into a global toy manufacturing hub – both with regards to the industry's efforts as well as the push required from the government?

With the BIS certification being made mandatory, it will help the industry to compete with international manufacturers and become the export hub as envisioned by our Prime Minister. The domestic industry which is barely US\$ 450 million at retail is 0.5 percent of the world toy industry which is estimated at around US\$ 5 billion. With at least 25 percent of the world's children in the age group of 0 to 12 years being in India, there is tremendous scope for the industry in future. The industry is just evolving in India and the recent focus on promoting domestic manufacture of toys will go a long way in faster development of the market in India. A major advantage of this recent initiative would be that domestically manufactured toys would make it more affordable for Indian kids to play with international quality toys! 🇮🇳

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With a small domestic market, short production runs are the order of the day but we are also making significant investments in automation. We have attained a higher level of automation in our exports lines which have bigger runs.

runs are the order of the day but we are also making significant investments in automation. We have attained a higher level of automation in our exports lines which have bigger runs.

Tell us something about your exports business in terms of markets served, product portfolio, volumes and share in overall revenues.

Many of the larger toy companies of the world source products from us. Products manufactured at our plants are therefore on the shelves of retailers across the world. What gives me greater happiness is the fact that our own brands are also beginning to make a presence in global markets. Today, our own brands are sold in several markets in the USA, Europe, Africa and the

By Niranjana Mudholkar

TAKING PRIDE IN PROGRESS

Gourav Luminaries (P) Ltd is looking to double its current sales in next two years and increase its market share in North India & North-East India before it explores central part of India, says its CEO, **Gaurav Khanna**

Gourav Luminaries (P) Ltd started its journey in 1991. How has been the journey so far?

We have come a long way from one-room/one product to five manufacturing units/five product categories. In 1991, it was my father 'Sri Prem Khanna' who started Gourav Luminaries. At that time, he himself used to make 'chowk fatti' with his two hands. It was his brilliant business acumen, impeccable work ethics, unshakeable determination and hard work that laid a strong foundation. Today, it is me and my brother who have the shared responsibility to take this organisation to its next milestone. Gourav has established itself as a brand that takes immense pride in lighting up middle-class homes in tier 2 cities with its affordable and reliable products. We are focused on being environmentally conscious not only through our energy efficient products, but also by taking conscious steps to cut e-waste and reduce plastic at the organisation level. We have also been strengthening our community voice to support women through our social-media initiative – DeshKaGourav. We have got the boxing legend Mary Kom as our brand ambassador to mark this new chapter.

We deeply value all our partners, associates, teammates and, most importantly, the customers who believed in us and continued to support us through all



these years. We are grateful for everyone who walked with us to make this 30-year old magnificent journey possible.

What is your analysis of the Indian electricals industry? Where do you think Gourav Luminaries (P) Ltd stands in terms of market position?

Covid-19 outbreak has posed some very serious questions to entire electrical industry. We have major supply-chain challenges, the raw-material is becoming unaffordable, workforce is disrupted, and even the markets are shifty and unpredictable at the moment. Covid has intensified the battle for electrical industry. As an industry, we need to set our priorities straight – local manufacturing!

If we look closely at the electrical industry, India is one of the largest LED-consuming country in the world. But the LED business is largely dependent on China. If we have to turn the COVID crises into an opportunity, we have to reduce our dependence on China. Localisation is also important to avoid supply-chain disruptions in the future. The need is to set up grounds up LED manufacturing in India. However, this can't happen without strong government policies supporting this. Government should also take steps to make slabs



"The LED business is largely dependent on China. If we have to turn the COVID crises into an opportunity, we have to reduce our dependence on China. Localisation is also important to avoid supply-chain disruptions in the future. The need is to set up grounds up LED manufacturing in India."



Although India has an excellent die casting capacity, the electrical components market has immense scope. It would also be interesting to see some of the industry giants collaborating towards remedying this.

of import tariffs for finished and imported products, and components. This will help reduce the stress on the industry. Moreover, we also need to strengthen our electrical components segment to support manufacturing. Although India has an excellent die casting capacity, the electrical components market has immense scope. It would also be interesting to see some of the industry giants collaborating towards remedying this.

How has the Covid-19 outbreak affected Gourav Luminaries (P) Ltd?

We faced multiple hurdles, from supply-chain to financial, to unexpected rise and fall in demand. But with sheer determination, strategy and persistent efforts of the team, we were able to turn all challenges into the opportunities to grow and our last quarter results speak for themselves. We were able to retain our labour workforce as we supported them through the tough period of March to May by paying them salaries, providing food and shelter. With the support of GECL funding, we were not only able to pay our suppliers on time but also procure raw materials well in advance, which enabled us to keep our factories in productions. With the help of Social media marketing strategy, we were able to add more distribution partners, which helped us to drive the sales. Though we missed our first quarter targets, we are still very confident of posting at least 28 percent YOY growth.

