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ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

THE MACHINIST

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Market
Growth, finally!

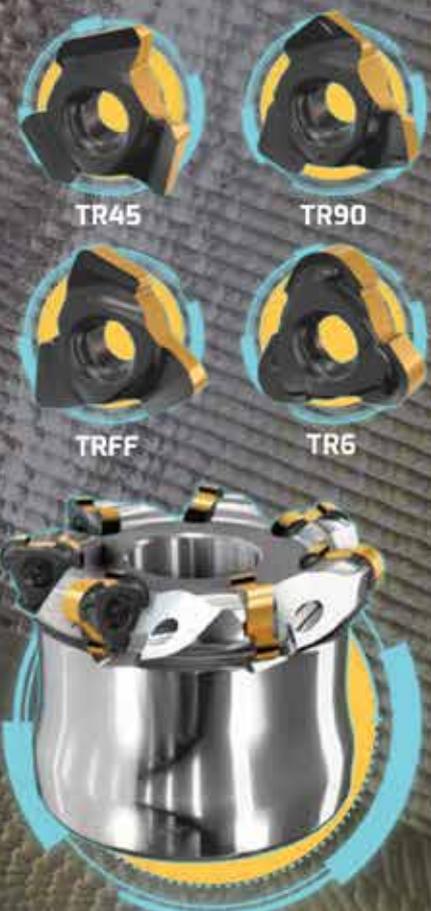
A man in a dark suit, white shirt, and yellow patterned tie stands with his arms crossed in front of a blurred yellow tractor. He is wearing glasses and has a slight smile. The background is a bright, outdoor setting with a blurred tractor, suggesting a manufacturing or agricultural environment.

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prospects

Subir Chowdhury of JCB India Ltd
explains why he sees
a strong growth trajectory

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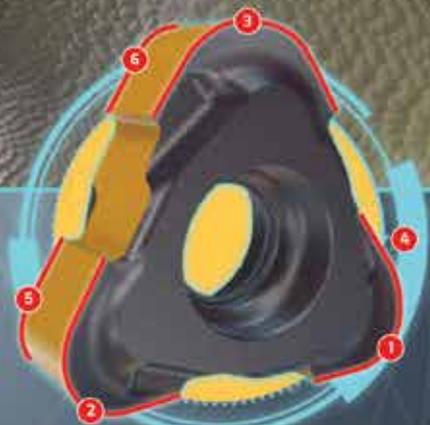
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IT'S OVER!

Okay, I am talking about the year 2019! What did you think? Well, we all know that this hasn't been a good year for the industry. In fact, you could say that this has been a very bad year! But it's getting over now. Not just the year itself but even the economic slowdown is phasing out. The latest report from the Organisation for Economic Co-operation and Development (OECD) states that "India is set for a modest recovery after a loss of momentum, as reforms to simplify taxation, lighten business regulations and upgrade infrastructure start to bear fruit. Further reforms to modernise the economy are now needed to drive the creation of high-quality jobs, as well as measures to improve public services and welfare." The latest OECD Economic Survey of India sees India's GDP growth recovering to 6.2% in 2020 and 6.4% in 2021 after dipping to 5.8% in 2019 following several years of robust growth.

"THE LATEST OECD ECONOMIC SURVEY OF INDIA SEES INDIA'S GDP GROWTH RECOVERING TO 6.2% IN 2020 AND 6.4% IN 2021 AFTER DIPPING TO 5.8% IN 2019"

In fact, speaking at a FICCI Summit, Dr Krishnamurthy Subramanian, Chief Economic Advisor, Government of India, said that the current slowdown in the Indian economy is more cyclical than structural in nature and the government has a well-thought-out agenda for reforms. The good news, as Dr Subramanian also pointed out is that 'there has been no change in the demographics, demand, and the ability of companies to supply things'. The government has already pushed for a lot of economic reforms and hopefully these reforms should start enhancing the economy in the times to come.

Saying hello is much better than saying good bye. But I am happy saying good bye to 2019 as I say hello to 2020. Of course, one thing is for sure, the industry will have to put in extra efforts to make the most of the incoming positive tide. I leave you with this wonderful thought from Alice in Wonderland: "It takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

Editor & Chief Community Officer

THE ULTIMATE GUIDE TO PROFITABLE MANUFACTURING
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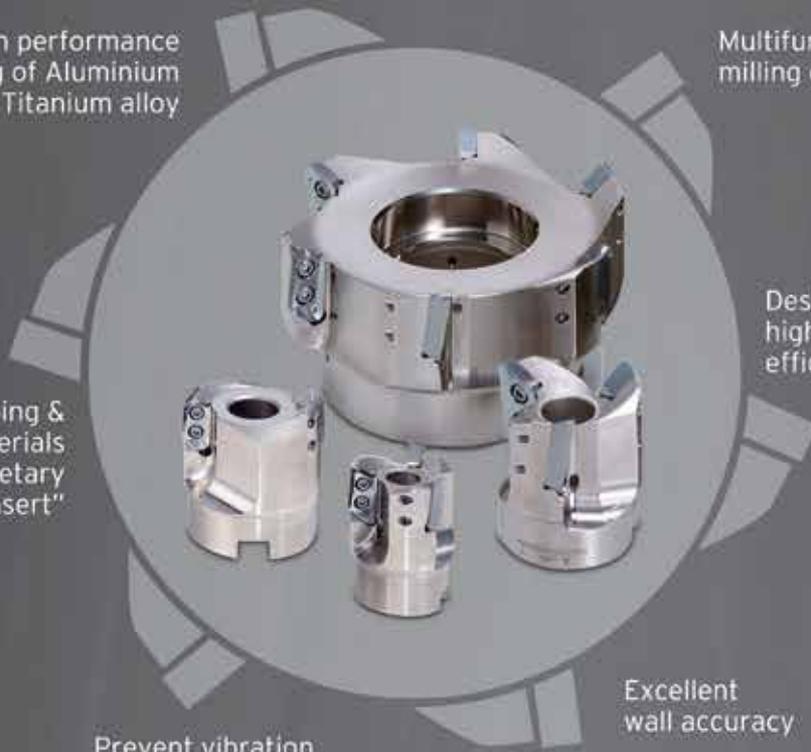
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YOUR GLOBAL CRAFTSMAN STUDIO

Fuji India 2.0 targets Rs.1,500 crore by 2023 supporting the Reiwa Prosperity plan

FUJI ELECTRIC CO., LTD. (FE) has announced its India 2.0 plan to expand its business operations in India. The FE India 2.0 plan envisages the revenues from the India market to reach 1,500 Crores by 2023 supporting the global objective of Fuji Electric's Reiwa Prosperity 2023 plan to grow global revenues to one trillion Yen when FE celebrates its Centennial Anniversary (100 years of founding). Fuji Electric is globally developing its core business of



Power Electronics Systems and India has been identified as one of the key markets

as part of FE's global growth plan. FE will expand its power electronics systems business in India, targeting mainly the manufacturing industries, core heavy industries, buildings, infrastructure and data centre market. With the recent acquisition of Consul Neowatt Power Solutions Pvt Ltd, Fuji Electric has a strong presence across India with almost 1,000 employees, four manufacturing plants and a pan-India sales network operating out of 25 offices.

Elgi Equipments conferred 2019 Deming Prize in Tokyo



ELGI EQUIPMENTS is now the first globally established industrial air compressor manufacturer to be awarded the Deming Prize for excellence in Total Quality Management, in over 60 years. In his acceptance speech, Dr. Jairam Varadaraj, Managing Director ELGi Equipments dedicated this award to all the employees at ELGi saying, "On paper, the path to success is pretty straight forward. But realizing it requires a secret sauce. An envelope that rigorously enables, executes and continuously improves the organization through a process orientation. TQM has been our secret sauce. We have a long way to go but TQM has helped us become a better company for all of our stakeholders." ELGi's TQM journey began in 2008, and gained momentum starting 2014. ELGi's TQM system - EBS (ELGi Business System), implemented as a means to achieve ELGi's goal of becoming the world's second largest air compressor manufacturer by 2027, comprises of diverse improvement activities and human resource development initiatives.

Indian Railways sign agreement with MELPL

INDIAN RAILWAYS has entered into Procurement cum Maintenance Agreement with Madhepura Electric Locomotive Pvt. Ltd. (MELPL), a joint venture of Indian Railways and Alstom. As part of largest Foreign Direct Investment project of Indian Railways, Ministry of Railways and Alstom came together in 2015 to transform the heavy freight transportation landscape of the country. A landmark agreement worth 3.5 billion Euro was signed to manufacture 800 electric locomotives for freight service and its associated maintenance.

Alstom has delivered prototype locomotive in March 2018. Based on the test results, Alstom has redesigned the complete locomotive including bogies. The new design of locomotive has been inspected by RDSO at Madhepura factory and cleared for dispatch from factory. After test and trials M/s Alstom will accelerate the delivery schedule and supply 10 locomotives in FY 2019-20 and 90 locomotives in FY 2020-21 and 100 locomotives per year beyond March 2021 as per their recovery plan. This is the first time such High Horse Power locomotive is being tested on Broad Gauge network in the World by any Railways.

Schneider Electric opens 1st Smart Distribution Center in India; fifth launch globally in 2019

SCHNEIDER ELECTRIC opened its first Smart Distribution Center in India. The Smart Distribution Center, located in the commercial hub of Mumbai, has been digitally transformed with Schneider Electric's EcoStruxure architecture to be more energy efficient and provide real time



access to information right across the supply chain. This is Schneider Electric's fifth Smart Distribution Center launch in 2019, following inaugurations in Australia, China, Brazil and France. The Smart Distribution Center in Mumbai is the first of Schneider Electric's showcase Smart Distribution Centers that has been set up as a third-party logistics (3PL) site. Javed Ahmad, Senior Vice President, Global Supply Chain, India, Middle East & Africa and East Asia & Japan, said, "Our Smart Distribution Center Programme serves as a model for other logistics and warehousing players in India to build intelligent distribution networks and paves the way for the region's logistics industry to become more sustainable and efficient."



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Government of Odisha launches Make in Odisha 2020

CHIEF MINISTER NAVEEN PATNAIK recently announced the countdown to “Make in Odisha 2020” and launched the 8th phase of ground-breaking industrial projects as Odisha continues with its unprecedented industrial development.

Patnaik also showcased the new website of Odisha Film Development Corporation (OFDC) followed by the unveiling of the countdown to the 3rd Make in Odisha Conclave in 2020, the state’s flagship biennial global investors’ meet.



During the last edition of Make in Odisha, the state received overall investment intent of Rs. 4,19,574 crore across 15 sectors and saw the participation of more than 5,000 industry captains, with delegates from across the country and

abroad, and experienced a footfall of up to 31,000 delegates. Patnaik said, “Odisha has a vision of becoming one of the top three investment destinations in the country and towards achieving this, we have devised the ‘5T’ strategy in which Transformation goals identified will be achieved through Teamwork, Transparency and Technology enablers in a Time-bound manner. One year from today we will host the Make in Odisha Conclave 2020 and I invite all stakeholders to join hands to make it the greatest investment summit ever organized by any State in the country.”

HAL signs MoU with RGNAU to promote cooperation

AS PART OF THE GOLDEN JUBILEE CELEBRATIONS OF HAL Management Academy (HMA), HAL signed an MoU with Rajiv Gandhi National Aviation University (RGNAU), a Central University under Ministry of



Civil Aviation to promote cooperation between RGNAU and HAL to grow the pool of human resources in the aviation and aerospace industry of the country. The MoU will identify the type of academic and training programs that could be offered jointly. In his key-note address, R. Madhavan, CMD, HAL said over the years, HMA has assumed a whole new role which is more pragmatic and relevant to the industry needs. HMA plays a pivotal role in developing competencies in professionals at different levels to strengthen the aviation eco system, he added. V. M. Chamola, Director (HR) said HMA is the intellectual force behind HAL as it provides consistent support to HAL. It will continue to provide holistic programs for the benefit of the aviation industry, he added.

Birla Carbon and CHASM sign agreement

BIRLA CARBON, a leading global manufacturer and supplier of carbon black, and CHASM Advanced Materials Inc., a leading developer and manufacturer of printed electronics materials and battery materials, based on proprietary carbon nanotube and ink/coating technologies, are joining forces to accelerate the discovery and development of novel nanomaterials to benefit various market segments including high-performance tires, novel coatings and next-generation batteries. Dr. Sanrups B. Misra, CEO, Birla Carbon, Director, Chemicals and Director, Group Human Resources, Aditya Birla Group said, “We are very excited to have the opportunity to collaborate with CHASM Advanced Materials. The combination of CHASM’s expertise in nanotube enhancement and our deep knowledge of carbon substrates and applications offers us the chance to rapidly advance our understanding of these high-performance, scalable nanomaterials.”

“As one of the world’s leading producers of engineered nanomaterials, CHASM looks forward to collaborating with Birla Carbon, who offer us faster access to customers and markets. Their experience with large-scale manufacturing of engineered nanomaterials is outstanding”, stated David Arthur, CHASM, Chief Executive Officer and Co-founder.

Indian stainless steel consumption touches 2.5kg/capita: ISSDA

PER CAPITA CONSUMPTION of stainless steel in India has touched a new peak of 2.5 kg in 2019, against 1.2 kg per capita in 2010, registering an increase of over 100 percent in a period of just eight years. This milestone achievement was announced during the inaugural session of the 30th foundation anniversary celebration of the Indian Stainless Steel Development Association (ISSDA), attended by Minister of State, Ministry of Steel, Faggan Singh Kulaste. Henceforth, India ranks among top 15 countries in the world in terms of per capita consumption of stainless steel. This was accomplished through collaborative efforts of the domestic stainless steel industry led by ISSDA, along with the pro-industry policy initiatives of the Ministry of Steel. Stainless steel demand in diversified applications such as Architecture, Building & Construction (ABC), Automobile, Railways & Transport (ART), Process Industries and White Goods, apart from conventional use in kitchenware and utensils. Kulaste added, “Growth rate of stainless steel demand in India is to the tune of 6-7 percent CAGR, which is also amongst the highest in the world, as the demand is directly linked to the economic growth. Stainless steel not only has a low life cycle cost but improves overall quality of life. I compliment the industry for this achievement and assure support for future growth of the industry.”

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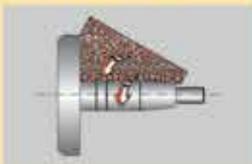


FIG-300 CNC
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FIGE-150 CNC
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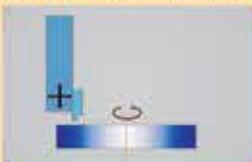


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A list of key events happening between January 2020 to October 2020, both nationally and internationally.

JANUARY
16-20, 2020

Plastivision 2020
Mumbai, India
www.plastivision.org/

JANUARY
18-22, 2020

Elecrama 2020
Greater Noida
www.elecrama.com/

JANUARY
23-28, 2020

IMTEX Forming 2020
Bengaluru, India
imtex.in/imtex2020/

FEBRUARY
7-12, 2020

Auto Expo 2020
Greater Noida
<http://www.autoexpo-themotorshow.in/>

FEBRUARY
26-28, 2020

Asiamold
Guangzhou, China
asiamold-china.cn.messefrankfurt.com

FEBRUARY 28
-MARCH 1, 2020

IFEX 2020
Chennai
<http://www.ifexindia.com/>

MARCH 31
-APRIL 4, 2020

SIMTOS
Seoul, South Korea
www.simtos.org

MAY 20-22,
2020

Transport India 2020
New Delhi
<http://www.transportindiaexpo.com/>

AUGUST
27-29, 2020

Bus World India
Bengaluru
india.busworld.org

SEPTEMBER
14 -19, 2020

IMTS
Chicago, USA
www.imts.com

APRIL 22-25, 2020

Die & Mould India
Mumbai, India
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OCTOBER
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Pushing Performance

Tony Berland takes charge as MD & CEO at Legrand India



Legrand has announced the appointment of Tony Berland as the CEO and Managing Director for Legrand Group in India. Berland, who takes over reins from Thuard, will be responsible for strengthening India as a strong base for business operations making Legrand the industry leader in the domain of electrical and digital infrastructure.

Berland has thirty years of experience working in the international electrical industry. He is associated with Legrand Group for over a period of 28 years. He was responsible for leading Legrand operations across markets like Europe, South East Asia, New Zealand and Australia. Tony has driven strategy-oriented growth across different geographies.

Speaking about the appointment, Jean-Luc Cartet, Executive VP Asia-Pacific Middle East Africa South America, said, "Tony is a strong, strategic and dynamic leader, given his strong command of our business and proven ability to drive results in international markets. With his

breadth of experience across diverse business verticals, we are confident that he will drive Legrand India into the next phase of growth. He has inculcated a growth mindset in the team as well as Partners. We wish him the very best for his new role."

Berland said, "I am delighted to take on the responsibility and lead the team to chart the next phase of growth in India. India is important market for Legrand as it presents tremendous growth potentials and development. From last few years, we have grown from strength to strength and have introduced new products in the market. Our focus will continue to remain on keeping the momentum alive."

V. Anbu is UFI's Incoming President for 2021



UFI, the global association of the exhibition industry held the 86th UFI Congress from 6th to 9th November 2019 at Bangkok, Thailand. Chaired by UFI's 2019 President, Craig Newman, the General Assembly highlighted an array of new initiatives supporting UFI's global membership in around 90 countries. The 86th UFI Congress featured 21 delegates from India including exhibition organizing venues and service providing companies from the Indian exhibition industry. At the 86th UFI Congress, V. Anbu, Director General & CEO of Indian Machine Tool Manufacturers' Association (IMTMA) and BIEC took over as the Incoming President of UFI for 2020 - 2021. Earlier this year the UFI board of directors had elected V. Anbu as its President for 2020-2021. V. Anbu has been active in UFI for many years, supporting its mission and driving developments. He has been serving on the UFI Board of Directors since 2011 and was further appointed to the UFI Executive Committee in 2017. Anbu is also the first UFI president from India in the history of the association. Expressing delight in his new role V. Anbu said, "I believe that BIEC and the Indian exhibition industry will now get wider

recognition and this will also enhance their positioning in the global map."

Japanese honour for Baba Kalyani



Baba Kalyani, CMD, Bharat Forge Ltd., has been bestowed upon the Order of the Rising Sun, Gold and Silver Star by the government of Japan. He is one of the foreign recipients of this year's Autumn Decorations for his contribution to strengthen the Japan and India relations in the economic field. Kalyani is a renowned international businessman, Chairman & Managing Director of Bharat Forge and also holds the position of co-chairman of Japan - India Business leader's Forum. He has been actively contributing to the forum by leading the discussions and preparing the reports to address the economic issues. Moreover, he has encouraged Japanese companies to expand in India. Speaking on the occasion, Baba Kalyani said, "I am immensely proud and honored to receive the Decorations - Order of the Rising Sun and earnestly grateful to Japanese government for this recognition." The Order of the Rising Sun was established by Emperor Meiji in 1875, it is Japanese government's Second Highest National Honor. And is awarded to those who have made distinguished achievements in international relations, promotion of Japanese culture, advancements in their field and development in welfare or preservation of the environment.

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Tony Van Herbruggen is GM Power Technique at Atlas Copco



Atlas Copco India has appointed Tony Van Herbruggen as the General Manager of its Power Technique Customer Center, effective July 2019. He is now leading the core areas of the business - portable air, power and flow divisions in India. Speaking on Tony's appointment in his new role, Giovanni Valent, MD, Atlas Copco India, said, "The collective knowledge, analytical input and expertise that Tony brings to the team will push the brand further as the front runner. His years of experience with the brand brings a natural edge to Power Technique, making him an excellent choice for the role."

Tony has been associated with Atlas Copco since 1981. Starting out in a technical role, he rose through the ranks in marketing and sales to take on senior leadership global positions. Tony has a rich experience as Country Manager in Oman and Regional General Manager in Algeria before taking on the role as General Manager of the Power Technique Customer Centre in India.

Tony's core strength lies in technical and strategic thinking across product categories from large industrial compressors to portable air compressors, light towers, generators and pumps. Commenting on his new role, Tony said "I look forward to this new role with Atlas Copco India and I am excited to work with the new team with a new strategic approach."

New Sales Director at Romaco India is Vibhash Solanki



Vibhash Solanki has been appointed new Sales Director of the Sales & Service Centre Romaco India Pvt. Ltd. In this role, he will be responsible for Romaco's sales of processing, tableting and packaging technologies in the Indian market and will report to Pietro Tomasi, Vice President Sales & Service of the Romaco Group. Mr. Solanki will be in charge of Romaco's Indian branch together with Amol Nikam, General Manager Customer Service. Romaco India has offices in Mumbai and Hyderabad and was officially opened in July 2019.

Vibhash Solanki has a degree in Mechanical Engineering as well as a Master's in Marketing Management from the University of Mumbai. He can look back on 21 years of sales experience in the Indian pharmaceutical market, and prior to joining Romaco in September 2019 spent nine years in sales management functions at CAM India and IMA-PG India.

"Vibhash Solanki is an extremely accomplished sales specialist and an industry insider who will support us very effectively in the key Indian growth market", emphasised Jörg Pieper, CEO of the Romaco Group. "He will share the running of the company with Amol Nikam, a service expert, and together they will drive Romaco India's expansion on the way to becoming one of South-East Asia's leading suppliers of packaging and processing technologies."

JDA Extends Executive Leadership in Asia-Pacific Region



JDA Software, Inc. has announced the appointment of Umesh Gaur as managing director of JDA's Centers of Excellence (CoE) in India and Vinok Sequeira as senior vice president (SVP), Associate Success for the Asia-Pacific region including the India CoEs. In his new role, Gaur will be responsible for providing leadership of the two CoEs in Bengaluru and Hyderabad, and continue to be instrumental in interacting with regional customers underlining the JDA value proposition from the sales cycle through to delivery and implementation.

Umesh Gaur began his career at JDA in 2000 as a director in the Consulting function and steadily moved up into various leadership roles including vice president and group vice president of Global Consulting Delivery. With deep domain expertise in supply chain and focus on customer success, Gaur has led many transformational projects for some of the biggest Fortune 100 companies. Over the last decade, he has been pivotal in transforming talent into next generation architects and consultants to lead and design the future supply chain in the world of data science, cognitive and machine learning.

"Umesh brings the right mix of talent development, global customer transformation project expertise across retail, manufacturing and transportation with experience in strategy, planning, execution and operations, and has been a mainstay at JDA for almost 20 years.

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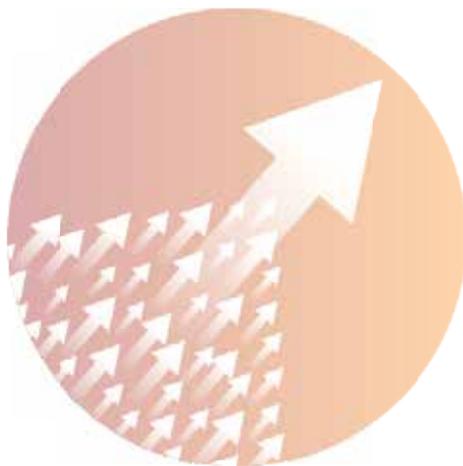
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GROWTH, FINALLY!

Indian manufacturing production increased only moderately in November, albeit at a quicker rate than October's two-year low.



“After pulling back noticeably in October, manufacturing sector growth displayed a welcoming acceleration in November.”

Pollyanna de Lima, Principal Economist at IHS Markit

Although business conditions in the Indian manufacturing sector improved in November, the upturn remained subdued compared to earlier in the year and the survey history. Growth rates for new orders and production were modest, despite accelerating from October's recent lows, while firms shed jobs for the first time in 20 months and continued to reduce input buying. At the same time, there were only slight increases in input costs and output prices halfway through the third quarter of fiscal year 2019/20.