What kind of business numbers are you looking at for the ongoing fiscal?

We are focusing on strengthening our distribution channel in North India - Punjab/Haryana/Delhi/Rajasthan and UP. Our number of channel partners has increased by 20 percent in last 6 months and we shall be able to post a bare minimum of 28 percent YOY growth. We are looking to double our current sales in next two years and increase our market share in North India & North-East India before we explore central part of India. We are also looking add small home appliances as a new product category in coming one to two years.

Tell us about your various product categories.

We currently manufacture and distribute – LED Lights, Modular Switches and Switchgears, and Ceiling Fans. With help of 218+ distributors, we touch around 18,000 retailers in North and North –East India on

regular basis. Our current market share is very insignificant however we are growing at more than 28 percent YOY basis while the market is growing at 11.8 percent. With every passing day, we are increasing our market share.

Tell us about Gourav Luminaries (P) Ltd's manufacturing capabilities and capacities as well as its overall manufacturing footprint.

We have dedicated manufacturing facility for each of our product category - led lights, modular switches, switchgears and ceiling fans. We have four state-of-the-art manufacturing units in Sahibabad Industrial Area. We use latest machinery and comply by BIS as well as ISO standards to ensure high quality, low price products. Our annual capacity of LED lights, switches, switchgears, and ceiling fans is 2.4 million, 6 million, 3.6 million and 1.2 million units, respectively.

As a second-generation entrepreneur, what is your vision for the organisation and where do you see it five years down the line?

We are transitioning from a traditional company into a new-age organisation with a distinguished vision. Our new logo represents our evolution into an environment-friendly and socially conscious organisation. We, at Gourav Luminaries, constantly thrive to bring happiness with our products to as many houses as possible, and are conscious of what message we send out to the world, and how we impact the planet Earth. The way forward for the brand is going to be a testament to the power of local, made-in-India products.

Our vision is to craft an eco-system to enable efficient homes, efficient India. We are on a mission to serve our customers with high-quality and low-price energy efficient electrical goods while creating maximum employment and leaving minimum carbon footprints.

Five years down the line, we see ourselves as a tech-driven umbrella organisation which not only manufactures and sell energy efficient electrical products but also encourages other women entrepreneurs to come on board and sell sustainable home products to Gourav's community.

So, can we expect more women employees working with Gourav going ahead?

Our current labour and middle management workforce comprises of 45 percent women. While, we definitely are looking to increase this number to 55-60 percent by next year, we are also looking to onboard more women employees in upper management in key decision-making roles. 

By Niranjan Mudholkar

UNLOCKING JOBS

The pandemic has made many organisations to look at apprenticeships as part of talent development and hiring strategy to make it future proof, says **Sumit Kumar**, Vice President – NETAP, TeamLease Skills University.

How has the Covid-19 pandemic affected the overall apprenticeship scenario in the country?

Pandemic did have an adverse impact on apprenticeships due to the lockdown. But from the very first phase of unlocking there has been an intake and there has been no looking back. Many of the organisations had some experience of doing apprenticeships in the past. Lack of manpower due to reverse migration added to the talent crunch which led to faster adoption of apprenticeships by the organisation to train the available local people to create productive resources to take care of demand for essential services and goods. The pandemic has made many organisations to look at apprenticeships as part of talent development and hiring strategy to make it future proof.

How will this further change the overall employment scenario in the nation?

Apprenticeship is the way to channelize youth into formal employment. The trend shows that about an average of 35-40 percent of the apprentices do get absorbed in into employment by the same organisations, and the rest get picked up by the industry due to the on the training they have gone through. The larger adoption of apprenticeship will ensure more formal employment which is good for the socio-economic development of the nation.

While the pandemic has certainly impacted the overall manufacturing industry in an adverse man-



“The trend shows that about an average of 35-40 percent of the apprentices do get absorbed in into employment by the same organisations, and the rest get picked up by the industry due to the on the training they have gone through.”



ner, there are also signs of a fresh revival. Do you think the industry will be in a full-fledged revival mode in the first two quarters?

Definitely, all the reports suggest consumption of goods and services even in the non-essential categories have gone back to pre-Covid times or are almost there, which is a good indication of revival of the economic situation. But it must not be forgotten that economic revival will be lop sided without skilled manpower. Hence, organisations need to keep investing in talent creation and upgradation through up skilling and re-skilling.

Which are the key industry sectors that will be primarily driving the demand?

It is a no-brainer that healthcare and pharma sectors are witnessing unprecedented demands. Consumer products (FMCG), automobile and ancillary, consumer durable (FMCD) as well as construction equipment are some of the industry in the manufacturing sector that will witness growth. The other industries to watch out are tech based Edtech, E-Commerce and NBFC (Fintech).

How much of the demand is driven by the MSMEs?

MSMEs are crucial for the economic growth of the nation. They already are responsible for 120 million jobs in the country and the number is growing. However, the engagement of apprenticeships in the medium enterprises is muted and in small enterprises is abysmal. Most of them have stayed away due to lack of under-

standing, fear of authorities, hiring challenges and cost of training. They need to come out of the shell and explore the platform. The regulations and the SOPs are extremely conducive for the sector and are aimed to have more participation from them. They need to invest in skilling, structured process will add to their productivity.

Which are the major profiles that will see an increase in demand going ahead?

Machine operator is the most sought after profile in the manufacturing sector. Quality control and maintenance are the other roles which are popular for engaging the apprentices. The demand will always be there for these apprentices. Of late, we have seen engagement of apprentices in the R&D function in the automotive and pharma sector. Apprenticeships in Web development is high in demand in e-com sector followed by warehouse management. BFSI sector has a demand for feet on street role – sales and collections. Also, the back end processing and data management is being considered for apprenticeships in the sector. Demand for retail sales has also picked up which will continue to grow. In the healthcare sector we are seeing apprenticeship engagement in diagnostic sector. Also, over last 2-3 years we are witnessing higher apprenticeship engagement in ITES sector for telephone callers.

One of the main objectives of Government initiatives like ‘Skill India’ and ‘Digital India’ has been to create a job ready young working force. How successful do you think these initiatives have been so far? What more needs to be done on this front?

Skill India and Digital India have a structured approach to skilling and this is leading to reforms, innovation, formalisation and recognition. There is a dedicated Ministry to handle skilling which is accountable for strategy, execution and monitoring. Apprentices Act has been reformed in 2014 and further amended in Rules in 2019. Skilling schemes like NAPS, PMKVY

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and DDUGKY are innovation in skilling by encouraging participation of industry. There is an emphasis in improving the quality of skilling by improving infrastructure, upgrading of Industrial training institutes and introducing industry driven courses. New Education Policy 2020 is the much needed reform to blend skilling with education. There is a lot that has been achieved and a lot to be achieved. Online education rules needs to be relaxed to make quality education accessible and affordable. The Online degree apprenticeships need a green signal to enhance employability of the youth. Skills universities need to be recognized by MoE and have formal regulations; that is missing right now. Higher education needs to blend with corporate learning to create talent supply chain.

How would you analyse the ‘Atmanirbhar Bharat’ (Self-reliant India) campaign in the context of employment generation in the country?

Trade restrictions with China, the impact of the pandemic and focus on localisation have all led to many potential opportunities for the country for job creation. India’s share in global supply chain is likely to improve. The pandemic has led to faster adoption of digitalisation and automation, generating newer roles and opportunities for employment. But the jobs being created are skilled based. India will be better equipped to handle these jobs and growth if it is being catered by skilled work force. The skilled India will make Atmanirbhar (self-reliant). 

AEQUS AEROSPACE-SAAB JV CELEBRATES MAJOR MILESTONE

Aerstructures Assemblies (AAIPL), a joint Venture between Aequs Aerospace and Saab AB, celebrated an important milestone with the completion of 100th shipset each of Over Wing Exit Doors (OWED), skeleton assemblies and Door 3 Plugs (D3P). The shipsets were completed well on time by AAIPL establishing the company’s competencies in complex assembly of the D3P, and a strikingly rapid industrialization and high build rate for the OWED. Though initiated on different

dates, both the projects achieved this significant milestone in a matter of 29 months (for D3P) and 11 months (for OWED). The D3P assembly manifests an intricate build-to-print assembly, while the OWED skeleton is mapped for a steeper build rate requirement. The occasion was graced by Rémi Maillard, President & MD at Airbus India & South Asia along with Thierry Cloutet, Head of Procurement, India & South Asia at Airbus at the Aequs SEZ in Belagavi.

By PVG Menon

THE FUTURE IS BRIGHT, IT'S HERE!

The opportunities in the semiconductor industry are bringing with them a growing need from junior to senior professional – to drive strategic direction and business growth.

Given today's rapid technological innovation, the semiconductor industry can look forward to growth. The semiconductor industry has been a pioneer in digitisation since its inception, offering digital services and pursuing new digital business models. Today, other industries, notably automotive, have clearly outpaced the semiconductor industry in terms of digitisation. That's ironic, given that automakers' own success in digitisation has been largely supported by the products made by the semiconductor industry. Now, artificial intelligence will likely be the catalyst that will drive another decade-long growth cycle for the semiconductor sector.

In the months after the coronavirus began to spread, semiconductor companies moved decisively to protect employees, secure supply chains, and address other pressing concerns. Although semiconductor companies that begin revising their long-term strategies now may emerge stronger in the next normal.