The headline seasonally adjusted IHS Markit India Manufacturing PMI[®] rose from 50.6 in October, when it had fallen to a two-year low, to 51.2 in November. The latest reading was below the survey average (53.8) and indicated only a slight improvement in the health of the sector. Consumer goods provided the main impetus to overall growth, while the intermediate goods category returned to expansion territory. Conversely,

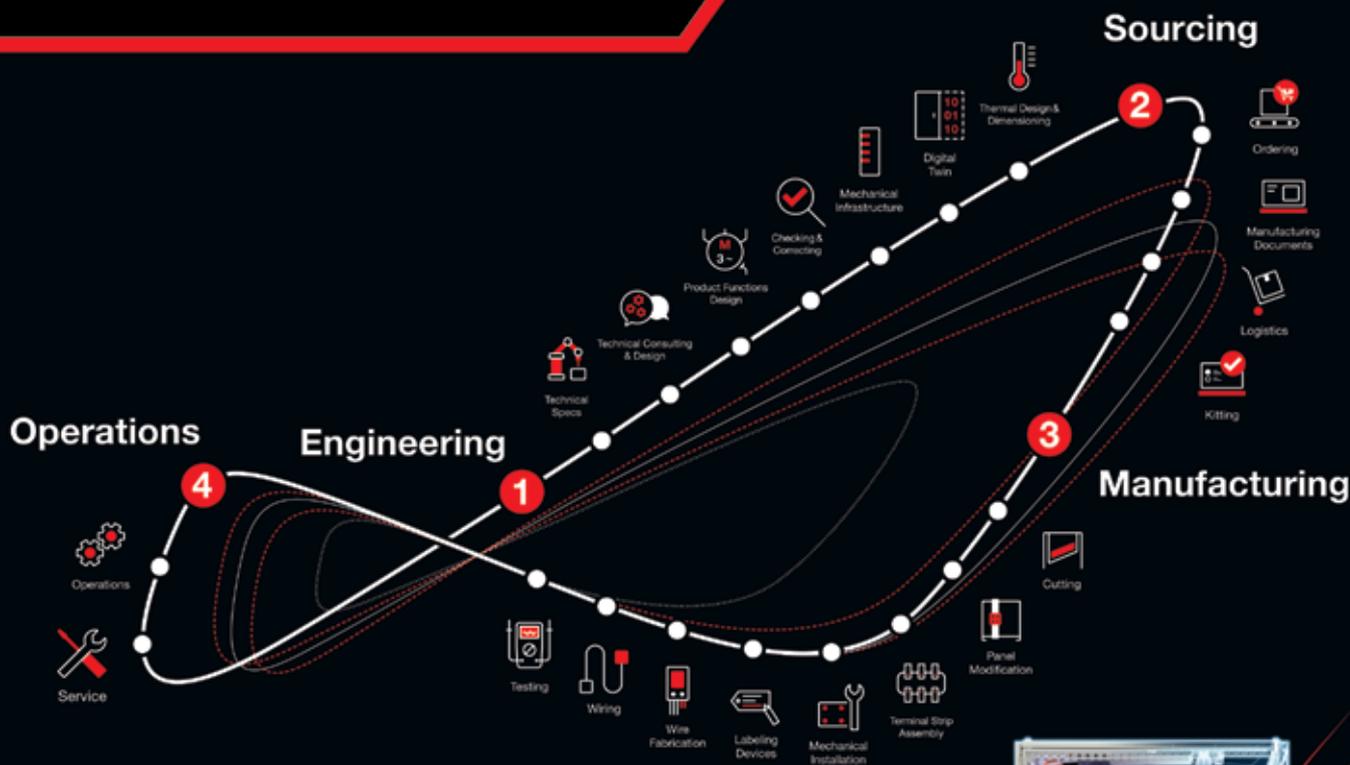
there was a solid deterioration in operating conditions at capital goods makers.

Indian manufacturing production increased only moderately in November, albeit at a quicker rate than October's two-year low. Anecdotal evidence suggested that growth was supported by the launch of new products and better demand, though restrained by competitive pressures and unstable market conditions. Total sales increased for the twenty-fifth month in a row, with growth strengthening from October's recent low. That said, the upturn was among the weakest over this sequence. Some firms were able to secure new work amid successful marketing and strengthening demand, but others struggled in the face of competitive conditions, a challenging economic scenario and troubles in the automotive sector. Manufacturers were partly helped by external markets, as signalled by a further expansion in international sales. The increase in exports was slight, however, and among the weakest over the past year-and-a-half. Holdings of manufactured goods likewise declined, with the pace of depletion being solid in spite of softening from October. Business sentiment strengthened in November, with panel members expecting advertising efforts and product diversification to support output growth in the year ahead.

That said, the Future Output Index was well below its average, as a number of firms were concerned about the state of the economy. Finally, there were only marginal increases in both input costs and output charges in November. Commenting on the latest survey results, Pollyanna de Lima, Principal Economist at IHS Markit, said: “After pulling back noticeably in October, manufacturing sector growth displayed a welcoming acceleration in November. Still, rates of expansion in factory orders, production and exports remained far away from those recorded at the start of 2019. PMI data continued to show a lack of inflationary pressures in the sector which, combined with slow economic growth, suggests that the RBI will likely extend its accommodative policy stance and further reduce the benchmark interest rate during December.” 

Source: IHS Markit

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GKN Aerospace opens state of the art wiring facility in India



GKN Aerospace has officially opened its all-new facility for Electrical Wiring Interconnection Systems (EWIS) in Pune, India. The site will focus on the assembly of wiring systems for commercial aircraft and aero-engines like the Airbus A320neo, Boeing 737, 777X and Boeing 787. The Pune facility will operate alongside the existing Joint Venture for wiring systems in Bangalore, which is serving the defence market.

GKN Aerospace will create 200 jobs in 2020 growing to 800 within five years. GKN Aerospace will recruit a significant

number of female operators and engineers and will provide on-site training for employees. A team of 30 persons has been built to date. GKN Aerospace has invested \$10 million in the site and in its state of the art equipment and technologies. The expansion to Asia is an important part of GKN Aerospace's long-term growth strategy and global operating model.

The new site, with a surface of 11,000 sqm, is a fully owned GKN Aerospace business and located in Pune in the state Maharashtra. Pune offers favourable

conditions in the areas of business development, labour, education & training and infrastructure. It also has an excellent location relative to the company's major customers in India. Site certification process and recruitment are on track and initial production has recently started.

GKN Aerospace, GKN Driveline and GKN Powder Metallurgy have made significant investment in India in recent years. The three businesses operate eight locations in India with 2000 employees. India is an important country in GKN Aerospace's plan to expand the Asian footprint. GKN Aerospace recently also opened a new facility in Malaysia, another element of the Asian expansion plan. By the time both sites are fully up-and-running, around 15% of GKN Aerospace's employees are expected to be based in Asia.

John Pritchard, CEO Aerostructures and Systems Europe and Asia said: "We are really proud to open this state of the art facility in Pune. This is a true demonstration of our enduring partnership with India and of the solid growth of the Indian Aerospace Industry and of our EWIS business. The collaboration with the local authorities and support of the regional government has been vital."

UKIBC starts an aerospace and defence industry group

The UK India Business Council has recently established an aerospace and defence industry group to promote UK-India collaboration. This initiative recognises that the UK-India relationship in aerospace and defence is at a critical turning point and is another demonstration of the close ties between Indian and UK industry. In 2019, an MoU on Defence Technology Industrial Capability Cooperation was signed between UK and India which highlighted the UK Government's approach towards enhancing cooperation with India, and the Defence vertical is an example of how this cooperation is being taken to a new level.

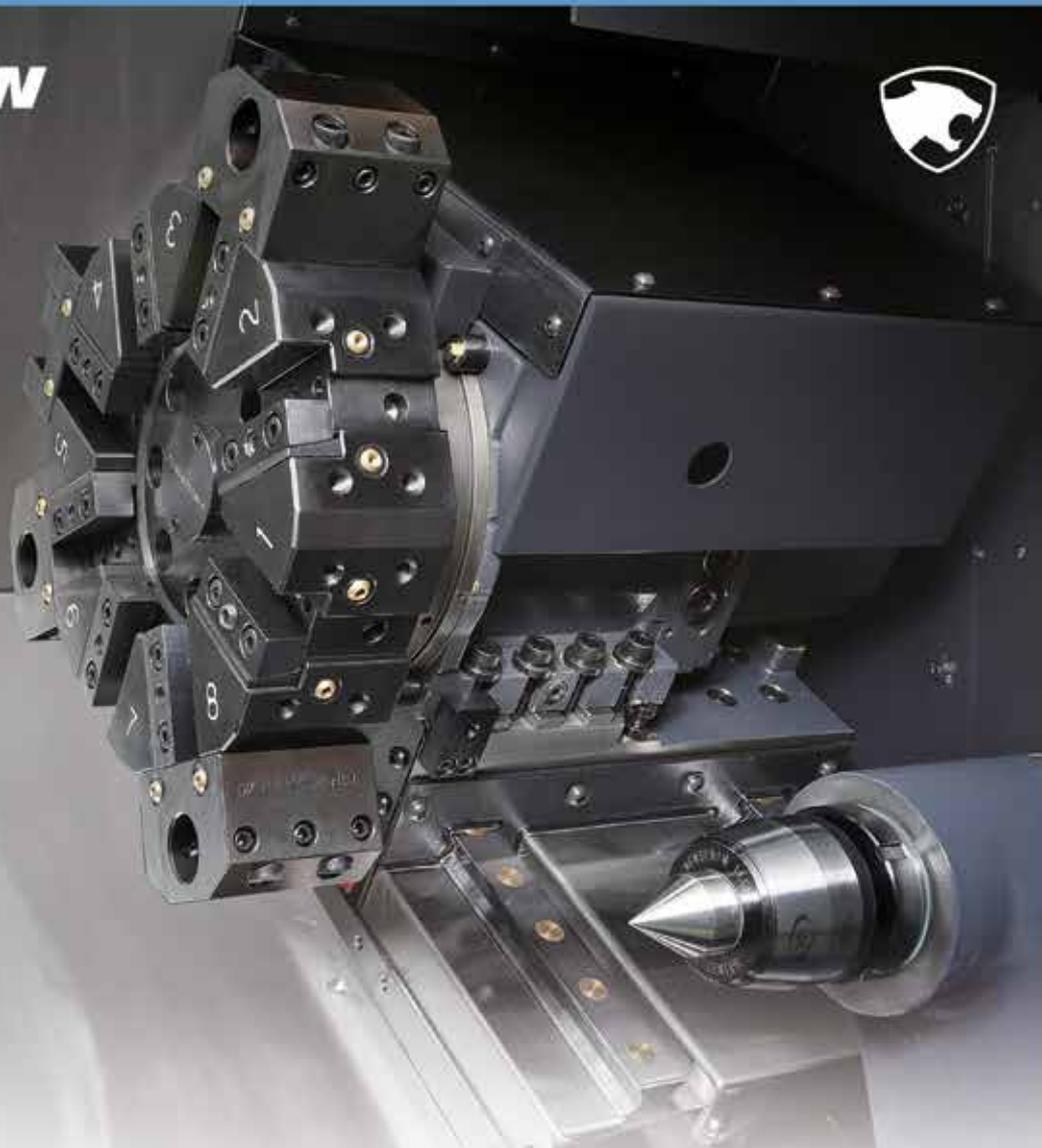
Speaking at the launch, Richard McCallum, Vice Chair UKIBC, said, "The Aerospace and Defence Industry Group will support and build on the huge opportunities for collaboration that exist between the defence industries of the UK and India. Collaboration will not only advance India's defence acquisition process but also foster long-term technology and hardware transfers". McCallum added: "We support the Government of India's Make in

India initiative and believe the Aerospace and Defence Industry Group can contribute to India's continued emphasis on defence modernisation and sophisticated military capabilities, which will be a win-win for both the UK and India".

"The 'Make in India' initiative is a great clarion call for the manufacturing sector and we believe the Aerospace and Defence Industry Group can contribute significantly towards building an ecosystem for defence manufacturing in the country. Together, we can build on India's vision of indigenisation and defence modernisation with sophisticated military capabilities and advanced technologies, which will be a win-win for both countries," said the Chairman of the ADIG group, Kishore Jayaraman, President, Rolls Royce India and South Asia.

The core members of the group include Rolls-Royce, BAE systems, Thales UK, MBDA, Leonardo, TVS Logistics, PEXA, Pattonair and Cranfield University.

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Tata Motors opens Engineering Tech Center in Pune

Tata Motors Ltd. inaugurated its state-of-the-art 'Advance Power Systems Engineering Tech Center' at the Engineering Research Center (ERC) Pune, India. This futuristic tech center will play a key role in engineering, testing and developing cutting-edge powertrain solutions for all its products, bringing in synergies across PV, CV and EV Businesses. This new world-class facility will primarily focus on future development of BS6 (Phase 1 & 2), Real Driving Emissions (RDE), CAFÉ II, Hybrids, Electrification and BS7. Guenter Butschek, CEO & MD, Tata Motors Ltd. said, "We at Tata Motors have been consistently gearing up for the future through strategic investments in our product development and engineering capabilities. I am delighted to witness



our new 'Advance Power Systems Engineering Tech Center in Pune' go live, which was established in a record time of 15 months. This facility will act as a hub to develop class-leading powertrain solutions for our vast product portfolio across ICE and Electric. This technical centre reiterates our commitment to offer our customers a wide range of clean, sustainable technologies, thus meeting their aspirations."

Spread over 12,000 square meters with future-proof design elements, this test facility is equipped to meet the development, calibration & type approval requirement for light & heavy-duty powertrains. It is also capable of testing - range, power, drivability and durability of electric vehicles.