In this article, we'll examine what semiconductor industry is, why it's important and what skills are required to go in this field:

MARKET OVERVIEW – UNCERTAIN TIMES AHEAD

The semiconductor consumption in India was about US\$21 billion in 2019, growing at the rate of 15.1 per cent, according to IESA ESDM Market Report 2020 done in association with F&S. The overall consumption of electronics component is US\$31 billion, of which about 2/3 is semiconductors. Recently, IESA conducted its Vision Summit 2020 event to drive initiatives and policies for the Intelligent Electronics & Semiconductor products and solutions that will propel the government's vision of a self-reliant or an 'Atmanirbhar Bharat'. Such trends reflect sustained confidence



among many investors and businesses in the semiconductor space over the medium to long term – especially in 5G, autonomous cars, artificial intelligence (AI), the Internet of things, optoelectronics and sensors. This sentiment stems from the economic aftermath of COVID-19 generally. The Semiconductor Industry Association (SIA), for instance, highlighted declining global sales in the first quarter of 2020 – by 3.6 percent compared with the previous quarter.

EDUCATION AND TRAINING

Many employers prefer that semiconductor processors have an associate's degree in a field such as microelectronics. These programs are usually offered at community colleges. Students should take science and engineering courses, such as chemistry, physics, and classes in electronic circuits. ESSCI have developed many Qualification Packs in the field of Embedded System, IoT, VLSI Design and Verification Engineering, which can help the candidate in gaining the appropriate knowledge required as per industry demand.

There is an emerging trend of employers preferring semiconductor processors to have a bachelor's degree in engineering or a physical science because of the increasing complexity of the manufacturing plants. New semiconductor processors need on-the-job training from one month to one year. During this training, a processor learns how to operate equipment and test new chips. Manufacturing microchips is a complex process, and it takes months of supervised work to become fully proficient. Because the technology used in manufacturing microchips is always evolving, processors must continue to be trained on new techniques and methods



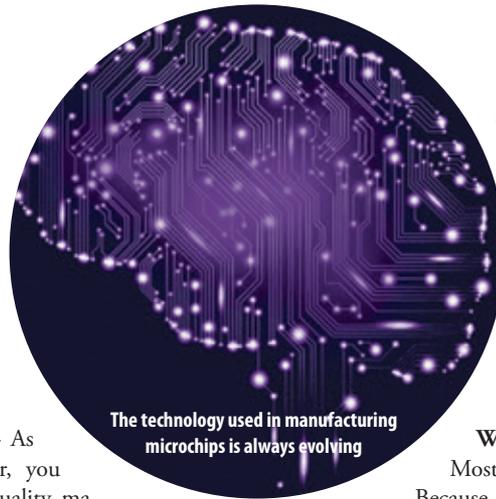
There is an emerging trend of employers preferring semiconductor processors to have a bachelor's degree in engineering or a physical science because of the increasing complexity of the manufacturing plants.

throughout their careers.

SEMICONDUCTOR POSITION TYPES

While there are a number of career opportunities throughout the semiconductor industry, here are a few types of positions that we typically recruit for within the industry.

1. **Field Service Engineer** - As a Field Service Engineer, you will be responsible for quality machine installation and maintenance service of complex electro-mechanical systems; analytical troubleshooting of technical problems to component level; and performing complete installation, maintenance services, and technical reporting.
2. **Equipment Technician** - In this role, you will perform electrical and mechanical troubleshooting and preventative maintenance on semiconductor manufacturing equipment.
3. **Test Technician** - Test Technicians are responsible for mechanical and/or electrical testing of materials, devices, and products as well as test fixturing and general test equipment maintenance.
4. **Technical Trainer** - As a Technical Trainer, you will be required to have in-depth knowledge and experience using best practices of internal or external business concepts to improve training products or services. You will solve complex problems; take a new perspective using existing solutions; work independently receiving minimal guidance; and act as a resource for colleagues with less experience.
5. **Product Support Engineer** - In a Product Support Engineer role, you will be in charge of providing effective support for products developed in an organisation, as well as testing and providing technical troubleshooting during development, and creating a product support plan to provide maintenance.
6. **Integration Engineer** - As an Integration Engineer, you will be responsible for the development and testing of control systems for engines using digital electronics and communications. It is important for Integration Engineers to understand control systems, subsystems, and component requirements of all systems.
7. **Project Coordinator** - Project Coordinators will have the responsibility of planning, procurement, and execution of a project, in any undertaking that has a defined scope, defined start and a defined



finish; regardless of industry. Project Coordinators and Managers are the first point of contact for any issues or discrepancies arising from within the heads of various departments in an organisation, before the problem escalates to higher authorities.

WORK SCHEDULES

Most employees work full time. Because semiconductor factories, also known as fabricating plants, run around the clock, night and weekend work is common for these workers. Although some plants schedule workers for the standard 40-hour week (8-hour shifts, 5 days a week), others schedule workers in 12-hour shifts.

DEMAND FOR TALENT – NEW OPPORTUNITIES EMERGE

From a recruitment perspective, meanwhile, market trends are paving the way for several thousand new jobs in the years ahead. The deployment of 5G will not only provide new growth opportunities for the wireless industry; it will also boost economic recovery due to the acceleration of wireless take-up for businesses globally plus rapidly changing consumer behaviours. The introduction of numerous semiconductors in connection with autonomous driving, AI and low-power semiconductors will lead upticks in demand, plus optoelectronics is likely to experience growth in 2021. These opportunities are bringing with them a growing need from Junior to senior professional – to drive strategic direction and business growth.