Kinetic Green and Autoline Industries join hands



Kinetic Green Energy and Power Solutions Limited, Pune and Autoline Industries Ltd. have signed an agreement for joint development and nationwide marketing of electric-bicycles. Under the alliance, Autoline will undertake the development of the E-cycle critical assemblies with almost 100 percent indigenous content. Autoline in association with Kinetic Green has successfully developed their first 2 models of E-Cycles named as "E-Speed" with in depth R&D over the last 18 months. Both the models will be available at a price of INR 24999. Kinetic, which is already a well-established player in not just the automotive market but also in Electric vehicles, will aggressively market the range nationally, through its PAN India dealership network. These "E-Speed" will be available for the customers in the Indian market by 1st December 2019. With the help of Kinetic Green's strong dealership network spread across 150 cities, the aim is to promote these e-Cycles across India. Autoline will utilise its existing capacity to manufacture the E-Cycles. At present, Autoline has a capacity to assemble 1,000 E-Cycles per month which can be expanded up to 10,000 E-Cycles per month. Initially, Kinetic and Autoline will introduce E-Cycles in two variants and will later introduce more models as per market demand.

Ashok Leyland showcases wide range of BS-VI trucks and buses

Ashok Leyland has showcased its wide range of Bharat Stage (BS) VI trucks and buses. After receiving the certificates, confirming compliance to BS-VI emission standard, from Automotive Research Association of India (ARAI), Ashok Leyland becomes the first Indian OEM to meet the BS-VI emission norms across the full range of heavy duty trucks (GVW of 16.2T and above). The company has also come out with a mid-NOx technology for BS-VI vehicles. Ashok Leyland has addressed the requirement for the new norms with a relevant and customized approach once again. Along with this, Ashok Leyland will be introducing the Modular Vehicle Platform that will efficiently cater to the diverse needs of the customers.



Commenting on the new BS-VI vehicles Dheeraj G. Hinduja, Chairman, Ashok Leyland, said, "Ashok Leyland has a rich legacy of technological innovations that has set the benchmark for the industry. Be it the in-line pump for BS-III or the iEGR for BS-IV, at Ashok Leyland, we have consistently stayed ahead of the curve. In focus with our aspirations of being amongst the top ten global Commercial Vehicle maker, we have yet again come up with an innovative technology to address the BS-VI norms. We are the first OEM to get BS-VI certification for our complete range of heavy duty trucks. This will be introduced with the new Modular Vehicle Platform which will provide customised solutions to address our customers' specific needs."



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Hyundai Motor Company to establish its first plant in Indonesia

Hyundai Motor Company has entered into a memorandum of understanding (MOU) with the Indonesian government to build its first manufacturing plant in the country. The company's decision to invest in Indonesia will, in particular, support its growth into new ASEAN markets, securing future growth engines to help the business combat slowing demand in the global automotive market.

The state-of-the-art manufacturing plant will be located on an 8.35 million-square-foot site (77.6-hectare) in Kota Deltamas (City of Deltamas), an integrated industrial, commercial and residential district in the eastern outskirts of Jakarta, capital of the fourth-most-populous-nation in the world. "The establishment of Hyundai Motor's manufacturing plant in Indonesia has been made possible thanks to the continuous cooperation and support from the Indonesian government," said Euisun Chung, Executive Vice Chairman of the Group. "Hyundai will continue to listen actively and respond to the Indonesian government's expectations and policies regarding eco-friendly vehicles, while continuously contributing to the ASEAN community."



The Indonesian plant will represent an investment of approximately USD 1.55 billion until 2030, including product development and operation costs. The new facility will break ground in December this year and is expected to begin commercial production in the second half of 2021 with an annual capacity of 150,000 units. The plant will eventually be able to build approximately 250,000 vehicles annually when it reaches full capacity.

Tata Motors rolls out the first Altroz from Pune plant



Tata Motors rolled out the first unit of Altroz from its plant in Pune recently (November 27, 2019). With this, the company is all set for the launch of the highly anticipated, premium hatchback in Jan 2020. The Altroz is the second vehicle designed under the Impact design 2.0 language and first one to be developed on the new ALFA architecture. The Altroz promises to redefine the category and set the Gold Standard of hatchbacks with its futuristic design, advanced platform, thrilling performance and smart technology.

Commenting on the roll-out, Mayank Pareek, President, Passenger Vehicle Business Unit (PVBU), Tata Motors said, "We are thrilled to roll-out yet another class defining product from the plant today. The Altroz is our first product that will be launched on the all-new ALFA platform and we believe that it will raise the bar for vehicles across the premium hatchback segment, come 2020. Since the unveiling of the concept in 2018, the anticipation for Altroz has always been high. We hope that customers will appreciate the new futuristic design with host of smart features, many of which are one segment above."

Piaggio partners with SUN Mobility

Piaggio Vehicles Pvt Ltd (PVPL) has entered into a strategic partnership with SUN Mobility, a leading provider of energy infrastructure and services for electric vehicles (EVs), for its swappable battery technology. As part of this tie-up SUN Mobility will support Piaggio with its Smart Batteries and Quick Interchange Stations.

Piaggio's upcoming electric vehicles will have smart swappable batteries with advanced lithium ion technology. These batteries will improve the overall efficiency of the vehicles with better pickup and increased mileage. The network of quick interchange stations will enable the electric three-wheeler drivers to swap their batteries in under 2 minutes thereby, addressing concerns around range limitations and long refuelling time.

Talking about the association, Diego Graffi- MD & CEO Piaggio Vehicles Pvt. Ltd said, "This partnership with SUN Mobility is a step forward towards providing easy, cost effective and eco-friendly last mile transportation. SUN Mobility's battery swapping solution will help us in fulfilling our vision of creating a sustainable mobility ecosystem without having to worry about the energy infrastructure."

While commenting on this partnership, Chetan Maini, Co-Founder and Vice-Chairman, SUN Mobility said, "It is our pleasure to associate with Piaggio, a leading brand in the commercial vehicle space. At SUN Mobility, we believe that our open architecture energy infrastructure solution will enable the building of a smart, affordable urban electric mobility solution for improving last mile connectivity options for commuters. This alliance, backed by Piaggio's state-of-the-art products will accelerate electric mobility as we scale our unique swappable technology further in the Indian market."



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By Niranjan Mudholkar

ENERGISED FOR GROWTH!

While expanding its product portfolio and enhancing its manufacturing capacities and capabilities, Kinetic Green is now considering a Series 1 funding to aggressively build scale and capitalize on its first mover advantage, says **Sulajja Firodia Motwani**, Founder and CEO, Kinetic Green Energy and Power Solutions



Kinetic Green started in 2015. What has been the vision behind this venture and how has been the journey so far?

We started Kinetic Green Energy and Power Solutions in 2015 with a dream to bring green mobility solution for masses in India. Kinetic Green is the latest venture from Kinetic and Firodia Group. Our vision is to be innovative leaders in the field of affordable green mobility solutions. We at Kinetic strive to create well-engineered yet affordable EVs to bring this technology within the reach of millions so that its impact can reach the society at large.

Today the company stands tall as one of the leading players in electric vehicle space which offers a wide range of battery-operated vehicles such as E-Autos, E-Carts and Buggies. Currently, Kinetic Green provides mechanically superior and technologically smart product portfolio for B2C (retail) and B2B (Business to Business) customers through its nationwide network.

Tell us something about the company's manufacturing capacities and capabilities.

We have our state-of-art manufacturing facility at Ahmednagar in Maharashtra, with an assembly capacity of

3,000 electric 3-wheelers per month. We have successfully designed, manufactured and sold close to 25000 electric vehicles so far.

Tell us something about your supply chain. Is it hundred percent localised?

We have over 90 percent local content in our Electric 3-Wheeler, which is probably the highest in the country and we are aiming to reach 100 percent local content within just a few months. We have taken pioneering steps to develop a local supply chain eco-system for electric three-wheeler which will help not only us, but the entire industry. Our supply chain is built with experienced and reliable automotive parts suppliers and we have helped them to adopt to EV technology.

How strong are Kinetic Green's R&D capabilities and infrastructure?

We are indeed proud to have a robust in-house DSIR recognized EV R&D centre which focusses on design-

"Apart from tapping Indian market Kinetic Green is keenly looking to tap the global market with high end golf carts and off-road electric vehicles along with our JV partner, the Tonino Lamborghini. The JV is eyeing Rs. 500 crore annual revenue over the next four to five years."





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ing and developing durable yet affordable range of electric vehicles with a vision to bring this technology and its benefits within the reach of common man.

I think it's our R&D team and several decades of automotive experience coupled with deep knowledge of the Indian market that makes us different and puts us ahead of everyone in the EV space.

It was the hard work of our R&D teams which helped us to get the recognition of being industry's 1st company to develop ARAI approved electric 3-wheeler and have over 90 percent local content. We are also first in this industry to come up with swappable battery technology.

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We have over 90 percent local content in our Electric 3-Wheeler, which is probably the highest in the country and we are aiming to reach 100 percent local content within just a few months.

Can you tell us something about the company's existing product portfolio? Do you plan to expand it in the near future?

The vehicles at Kinetic Green are being indigenously designed and manufactured at our plant in Ahmednagar, near Pune. The vehicles feature significant technology integration, IoT (Internet of Things) capabilities and advanced safety features, including full GPS tracking and sensor capability, with a view to offer a safe, reliable and economical ride experience to its customers.

As far as our product line is concerned, we offer both on road as well as off road vehicles in the small commercial vehicle segment. In on road vehicles we have vehicles in two categories namely, passenger vehi-

cles and utility vehicles. In passenger vehicles we have e-auto rickshaws and in utility vehicles we have vehicles under the name Safar Shakti which can be used as garbage collector and for cafeterias on wheels. These vehicles are also used by e-commerce companies to deliver packages to their customers. In the off-road vehicle category, we have high-end golf carts and electric vehicles which can be used at public places such as airports, resorts, shopping malls. These vehicles can also be used at plants of manufacturing companies to cover the longer distances in the most sustainable ways.

The company has also recently launched new electric vehicle 'Kinetic Safar Star' for the last mile deliveries and marked its entry into the mid-speed vehicle segment. This vehicle is ideal for transporting goods in cramped, crowded city streets. With current Government's focus on electric mobility I see many new opportunities coming for us in the near future. We will soon launch a high-speed e-rickshaw with a top speed of 55 km as also a high-speed product in the cargo segment.

Battery is the probably the most important factor when it comes to e-mobility. What is your strategy in this aspect?

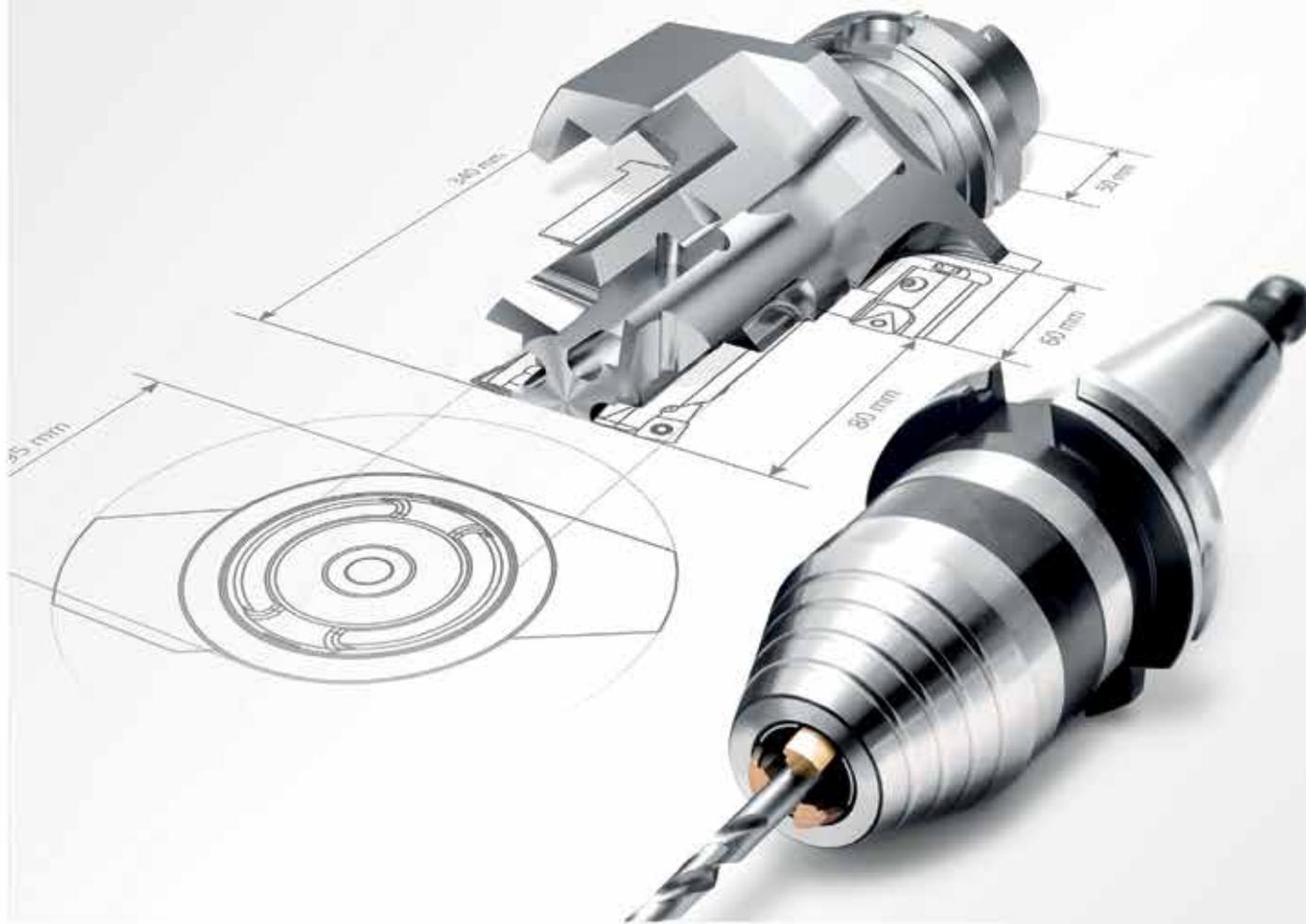
With increasing mass adoption of EVs, the innovation for higher efficiency lithium batteries has accelerated and cost of battery is reducing day by day. This will make EVs very affordable in the long run.