CANDIDATE SHOULD ALSO POSSESS THE FOLLOWING SPECIFIC QUALITIES:

1. **Communication skills:** Semiconductor processors must clearly communicate their recommendations on how to improve the manufacturing process to engineers and other workers.
2. **Computer skills:** Much of the equipment that these workers use is programmable—that is, a computer language determines how the equipment operates. Semiconductor processors must modify the specifications in programs to adjust for a change in the manufacturing process, such as a change in robot sensing requirements.
3. **Critical-thinking skills:** Semiconductor processors use logic and reasoning to uncover problems and determine solutions during the manufacturing process.

4. Detail oriented: Because a minor error or impurity can ruin a chip, processors must be able to spot tiny imperfections.
5. Dexterity: Semiconductor processors must be able to use tools and operate equipment to make precise cuts and measurements.
6. Science skills: Processors must understand the chemical composition and properties of certain substances that they may use in manufacturing semiconductors. They need to know a lot about electronics and about the manufacturing process, which involves the application of ideas from chemistry and physics.

HOW TO ENHANCE YOUR CAREER IN SEMICONDUCTOR INDUSTRY

We believe there are five specific steps that forward-thinking candidates can take to increase their appeal to employers within the semiconductor industry:

1. Be proactive in developing themselves – via self-learning activities, candidates must not let themselves be restricted by the attributes required for their current positions, and instead get up-to-date on market trends, and refresh and enhance their skills and knowledge.
2. Volunteer for new or additional projects – by participating on a pro bono basis in industry initiatives

and applying talent to areas of work beyond their core function, candidates can grow their mental agility, plus become more open-minded and flexible.

3. Relocate for a certain period of time – in offering to move to a new location or take on a new role, candidates can get experience of new projects and positions, learn about different cultures and build a broader knowledge of the market.
4. Participate in networking – in trying to be more outgoing and interact with industry peers, candidates can broaden their horizons and get exposure to a variety of people and trends, in turn expanding their understanding of different markets.
5. Getting the right support – by aligning with a specialist recruiter who understands the emerging trends within the semiconductor industry, candidates can not only understand hiring trends, but also gain access to a range of exciting opportunities within their own country and overseas.

The semiconductor industry has become a strategic sector and has a tremendous economic impact. Recently announced policies (PLI, SPECS and EMC2.0) are the steps in the right direction and will create a new opportunities for the skilled professional. 

The author is CEO, Electronics Sector Skill Council of India (ESSCI)

RANGE OF LEAD-FREE BRASS CABLE GLANDS FROM LAPP

To be successful in the future, companies need to place their focus on sustainability

LAPP is offering cable glands in a lead-free brass version under SKINTOP® and SKINDICHT® cable gland ranges. LAPP firmly believes that to be successful in the future,

companies need to place their focus on sustainability. LAPP is developing sustainable products, even before being obliged to do so by laws and regulations. It sees this not as a constraint but as an integral part of our corporate responsibility.

The popular LAPP cable glands are now available in the new lead-free version. The first products include the popular SKINTOP® MS-M and MS-SC-M models, as well as the counter nut SKINDICHT® SM-M.

SKINTOP® MS-M: It is the first choice for a wide range of applications in machine and plant construction, measurement, control and regulation technology, and where there are tough demands in terms of mechanical and chemical stability. These glands offer optimum strain relief, wide clamping ranges, numerous approvals and a



high protection class.

SKINTOP® MS-SC-M: The EMC gland features a highly conductive, flexible EMC contact spring and a low-resistance shield contact for EMC earthing of the shielding braid.

SKINDICHT® SM-M: The perfect locknut for SKINTOP® cable glands.

All of the above versions are available immediately in metric sizes M12 to M63. The acronym LF at the end of the article number indicates that a product

is lead-free. Further product groups are being supplemented with lead-free versions.

The cable glands made of lead-free brass deliver the same reliable LAPP quality as the existing versions in terms of their mechanical properties, corrosion resistance and EMC properties. The lead-free version also complies with protection class IP 68.

With the lead-free SKINTOP® and SKINDICHT® cable glands, LAPP is taking a pioneering role in sustainable products. In the near future with the possibility of ban on lead as a metal, we are giving our customers the certainty that they will be prepared for the challenges of the future especially for machines with a long service life.

SWITCH-OFF PROTECTION ON LONG TRAVELS

igus position-based push/pull force monitoring ensures safety on crane systems

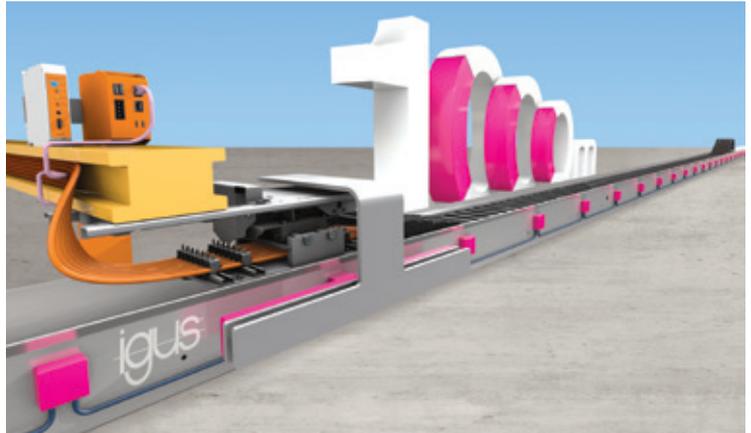
A forgotten screwdriver in an energy chain, a bent trough as well as ice, snow and bulk material can quickly lead to a total failure of cranes with high costs. This prompted igus to develop a new push/pull force monitoring system. The EC.PR precisely records the force values of the floating moving end and adjusts the force limits. This prevents high repair costs and damage to the system.

A system failure is the worst-case scenario for crane operators. Often high costs are incurred not only for repair and maintenance, but above all for downtime and non-produced goods. igus has developed the EC.PR system especially for long travel energy chains from 150 metres upwards, which uses sensors to determine the push/pull force of the energy chain and automatically switches off when a defined force is exceeded. This can prevent a crash of the system. If, for example, a foreign object enters the energy chain or if the trough bends, the push/pull force increases at that position. The system detects the changed value and switches off the system. By means of the new EC.PR system, the force for switching off the trolley is automatically adjusted to the position. The system receives the position information from additional modules of the Siemens PLC, an OPC-UA server, and analogue or digital position measuring systems. The EC.PR system can be easily integrated into existing control concepts and switch cabinets.

Tested under real conditions at outdoor test facility

The EC.PR system consists of two sensors that commu-

“A SYSTEM FAILURE IS THE WORST-CASE SCENARIO FOR CRANE OPERATORS. OFTEN HIGH COSTS ARE INCURRED NOT ONLY FOR REPAIR AND MAINTENANCE, BUT ABOVE ALL FOR DOWNTIME AND NON-PRODUCED GOODS.”



The EC.PR system monitors the push/pull force along travels up to 1,000 metres based on the position and switches off automatically when the measured values change.

“THE EC.PR PRECISELY RECORDS THE FORCE VALUES OF THE FLOATING MOVING END AND ADJUSTS THE FORCE LIMITS. THIS PREVENTS HIGH REPAIR COSTS AND DAMAGE TO THE SYSTEM.”

nicate with each other. A sensor measures the push/pull force of the e-chain while, for example, a digital distance measuring system determines the exact position of the trolley or the moving end of the e-chain. For this purpose, so-called “beacons” are attached to the outside of the guide trough at a distance of 500 millimetres. Each position and thus each beacon is assigned a specific push/pull force. If the assigned maximum push/pull force of a position is exceeded, the system switches

off automatically via the EC.PR. The user can remove the foreign object from the energy chain, reset the system and then put the system back into operation. The new system has already been successfully tested at the 200 metre long outdoor test rig at igus in Cologne.

*For more information, contact:
Kaushik Ramanujachar,
Product Manager, E-ChainSystems®,
igus (India) Private Limited,
Email: kramanujachar@igus.net, or
visit www.igus.in*

TOTAL FDI INFLOW OF US\$ 58.37 BILLION IN APRIL TO NOV 2020

Foreign Direct Investment (FDI) is a major driver of economic growth and an important source of non-debt finance for the economic development of India. It has been the endeavour of the Government to put in place an enabling and investor friendly FDI policy. The intent all this while has been to make the FDI policy more investor friendly and remove the policy bottlenecks that have been hindering the investment inflows into the country. The steps taken in this direction have borne fruit, as is evident from

the ever-increasing volumes of FDI inflows being received into the country. Measures taken by the Government on the fronts of FDI policy reforms, investment facilitation and ease of doing business have resulted in increased FDI inflows into the country. During April to November, 2020, total FDI inflow of US\$ 58.37 billion has been received. It is the highest ever for first 8 months of a financial year and 22% higher as compared to first 8 months of 2019-20 (US\$ 47.67 billion).

A STEP TO ACHIEVING MAXIMUM PROCESS OPTIMIZATION

Ensuring smooth operations with VERICUT's simulation and verification software.