In the short run, I believe that battery swapping technology will revolutionize the use of E3W in India. It is suitable for three-wheelers due to their route predictability so that swapping stations can be put up in the popular areas and more importantly; removing battery drastically reduces the upfront cost of ownership. We are working with several players for this and we have successfully completed a battery swapping pilot with Ola with a fleet of 100 electric three-wheelers in NCR for the past six months.

As we move forward, we will implement this gradually with more swapping stations and will also scale up the business significantly.

There is obviously a huge scope for collaboration in the e-mobility segment. Are you working or planning to work with some partners in this regard?

Indeed, there is a huge scope for collaboration in the e-mobility segment. Kinetic Green has signed an MoU with Nagpur MahaMetro and Kochi Metro to provide last mile connectivity with e-rickshaws to commuters. The company will be providing its electric 3-wheeler



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'Kinetic Safar' which is ideally suited for last mile connectivity and urban commuting.

We have also tied up with Smart-E to provide our e-rickshaws for Delhi Metro. We received an overwhelming response from Delhi Metro and thousands of people use our e-rickshaws every month. Further, we would like to expand our network aggressively.

We are also collaborating with other aggregators, battery technology companies and other technology providers and charging infrastructure companies towards a rapid creation of an eco-system for EV adoption.

Apart from tapping Indian market Kinetic Green is keenly looking to tap the global market with high end golf carts and off-road electric vehicles along with our JV partner, the Tonino Lamborghini. The JV is eyeing Rs. 500 crore annual revenue over the next four to five years.



should do in this regard?

Since last year electric vehicles have gained momentum and government of India is giving a serious push to the clean mobility initiative in the country. The electric vehicle segment is already getting a lot of attention from the government and NITI Aayog. I feel it is indeed a big opportunity for Indian manufacturers which can help them target not only domestic market but also exports.

Recently government has introduced many initiatives to promote electric mobility including reduction of tax rates on electric vehicles from 12 per cent to five per cent, reduction of GST from 18 percent to 5 percent on EV chargers that are required to charge electric vehicles. Another highly encouraging development is the approval and adoption of FAME II: Government's detailed policy to incentivize and support accelerated adoption of EVs. With the FAME subsidy, the price can go down further to ₹50,000-₹60,000. These initiatives have removed policy uncertainties in the electric vehicles segment and paved ways for higher investments and adoption. Therefore, these measures clearly indicate that government has taken right steps in the right direction for a rapid increase in investments in the EV space by the industry and adoption of EVs by the consumers. I appreciate Government's commitment to lower pollution in our cities and move towards fuel security of our nation. I don't think now Government needs to come up with any more reforms or policies. Now responsibility lies with us when it comes to promoting green mobility. We will now only need support from the government when it comes to setting up the infrastructure for charging stations.

What was your turnover in the previous fiscal?

The company reported FY19 revenue at ₹61 crore and is expecting a revenue of about ₹200 crore by the end of FY20.

What targets have you set for the next two years?

Green mobility for masses is our ultimate goal. Keeping our vision intact we have so far sold close to 25,000 E3W. Our aim is to sell 100,000 E3W per year in the next few years. To support this, we will come out with more products and expand dealerships and marketing push. 

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We have our state-of-art manufacturing facility at Ahmednagar in Maharashtra, with an assembly capacity of 3,000 electric 3-wheelers per month. We have successfully designed, manufactured and sold close to 25000 electric vehicles so far.

Are you also looking to raise more capital to push your organisation's growth?

The company is looking to expand its product portfolio, develop new products along with suppliers and increase the manufacturing capacity at our Ahmednagar plant. To push our organisation's growth, we are in the market for series one funding.

So far, Kinetic Green has been 100 percent promoter funded. We are now considering a Series 1 funding of about \$30-40 million as we wish to aggressively build scale and capitalize on our first mover advantage in the electric vehicle segment.

While there is a consistent push from the government for encouraging and promoting electric vehicles, what more do you think the government

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IT'S MUCH SIMPLER THAN YOU THINK!

Machine learning gives computers the power to constantly learn without being explicitly asked to do that via programming. This is the key to the power of machine learning, **Ramakrishnan Ramanathaiah**, Director- SAP Practices, Miraclesoft, explains to The Machinist



"It is actually a subset of AI and aims to feed data to machines, so they might learn from that data on their own. So, in essence, machine learning is a part and parcel of artificial intelligence."

Machine Learning is one of the most talked about fields today. While the term might sound a bit complex, it is far simpler in its meaning and much expansive in its manifestations in real life. To get some industry insights from an insider who has seen the space inside out, The Machinist undertakes this journey through the frontiers of machine learning with Ramakrishna Ramanathaiah, a professional in the SAP and Machine learning space with an expansive experience spanning more than 17 years. He regularly uses Python and the R programming language for data analysis.

Sit back as we get to know all about the machine learning buzz and what the future holds in its vaults!

Talk about machine learning and you're sure to scare off people. Please tell us what really machine learning is and why it's so popular.

It's not at all like that! The basic concept of machine learning is actually a very simple one. Okay, so one thing that really distinguishes humans from machines is the ability to learn. We, humans, can comprehend what's happening and adapt. What makes this possible is our ability to learn. You see, with programming, coders give the computer instructions about what to do and how. The computer simply follows what it's been told. With machine learning, things go a step further. Machine learning (ML) gives computers the power to constantly learn without being explicitly asked to do that via programming. This is the key to the power of machine learning. Using ML, intelligent machines can learn from data and make informed decisions.

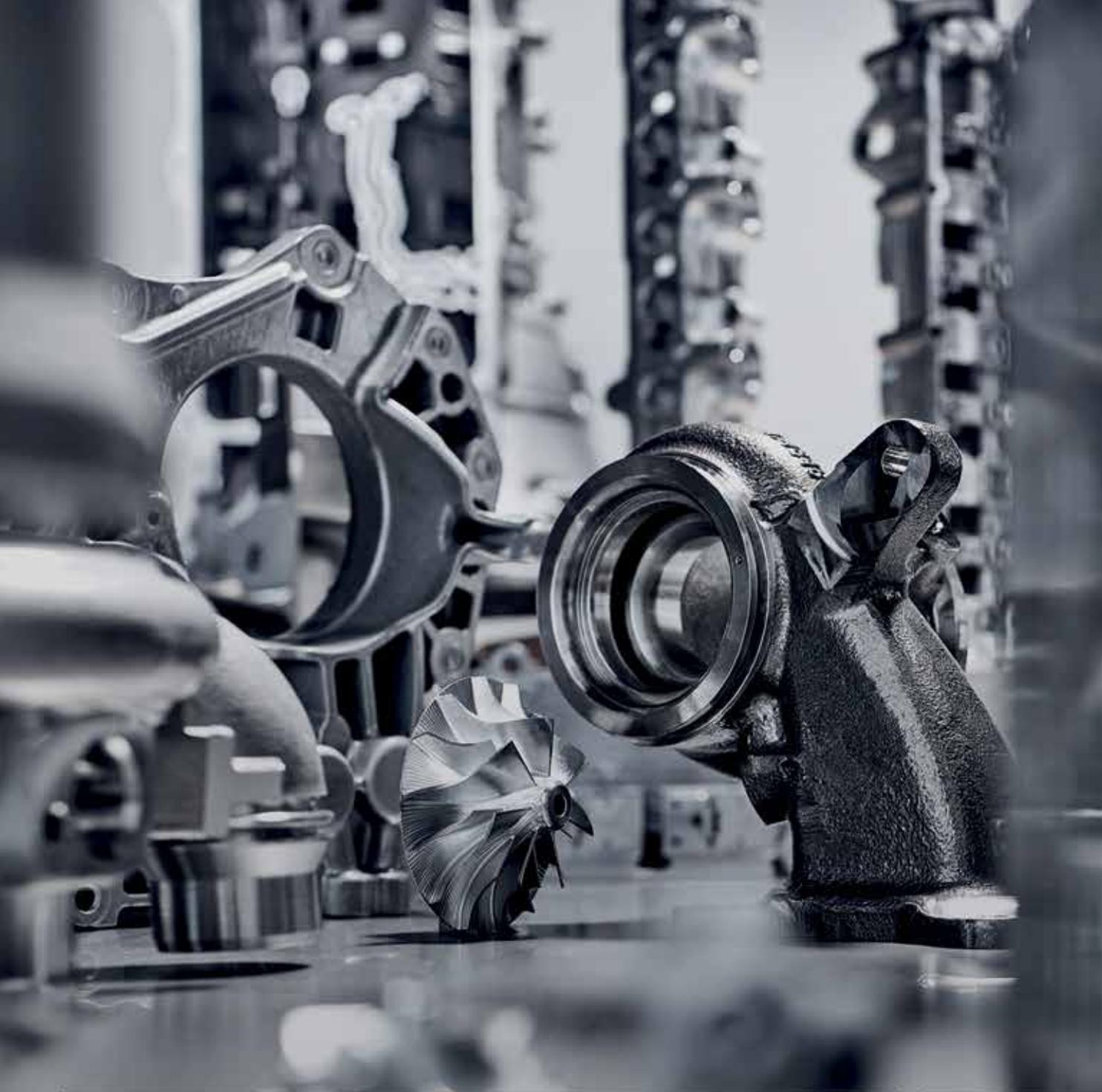
Wow, that was an eye-opener! But isn't that also what artificial intelligence does? How does machine learning differ from artificial intelligence?

Well, that's a brilliant question! Actually, artificial intelligence is a very broad concept. At the core of the idea of AI is that machines should be smarter, intelligent. The ultimate aim is to simulate natural intelligence. Scientists would like machines to have the decision-making abilities that we humans possess, at least as close to that as we can practically go.

Now, talking about machine learning, this is actually a subset of AI and aims to feed data to machines, so they might learn from that data on their own. So, in essence, machine learning is a part and parcel of artificial intelligence. AI, though, is a much broader concept that encompasses other aspects as well which are not necessarily within the scope of machine learning.

That makes sense! One can only imagine the amazing possibilities machine learning holds in the real world.

Absolutely. Without a doubt, machine learning has transformed the world. It is now being used in every



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We are only waking up to the limitless possibilities that cutting-edge technologies like machine learning, artificial intelligence, and big data present.

sector you can possibly imagine. Machine learning algorithms have been used in what is called Natural Language Processing (NLP) which studies the way humans interact with computers and giving computers the ability to understand complex natural language and dialogues. Ever noticed Gmail offering suggestions about the best response to an email? Or Skype suggesting what to message your friend when you've been late for lunch? That's NLP in action.

//

As data becomes more and more voluminous, we will need more powerful CPUs to handle the data processing needs for machine learning. In simple terms, expect to see your favourite hardware manufacturers come up with even more powerful devices and computers.