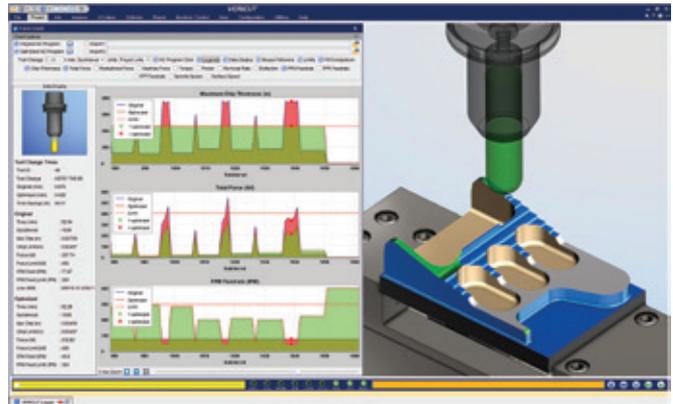
Process forms the daily functionalities of manufacturing playing a significant role in the efficiency. VERICUT is helping save time and money. It links all the machining operations end-to-end to evaluate and improve during each step along the way, through engineering, design, CAM programming and machining and up to the final quality and inspection phase, can and should be optimized.

Reducing costs and time effectively is the need of the hour. Simulation ensures programs are error free and all operations work together as intended, but optimization ensures the whole process is operating as efficiently as possible to save time and money.

As machining gets more complex and customers expect more for less there is room for improvement in any manufacturing process. Every level of the manufacturing process that a job goes through requires careful planning and communication and the aim of manufacturing breaking through each step as quickly and efficiently as possible, with the least cost incurred. In a typical manufacturing workflow VERICUT resides between CAM programming and machine set up.

CAM programmers know that modern machines move so fast it's pretty much impossible to stop them before a crash occurs. VERICUT CNC simulation and verification software does a superior job at finding problems lurking in NC programs and warning of unexpected machine behavior, even those occurring between multiple setups. It lets programmers resolve these issues before they reach the shop floor, crash the machine and waste valuable machine time.

ENGINEERING AND DESIGN CAN LEARN THROUGH VERIFICATION IF PARTS CAN BE MANUFACTURED OR IF CHANGES NEED TO BE MADE BEFORE METAL CUTTING.



CAM PROGRAMMERS KNOW THAT MODERN MACHINES MOVE SO FAST IT'S PRETTY MUCH IMPOSSIBLE TO STOP THEM BEFORE A CRASH OCCURS. VERICUT CNC SIMULATION AND VERIFICATION SOFTWARE DOES A SUPERIOR JOB AT FINDING PROBLEMS LURKING IN NC PROGRAMS AND WARNING OF UNEXPECTED MACHINE BEHAVIOR, EVEN THOSE OCCURRING BETWEEN MULTIPLE SETUPS.

Engineering and design can learn through verification if parts can be manufactured or if changes need to be made before metal cutting. Planning and scheduling will have more accurate cycle times and they won't have to schedule prove-out times on the machines. The quality control and inspection team can expect higher levels of conformance and fewer issues,

which make it easier to approve parts, and get them delivered. However, Force is based on calculations and proven cutting data that's been gathered from tooling manufacturers, material specifications and dyno testing.

Force charts visualize what's happening during the machining process and expose areas of opportunity that exist in each NC program, such as erratic chip thickness, chip thinning and inefficient CAM paths that can all be resolved by optimizing feed rates. VERICUT Force recalculates feed rates to maintain ideal constant chip thickness while simultaneously reducing feed rates when needed to maintain safe cutting forces and spindle power, and it does this for each tool.

Simulating, verifying and optimizing simultaneously with VERICUT Force equates to a cumulative effect on process optimization resulting in time and money savings.



A NEW DIRECTION TO TURNING

Converting conventional turning operations into High Dynamic Turning with the FreeTurn standard range



The new introduction by CERATIZIT, High Dynamic Turning (HDT) has created a revolution in the sector. The company's dynamic FreeTurn tooling, makes it possible to carry out all traditional turning operations such as roughing, finishing, contour turning, face turning and longitudinal turning with just one tool. HDT with FreeTurn represents a completely new method of turning.

The traditional techniques followed since ages such as new cutting materials, new chip breakers and a few new tooling systems have been invented to optimize turning. However, the actual basic turning process has remained essentially unchanged. Even today, a contour is created with an indexable insert at a fixed angle to the workpiece. This method has not changed, even with the addition of controllably axes in modern turning-milling

UTILIZING THE MILLING SPINDLE FOR 360° DEGREES OF FREEDOM IN CONJUNCTION WITH THE SLIM, AXIAL TOOL DESIGN OF THE FREETURN TOOLS, CREATES A DEGREE OF FREEDOM OF 360° WITHOUT THE RISK OF COLLISION, THUS PROVIDING UNPRECEDENTED FLEXIBILITY.



CERATIZIT High Dynamic Turning (HDT) with FreeTurn tools allow 360° rotation of the cutting surface.

EVEN TODAY, A CONTOUR IS CREATED WITH AN INDEXABLE INSERT AT A FIXED ANGLE TO THE WORKPIECE. THIS METHOD HAS NOT CHANGED, EVEN WITH THE ADDITION OF CONTROLLABLE AXES IN MODERN TURNING-MILLING CENTERS, MACHINES WHICH ARE INTENDED TO SERVE ONE PURPOSE, NAMELY, TO MANUFACTURE A COMPONENT AS COMPLETELY AS POSSIBLE WITHIN A SINGLE MACHINE WORK ENVELOPE.



All contours can be machined in one setup, as the traditional turning operations of roughing, finishing, contour turning, face turning and longitudinal turning are all accomplished with a single tool.

centers, machines which are intended to serve one purpose, namely, to manufacture a component as completely as possible within a single machine work envelope. CERATIZIT has taken advantage of the features on these turning-milling centers and developed the High Dynamic Turning (HDT) System. The simple idea behind HDT: the tool approach and point of contact in the machine can be varied as opposed to conventional turning with a fixed tool.

Utilizing the milling spindle for 360° degrees of freedom in conjunction with the slim, axial tool design of the FreeTurn tools, creates a degree of freedom of 360° without the risk of collision, thus providing unprecedented flexibility. Due to the rotation around its own tool axis, the cutting edge change can be done without interrupting the cutting process. Additionally, the angle of approach is freely variable at any time and can

even be changed while cutting. This not only enables flexible machining of almost every work-piece contour, but also optimum chip breaking, higher feed rates and an increase in tool life.

The defining characteristic of FreeTurn tooling is its simple structure. The tool holder, together with its slim shank and axial concept which optimizes the direction of the cutting forces into the spindle, form a stable unit. For instance, In one application at Spanish wheel manufacturer ROTOR, an indexable insert with two different cutting edges was used to manufacture an aluminium wheel hub.

Since CERATIZIT presented High Dynamic Turning and FreeTurn tools, a number of major machine and control system manufacturers have begun developing solutions for an automated process. CAD/CAM providers have developed solutions for programming HDT-specific program sequences.

BESPOKE FIRE RESISTANT POLYMERS



As We get future ready for Electric Vehicles fire resistance for plastic components is gaining more attention.

We at APPL have just the right solution with Bespoke Fire-resistant Grades of Engineering Plastics and Thermoplastics Compounds.

Our High-performance FR Grades are made as per UL94 Flammability Ratings and Halogen free for certain applications.

FOUR BRANDS – A COMPLETE PRODUCT SPECTRUM

Always the ideal cutting tool solution for
every metal cutting application

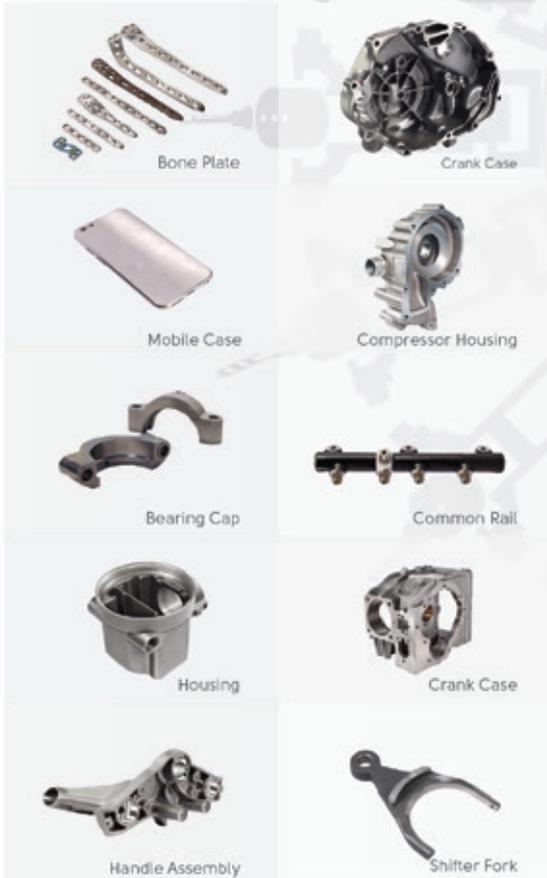


TEAM CUTTING TOOLS

Tooling the Future

High Speed Drill Tap Centre

DTC 400-XL
DTC 400L-XL



The Advantage

The drill tap machining center DTC-400 XL / DTC-400L XL designed specifically for high speed drill tap application along with full milling capabilities. It's a compact and powerful DTC, loaded with BT-30/BBT-30 spindles.

- Chip to chip time: 1.7 s (1.5 s*)
- Axes rapid rate: 60/60/48 m/min (DTC-400XL)
(X/Y/Z) 50/50/48 m/min (DTC-400L XL)

Machine Highlights

- ◆ Faster Front - Pocket Tilting ATC
- ◆ Enhanced Z-axis acceleration: 1.3 G
- ◆ Spindle Speed - 10,000rpm/20,000rpm*
- ◆ Roller guide ways
- ◆ Rigid Structure
- ◆ Compact Foot-Print

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