Similarly, wearable sensors are redefining healthcare by aggregating data about blood pressure, heart rate, and other health parameters in real-time, processing and analysing what it means in terms of healthcare using complex algorithms. Doctors can then use this information to predict ailments that might appear in the future to a reasonable degree of accuracy.

Machine learning has quietly entered our day-to-day life without us even noticing. It has certainly made things super simple, though. You now have Alexa predict the weather or tell you when and where you have the next meeting without you looking up your schedule yourself. All you have to do is ask! That is the power of machine learning.

//

Machine learning algorithms have been used in what is called Natural Language Processing (NLP) which studies the way humans interact with computers and giving computers the ability to understand complex natural language and dialogues.

Interesting. What about the future? What do you think does the future hold in store for machine learning?

We are only waking up to the limitless possibilities that cutting-edge technologies like machine learning, artificial intelligence, and big data present. I think we'll keep seeing Moore's Law expand in terms of the CPU power. We have already come a long way in terms of how powerful our handheld devices are, but this trend will only exponentially increase. CPU power will catch up with the potential of machine learning and we will continue to see ever more powerful machines.

The key to the power of machine learning is data: there can be no learning without a data set to learn from. As data becomes more and more voluminous, we will need more powerful CPUs to handle the data processing needs for machine learning. In simple terms, expect to see your favourite hardware manufacturers come up with even more powerful devices and computers.

Bots will get even more capable and powerful in interacting with humans. Take SAP's Conversational AI, for example, which is a cloud-based bot platform. Enterprises can use this technology to handle their Twitter messaging service and deploy human-like bots that use Natural Language Processing.

I work with a programming language called R that deals mainly with data analysis. It's a great tool that helps data miners and enterprises— Ford, for instance, uses the language to analyse its social media to implement design decisions based on customer feedback!

So, in a nutshell, what do I think about the future of machine learning (ML)?

We are on the brink of a revolution. What does the future hold for ML? Only time will tell! 🤖

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AVIATION

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Process / Machine Development

- Material: Nickel-based alloys / Titanium



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Process / Machine Development

- Material: Nickel-based alloys / Titanium / Titanium Aluminide



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- Turbine wheel
- Turbine casing
- Thrust bearing
- Valve disk, etc.



INJECTION SYSTEM

- Fuel injector
- Valve plate
- Pump casing & Injector
- Rail, etc.



DISC

Process / Machine Development

- Material: Nickel-based alloys



DIFFUSOR

Process / Machine Development

- Material: Nickel-based alloys



VALVE TRAIN

- Connecting rod
- Camshaft & Cam piece
- Cam
- Piston, etc.



TRANSMISSION

- Synchronizer body
- Synchronizer ring
- Drive shaft
- Parking lock, etc.



By Karthik Shankaran

IMPACT OF AUTOMATION ON BUSINESSES

Not only has automation made our workstations simpler and convenient, it has brought more precision to it.



“Secret to business growth lies in operational efficiency. More efficient the operations are, more successful a business is going to be.”

The impact of automation is no more a mystery now. Technology has already become a significant part of our lives. We have incepted in an era which is exciting and innovative and is engulfed with futuristic technologies making everything possible at our fingertips.

Technology experts believe machine learning which has already become such an important technology, is going to witness a market expansion of beyond \$7.4 billion by 2022. Automation is impacting businesses in more ways than one. Let's take a peek into the future:

Enhanced Customer Experience: An effective proof of concepts that automation has established is revolutionising customer experience, largely due to the introduction of chatbots, customer service is never “on hold” now. It has become a 24X7 on-going process, providing quicker, enriched customer experience across the globe. Chatbots are pocket friendly as well.

Improved Operational Efficiency: More efficient the operations are, more successful a business is going to be. The introduction of automation at work places has made the level of efficiency manifold. Sometimes, it is crucial to make use of technology at certain points so

that human resources could be utilised in better ways. While automation make operations smoother and more efficient, it leaves human minds, the most precious resources to any business, with more space and time to think better about businesses. As per a research done by Xero, automation will hold a common place in accounting and financial sphere by 2020.

Better Accuracy: When it comes to some financial tasks like accounting or some technological testing, machines can play a better role in circumventing manual errors as they do not get tired or bored or get negligent. The accuracy that machines provide in the limited time is unmatched with any other tool.

New-Age Marketing: Artificial intelligence is paving way for better, more effective and focused marketing campaigns. AI-ML are being used extensively to seek customer's information and use it judiciously to plan out the marketing techniques. Automation is soon going to help in creating personalized, real-time content that will be very useful in connecting with the focused, target audience in the best way possible.

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In the future, this kind of automation will surely result in making businesses profitable and productive, and helping companies get products to market faster. Although the Engineer's creativity, cognitive input / judgment could make significant difference in quality of output achieved and the time invested. 

The author is Chief Innovation Officer, Detroit Engineered Product.

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By Niranjan Mudholkar

A STRONG GROWTH TRAJECTORY!

As markets mature, there will be newer applications and thus, newer products and technologies will make their way into the Indian market, says **Subir Chowdhury**, MD & CEO, JCB India Ltd

You have recently taken charge as JCB India's MD & CEO after serving as the COO. What are your first reactions?

I am delighted and overwhelmed. JCB India is special to me as I have been a part of its journey 2006 onwards

when we had only one factory. Today, we have five factories in Pune, Jaipur and Delhi-NCR. The one in Delhi-NCR is the world's largest for Backhoe Loaders. With a Sixth factory coming up in Vadodara, Gujarat, these factories are at par with the rest of the world. We





operate on the philosophy of One-Global-Quality and are all bound by a great work ethic at JCB India.

JCB products are a way of life in India. Almost every infrastructure project in the country has a JCB machine working tirelessly, building a new India and also creating entrepreneurs. A lot has been achieved over the past four decades of our operations in India, but we also see a lot of expectations and opportunities ahead.

What do you think will be the key challenges for you and where do you see the opportunities to take the organisation ahead?

Compared to 2018 which was the best year ever for the industry, the year 2019 is witnessing some demand compression. The overall economic slowdown has been affecting the construction equipment sector as well.

Being an election year, some disruption was expected, however, what we have seen is a combination of a variety of factors, there has been a disruption to the cash cycle along with stress in the NBFC sector, which is adding to the slowdown for us.

However, in spite of the current scenario, the long-term vision looks positive. With the Government committed to building infrastructure, importantly in the Rural Economy, there will be opportunities for growth in the future.

Also, as markets mature, there will be newer applications and thus, newer products and technologies will make their way into the Indian market. Already, we are seeing a significant integration of digital technology in JCB machines through LiveLink, our advanced telematics technology.



Production at the new facility at Halol-II, Vadodara, will begin towards the end of 2020. It will house the most modern laser cutting, welding and machining technology and will be a fork-lift free operation. It will be capable of processing 85,000 tonnes of steel annually.

What is your analysis of the Indian construction equipment industry?

The construction equipment industry has been lately witnessing a slowdown. It is down by approximately 17 percent this year. However, Infrastructure is a key element in India's vision of becoming a Five Trillion USD economy by 2024 and thus, Roads & Highways must continue to be one of the key growth drivers for the Construction Equipment Industry. The focus of the Government towards the rural economy will also be one of the major contributors in the foreseeable future.

Urban rejuvenation, Railways and Water Conservation have the potential to become significant growth drivers for the Construction Equipment Industry. The ambitious Har Ghar Jal is a programme that is specifically aimed at improving the distribution of water across the country.

Amidst the downside, it is re-assuring to see the Government taking notice and trying to improve the economic environment. The lowering of the Corporate



Tax and working towards re-capitalisation of banks, supporting NBFCs are steps in the right direction.

To keep pace with the demand, JCB India is re-calibrating its manufacturing and supply chain to adjust to this lower demand. In an uncertain environment, it means having a swift and nimble supply chain which can ramp up and down as per the market demand.

The last few months haven't been good for your industry due to the slump in the infrastructure sector for various reasons. Do you see the scenario changing soon? What are your industry's key expectations from the government?

With large-scale projects, including projects of national importance, the infrastructure sector will ultimately gain momentum. Given the investments earmarked by the Government for the infrastructure development, especially in the Roads and Highways sector, we foresee a growth potential in the sector.

Going forward, with projects such as Sagarmala, Bharatmala, Jal Marg Vikas, Har Ghar Jal together with a strong focus on rural development, we are hopeful that this will have a positive impact in the near future.

As rural further integrates, we are hopeful of seeing more activity in terms of building infrastructure in this sector. The Pradhan Mantri Gram Sadak Yojna has been one such program. With concerted efforts, the long-term prospects look positive and we are hopeful of seeing a strong growth trajectory in the Construction Equipment industry in the coming years.

What are the other key challenges being faced by your sector? With input costs going up and skilled manpower becoming both scarce and expensive. How is JCB India addressing these issues?

We believe that finally it is people which build an organisation. Thus, it is imperative to build an environment of excellence where the team feels positively challenged and remains engaged.

There is a need for the industry to make its oper-

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There is a need for the industry to make its operations exciting by showcasing the latest trends that are making their way into our Industry. Therefore, IoT and Big Data for instance are now an integral part of JCB machines."

ations exciting by showcasing the latest trends that are making their way into our Industry. Therefore, IoT and Big Data for instance are now an integral part of JCB machines.

As the ECE industry grows, there is a proportionate need for trained operators and mechanics. We, as a part of the industry, are working with the Government and industry bodies to solve the skill gap. This will not only help us with adequate skill manpower but will also facilitate employment.

JCB is also creating employment and entrepreneurship amongst youth through 15 Operator Training Centres in India. We provide a one-month certified course on machine operations and maintenance, which includes both, classroom and practical training on how to operate JCB machines safely and productively.

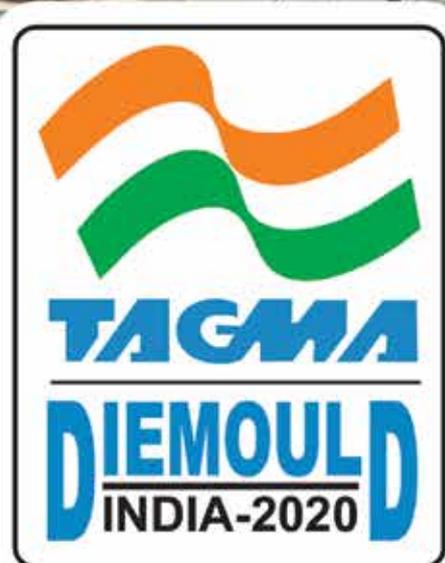
Our 16-week detailed induction program at the training school at the Jaipur facility for ITI and Diploma graduates is another step towards filling the skill gap. Comprehensive skills developed through programmes here have helped young men and women excel in their careers, especially women engineers, who are now making their careers in traditionally male dominated areas of manufacturing such as welding and assembly.

Our Jaipur facility today has over 30 percent of the workforce on the shop floor as women. These women engineers are champions of change and are now role models for many others in their villages and towns.

JCB India has maintained its market leadership in the construction equipment segment since 2006-07. What has been the key to this leadership and what will you be doing to further consolidate this position?

In our four decades of being in India, the customer has always remained at the centre of our operations. Our strategies are directly driven by what the customer wants which are productivity, reliability and profitability.

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JCB India Design Centre, Pune

JCB is a leading technology brand which pioneers in innovation. It has become a modern, productive, and pioneering solution to India's Earthmoving and Construction needs. Today, our products are visible at almost every worksite in metros, towns, and villages, working tirelessly towards building a new India.

But more so, we have tried to remain as close to our customers as possible. We have invested in created a vast dealer network which provides an unmatched after-sales service to customers through 700 outlets and over 60 dealers.



Amidst the downside, it is re-assuring to see the Government taking notice and trying to improve the economic environment. The lowering of the Corporate Tax and working towards re-capitalisation of banks, supporting NBFCs are steps in the right direction.

Since these machines work in far flung areas, it is imperative that a well-connected product support is offered to customers to minimise the downtime and maximise productivity.

JCB introduced LiveLink- an advanced telematics technology, as a key element of product support. LiveLink benefits customers in better fleet management through remote monitoring and management of the machines. It transmits information on machine's health including Service, Operations and Security of the machine. For real-time monitoring, we have a state-of-the-art LiveLink command centre at our Ballabgarh (Delhi-NCR) facility.

Additionally, we have introduced a series of smart machines-the 'Intelli' series, which is again for providing smart and seamless experience to our customers. These innovations developed keeping in mind the evolving customer demands have helped us remain

close to our customers.

We are also aligned towards the rising need for safety and operator comfort by the customers as these parameters are becoming critical in the overall buying decision. Thus, keeping up with the consumers' expectations and demands has been a top-most priority for us.

While JCB India has always been focused on innovation and technologically-backed solutions,

in order to stay relevant and to consolidate our position in the market, we will continue to put a significant thrust in digital technologies and their integration into new products.

In March 2019, JCB India had announced plans to invest Rs. 650 crore in a new plant in Gujarat. What's the progress on that front?

The new factory located on a 44-acre site in Vadodara will be JCB's sixth unit in the country and will manufacture parts for global production lines.

Production at the new facility at Halol-II, Vadodara, will begin towards the end of 2020. It will house the most modern laser cutting, welding and machining technology and will be a fork-lift free operation. It will be capable of processing 85,000 tonnes of steel annually. This new factory will be manufacturing engineered components and sub-assemblies for JCB's many factories around the globe. It will add to the capacity at our existing plants in India. Vadodara presents us with the advantage of being located close to the Surat port and also to our key suppliers

Tell us about JCB India's overall manufacturing capabilities and capacities.

Over the years, we have launched innovative, India-centric products and have expanded by way of new factories, with customer focus and One Global Quality being at the core of our operations. Today, JCB India is an embodiment of the 'Make in India' programme. Seamless integration with our UK colleagues also plays a vital part in getting the global best practises in India.

With five state-of-the-art factories in in Delhi, Pune and Jaipur, we today manufacture over 60 different types of products in eight categories. We further announced an investment of Rs. 650 crore in a new factory in Vadodara, Gujarat earlier this year. The new factory - JCB's sixth in the country, will be on a 44-acre site and will manufacture parts for global production lines.

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All JCB factories have been designed and built around the JCB Group's global Manufacturing Philosophy. Lean manufacturing principles, automotive footprint and robotics are driving the manufacturing operations at JCB India. Made in India products have been exported to over 100 countries.

We are committed to having an indigenised supply chain with over 380 suppliers who are aligned to JCB India's group objectives and have grown along with the company through various supplier development and cluster initiatives.

Our Design Centre in Pune is the largest outside of the UK and has over 400 engineers. It comprises of Centres of Expertise, Innovators and Design Experts who are developing indigenous products, technology and processes through Innovative solutions.

We today have over 8,500 people in our Indian operations and have a network of more than 60 dealers and 700 outlets spread throughout India who further employ another 6,000 people.

Last year, I visited the JCB Jaipur Facility. It was good to see JCB India practicing gender diversity by encouraging and appreciating the role of women

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Our Jaipur facility today has over 30 percent of the workforce on the shopfloor as women. These women engineers are champions of change and are now role models for many others in their villages and towns.

in functions like welding, which is supposed to be a male dominated area. Tell us about JCB India's overall quest for gender diversity.

As an organization, JCB India believes in equality, whether gender or culture. This belief has allowed for a dynamic integration of people from different backgrounds, experiences, and cultures. We have made pioneering efforts in the integration of women engineers in our factories, especially in roles which have always been considered male-centric.

Today we are proud that over 30 percent of the workforce on the shop-floor at JCB Jaipur are women. They have broken barriers and are now role models in their villages and towns. They are building careers in the areas of manufacturing, such as welding and assembly. From operating machines to testing and certifying engines, they are challenging traditional male bastions.

The transition is also significantly impacting the mind-set back at their homes and villages, and we are delighted to be a key contributor in this transition. Families that were once apprehensive about sending their daughters to study and work are now champions of change in their communities. 



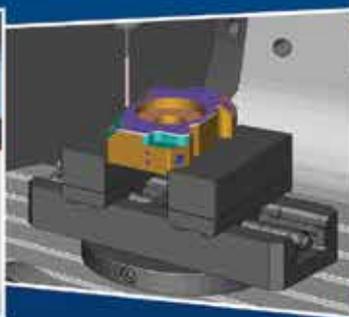
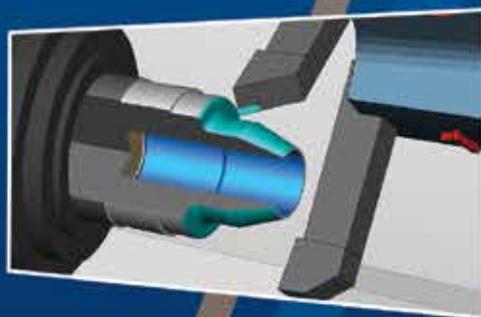
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BS-VI TVS Jupiter equipped with ET-Fi launched



TVS Motor Company launched the new BS-VI TVS Jupiter equipped with ET-Fi (Ecothrust Fuel injection) technology. TVS Motor has developed two versions of BS-VI Fi platforms, namely, RT-Fi (Race Tuned Fuel injection) and ET-Fi (Ecothrust Fuel injection). The BS-VI TVS Jupiter will now come equipped with ET-Fi technology, providing enhanced overall performance across driveability, smoothness, and fuel economy. The RT-Fi technology on the other hand is specially designed to ensure enjoyable racing experience in all driving conditions. TVS Jupiter Classic ET-Fi is the first in the Jupiter portfolio to be launched with this technology.

Magna to acquire Wipac Czech S.R.O.

Magna has agreed to acquire Wipac Czech s.r.o., a premium automotive lighting engineering firm located in Ostrava, Czech Republic. The transaction – Magna's second lighting acquisition in as many years and will expand Magna's engineering capabilities globally.

Wipac Czech s.r.o.'s engineering team designs and develops automotive forward lighting, primarily for European exotic and luxury brands. With more than 40 engineers on staff, the company has significant technical competencies having served premium customers including Aston Martin, Bentley, Rolls Royce, McLaren, Lamborghini, Bugatti, Audi, Daimler, BMW and Porsche.

"We see Wipac Czech playing an important role in growing our global lighting business, particularly with forward lighting to European automakers," said John O'Hara, President of Magna Mechatronics, Mirrors and Lighting. "Lighting represents a strategic growth area for us, due to increasing levels of electronic and sensor integration and the ongoing industry trend to differentiate vehicles through styling."

With the 2018 acquisition of OLSA S.p.A., a market leader in rear lighting technology, and now Wipac Czech s.r.o., Magna has added to its existing N.A. footprint and has a total of 11 lighting manufacturing facilities and three engineering centers globally. The company has the capability to design, engineer and manufacture advanced forward and rear lighting products in its key auto production regions around the world.

European Investment Bank gives €17m funding to QEV

E-mobility and R&D specialist, QEV Technologies, will receive EUR 17 million funding from the European Investment Bank (EIB) for a variety of low carbon transportation projects. The funding will boost the company's development of electric powertrains for small urban transport vehicles, electric racing technologies, fast charging systems, and electric vehicles (EVs). The quasi-equity financing agreement was signed today in Lisbon by EIB Vice-President Emma Navarro and QEV CEO Miguel Valldecabres. The project is supported by the European Fund for Strategic Investments (EFSI), the main pillar of the Investment Plan for Europe, also known as the Juncker Plan. QEV is a Spanish technology and engineering company that develops and



manufactures electric drive components for Formula-E race cars, and electric drivetrain assemblies ('e-kits') for minibuses. The knowledge QEV has gained from the racing sector has enabled it to become a technology partner for several car manufacturers that are developing fully electric vehicles, including Spanish hypercar brand Hispano Suiza. Boosted by the EIB backing, QEV will advance its development of cleaner and more sustainable mobility innovations, helping to tackle climate change, a key priority for the EIB. Growing its operations, QEV will develop zero-emissions vehicles, deploy rapid charging infrastructure, and accelerate its R&D of public transport EV technologies and high-performance vehicles.

Volkswagen Group grows 12.2 percent in October 2019

The Volkswagen Group delivered 949,800 vehicles to customers worldwide in October, corresponding to a significant rise of 12.2 percent compared with October 2018. The Group further expanded its market share in all core regions, in some cases quite substantially. This was the case, for example, in China, the Group's largest single market, where Group brands grew deliveries 6.6 percent despite a shrinking overall market. Strong increases were once again recorded in Europe (+25.5 percent) and Germany (+41.5 percent) compared with the weaker performance in October 2018 as a result of WLTP. The Volkswagen Group also succeeded in expanding its market shares in the regions of North and South America in shrinking overall markets. Dr. Christian Dahlheim, Head of Volkswagen Group Sales: "The Volkswagen Group brands produced a strong delivery performance in October. We outperformed the market in all core regions and once again substantially expanded our market shares, especially in China, our largest market."

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By Vikas Manral

GROWTH OPPORTUNITIES WITH PROMISING FUTURE

India's contribution to the manufacturing for global civil aerospace programs has increased over the few years.



Last decade has shown signs of shift in global economic power towards Asia and the trend seems to continue in the coming decade as the major Asian economies - China and India find themselves at the centre of enhanced global economic activities. Rapidly growing population (middle class) with higher disposable income, urbanization and change in socio-economic scenario have been the drivers of growth in these economies. And Civil aviation in India can surely benefit from this acceleration.

Figures indicate a strong co-relation between the GDP and growth in civil aviation sector. The current civil aviation market in India is estimated to be around \$16 billion and is currently the ninth largest in the world. Forecasts have predicted India to become the third largest market by 2025 with around 275 Mn passengers per year. With more than 90% of Indian population yet to experience air travel, the civil aviation market has tremendous potential to grow by market penetration of this untapped customer base.

Airport infra requires complete overhaul, as India plans to strengthen the "hub and spoke" network (connectivity between metros and other smaller cities). Airports Authority of India aims to bring around 250 airports under operation across the country by 2020 from 102 at present. About \$6Bn investments are expected in India's airport infrastructure between 2018-2023.

With rapid passenger traffic growth in picture, India is preparing itself for dealing with a billion passengers annually. The UDAN scheme is expected to stimulate regional connectivity by offering affordable flights

to comparatively remote locations. FDI norms for the aviation sector that allows 100 percent FDI into Indian airline operators under the automatic route has also boosted the M&A activity affecting global operators.

India's contribution to the manufacturing for global civil aerospace programs has increased over the few years. Airbus is presently working with 45+ suppliers in India to source more than \$500Mn for their global programs. Civil aerospace is the growth engine for global A&D markets and accounts for higher volumes as compared to defence. As Indian suppliers vie for a bigger market share in global markets by offering more value-added products at higher end of the value chain, maintaining consistent quality and global competitiveness become a challenge to take-up.

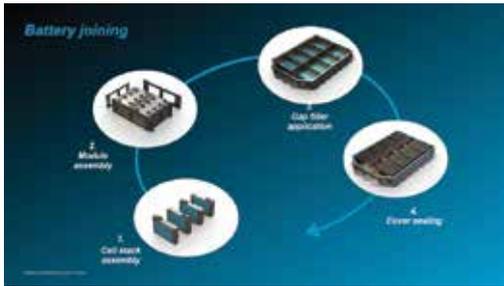
Estimations predict the civil MRO market in India to be around \$1.5Bn by 2020. MRO expenses account for nearly 15% for the airline operators. Presently 90 percent of the aircraft operators prefer to perform major MRO activities outside India (Viz Sri Lanka, Singapore, Malaysia, UAE etc), the need of the hour is to bridge the skill gap in the industry and review the policy framework to aid capturing this business.

While India has established its competency in design and development of helicopters and military aircrafts. India does need a big civil aircraft program not only to capture the domestic demand but also to establish its competence in design, development and certification for such aircraft to capture growth in other developing economies in future. This will also aid development of domestic UAV (Unmanned Ariel Vehicle) market in India both for military and civil applications, as India look forward to becoming significant contributor to global UAV market.

We look forward to 2020 as a year for enhanced engagement and collaboration between different industries, stakeholders and policy makers resulting in efficient decisions aiming to boost Indian civil aviation market and provide opportunity to Indian companies for displaying their capabilities in global market. 

The author is an expert on aerospace & defence

COMPLETE EV-BATTERY ASSEMBLY



The Indian Automobile sector is contributing to the cause of sustainability by the introduction of EV vehicles. Improved technologies have made usage of EVs practical with more power, speed and range. This necessitates bigger and efficient batteries with new challenges like heat dissipation, electrical isolation, compact assembly, reusability, weight and most importantly safety. Atlas Copco's multiple joining solutions provide one stop shop for complete EV-Battery Assembly, with its range of sealing, self-piercing riveting and fastening solutions. Hybrid joining solutions enhance the reliability and safety in different stages of battery assembly.

Cell Stack Assembly: Usually the 2C bonding is used for stacking the vertical cells together and our systems ensure accurate mixing of two components thanks to close looped digital mixers installed just before applicator. The latest controller helps to deliver right pattern for even distribution of material with constant bead.



"With profound experience of catering to Global OEMs and with technological excellence at hand, we are ready to walk hand in hand with OEMs willing to take the EV Path."

Samir Joshi, Key Accounts Manager – ADH

Module Assembly: Cells are stacked and arranged together in metal frame having different material properties and thickness. Self piercing Rivets can be used for assembly so that heat of weld can be avoided keeping cells safe.

Gap filler: Modules are placed in the battery tray over a highly viscous and abrasive thermal paste. Air bubble detection technology ensures bubble free and even material distribution in large volumes. This helps for shorter cycle times. **Cover Sealing:** Hot Butly bead is used to seal the cover with ability of being removed for service. The systems deliver constant volume and height of the bead.

"As the OEMs warm up rapidly to emerging trends in EV industry, we are happy to provide solutions which are technically excellent and provide full ability for industry 4.0 connect," says Tushar Pawar, Business Line Manager – ADH.

Source: Atlas Copco

LINEAR MOTION SYSTEM & BALL SCREWS

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(stainless steel)

Ballscrew
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MADE IN INDIA FOR ASIA

A cutting tools major has expanded its manufacturing base in Bengaluru by doubling the plant size to serve the Asian markets.



“The two sites in Bengaluru and the one at Uluberia, near Kolkata offer ideal conditions for supplying the markets in Southeast Asia and China with tools and turnkey solutions. That is why we will continue to invest in the future.”

Executive Board Member **Thierry Wolter**

In order to satisfy the steadily increasing demand for cutting tools in the Asian markets, the Ceratizit Group last year laid the foundation stone for the expansion of production at the Ceratizit Bengaluru site. The expansion is inaugurated by HE Jean Claude Kugener, Ambassador of Grand Duchy of Luxembourg in India, in presence of Members of the Board - Thierry Wolter, Andreas Lackner, Andreas Schwenninger, and Gerhard Bailom, AK Sareen as well as Anil Kumar. With the expansion, the company has gained the flexibility to accommodate the machines necessary for further growth and to optimize its production processes.

The original building, opened in 2009, currently has an area of 36,500 sq ft. The new extension has more than doubled it to 85,000 square feet and now offers the urgently needed space, as Managing Director Anil Kumar explained: “Due to the growth in recent years, we have been lacking the space to install additional machines. The extension removes this crucial bottleneck and allows us to continue growing here at the site.”

This flexibility is necessary to meet the Group’s ambitious growth targets for India. “Our Indian locations have already grown at an above-average rate in the past.

We want to maintain this trend,” explained Executive Board Member Thierry Wolter. On an average, the Indian business of the internationally active carbide specialist is expected to grow at double-digit rates in the coming years.

HE Jean Claude Kugener, Ambassador of Grand Duchy of Luxembourg in India said “We are celebrating the 70 years of our diplomatic relations with India and celebrating 90 years of Luxembourg’s first Vice-Consulate in Bombay. We have become strong partners over the years, a relation that has further deepened with the inauguration of the resident Embassy in Delhi in 2002. The bilateral relations between both countries are developing fast. The ever-increasing political, economic, financial, cultural and people-to-people bonds give us a promising outlook for the next decades of friendship.”

MADE IN INDIA FOR ASIA (AND THE WORLD)

The Group is gradually expanding its production facilities in India to serve as a production hub for the whole of Asia, says Thierry Wolter. “The two sites in Bengaluru and the one at Uluberia, near Kolkata offer ideal conditions for supplying the markets in Southeast Asia and China with tools and turnkey solutions. That is why we will continue to invest in the future.”

“Due to the growth in recent years, we have been lacking the space to install additional machines. The extension removes this crucial bottleneck and allows us to continue growing here at the site.”

Anil Kumar, MD, Ceratizit India

Today Ceratizit Bengaluru plays an important role in the international supply chain of the Group and delivers finished and semi-finished tools to the Ceratizit locations in Germany, Poland, Mexico and the USA. Although the focus is currently on growth in Southeast Asia and China, the international role of the Indian locations might also be expanded in the future, explained Thierry Wolter: “Our employees in India are doing an excellent job. If we maintain our current course, Ceratizit India will be able to play an even more important role beyond Asia in the future.” 



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ON A GROWTH TRAJECTORY

The User Forum organised by a global leader in 3D printing and additive manufacturing brought together the best of 3D printing technology to Bengaluru



Stratasy hosted the 3rd edition of the Stratasy India User Forum in Bengaluru recently. The forum which witnessed participation from over 620 industry leaders and end-users, served as a great platform for professionals.

Michael Agam, President South Asia, Stratasy said, “The Forum brought together several leading brands such as Maruti Suzuki, Ashok Leyland and Honda in the Indian ecosystem, who have used our products to innovate, take their businesses to new heights and improve the overall customer experience. This reiterates why India is a key market for Stratasy.”

Guy Yair, EVP, EMEA & APJ, Stratasy said, “The 3D printing industry is on a growth trajectory and we expect high double-digit growth in India during the next five years, despite the economic slowdown. This will be driven by strong engagements across key industry verticals such as automotive, healthcare, education and aerospace. This Forum offers a great opportunity for innovators and decision makers to put their minds together and I am happy to note that we continue to witness higher participation with each passing year.”

Addressing the media during roundtable on the sidelines of the event, Rajiv Bajaj, MD Stratasy India & SEA said, “According to 6Wresearch, the Indian 3D Printer Market is projected to record \$79 Million by 2021. This growth is anticipated to be driven primarily by the adoption of industrial 3D Printing in Prototyping, Manufacturing (Jigs & Fixtures) and End Use Parts. We plan to add 50 more customers in

Excerpts from the keynotes

Padma Shri Ganpat I. Patel, President and Patron-in-Chief - Ganpat University emphasized the need to constantly innovate and announced plans to set up a new ‘3D Printing Centre of Excellence’ at the university in partnership with Stratasy India. Saurabh Singh, Head of Design Studio at Maruti Suzuki India Ltd highlighted how the brand has been able to leverage 3D printing to provide high quality, ergonomically suited and distinctly personalized offerings, thereby enhancing the overall customer experience.

Sundaresan, Vice-President, Electric Vehicles and eMobility Solutions, Ashok Leyland shared his insights on how Stratasy has helped the company save about 14,138 days of hour-utilization and nearly Rs 74 lakh in manufacturing costs.

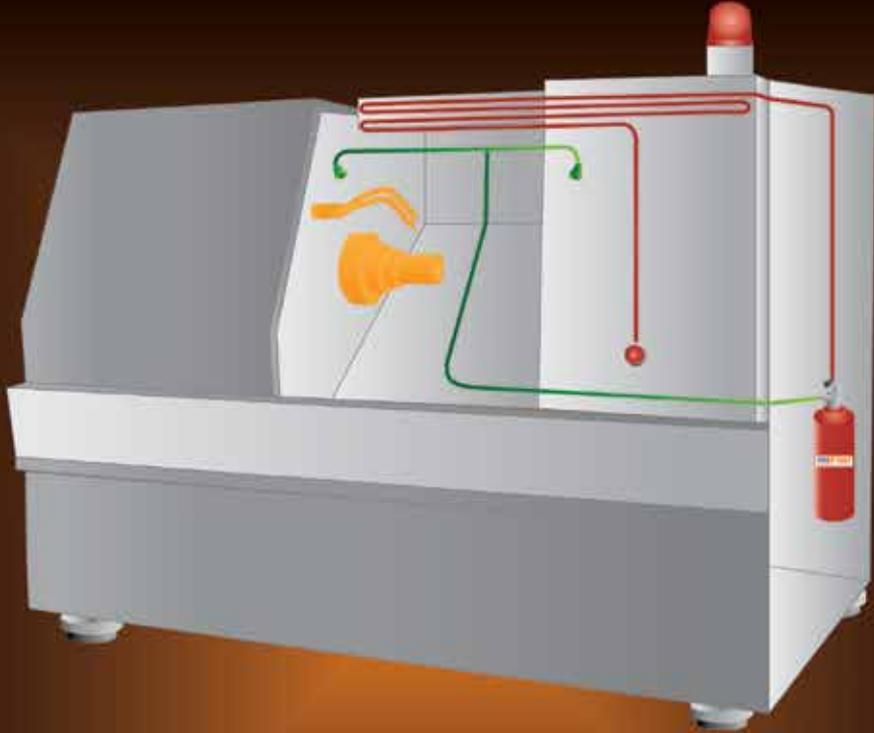
Bhushan Chandna, Manager - Business Excellence, Honda Cars spoke about how the brand has spearheaded the use of additive manufacturing in the auto sector, especially with the use of 3D printed jigs and fixtures.

Dr. Rahul Jain, Associate Consultant Dept. of Plastic, Aesthetic and Reconstructive Surgery, Medanta - The Medicity shed light on the impact of 3D printing on facial reconstruction and how the quality of healthcare services offered in India can be enhanced with this technology.

2020 and are also seeing an increasing demand for 3D printers and related technologies in Tier 2 cities such as Trivandrum, Trichy and Sonipat.”

Other senior leaders including Fred Fischer, Director of Products, Applications & Technology, Stratasy and Ben Klein, Medical Models Product Manager, Stratasy also delivered keynotes. During the discussions at the Forum, the Stratasy leaders shared insights on the company’s strategy for 2020 and mentioned how the company sees a \$12 billion opportunity in the metal 3D printing industry. It also mentioned how the company invested about \$90 million in R&D in 2018, one of the biggest budgets as per industry norms. 

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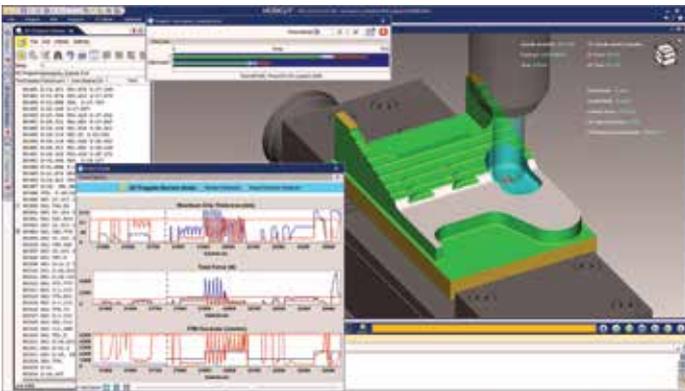


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OPTIMIZATION MODULE TACKLES TOUGH MATERIALS

It is now possible to visualize excessive forces, inefficient cutting parameters, metal removal rate, power consumption, torque, and tool deflection.



In VERICUT Force, blue line “spikes” reveal excessive or unsafe cuts in the original program, while red lines show gains and corrections made by optimizing. (All images provided by CGTech.)

Most anyone who’s worked in a machine shop for any length of time has at some point attended a trade show or machine tool distributor’s open house. There they see canned demonstrations of CNC machines busily carving up chunks of brass, mild steel, or aluminum into business card holders and tic-tac-toe games. While these giveaways are fun stuff, wouldn’t it be refreshing to see some real parts being machined, preferably from a difficult-to-machine material?

That’s what took place at the Okuma Winter Showcase, an annual event the machine builder hosts for 600+ attendees. At the event, attendees were treated to more than two-dozen CNC machine tools under power, most of them making chips. These included an MU-8000V LASER EX super multitasker with laser metal deposition and the GENOS M460V-5AX, a trunnion-style, five-axis vertical machining center offering high productivity, a small footprint, and a surprisingly low-price tag.

There was also an LB3000 EX-II lathe with barfeed vibration detection, a MULTUS B300II turn-mill

center with collaborative robot part handling, MA-500HII horizontal and MCR-A5CII double-column machining centers, and a MULTUS U3000 multitasking machine.

An impressive lineup, to be sure, but there was one demo that had a large number of show attendees talking, even those responsible for setting it up. “It was pretty cool to see, especially when you consider that we were cutting titanium, a very hard and difficult-to-machine material,” says Okuma Applications Engineer Lee Johnston.

He’s talking about CGTech’s Force, a physics-based NC program optimization module that works within the company’s flagship VERICUT toolpath simulation software. Working with representatives from CGTech and Sandvik Coromant, Johnston programmed a Ti-6Al-4V titanium bracket being made for an aerospace customer, then optimized its toolpaths with VERICUT Force.

“We had the same demo on two vises and ran them side-by-side, one with the standard program and one that was optimized,” said Johnston. “We reduced cycle time from an hour to just under 40 minutes, and you could also hear and see the difference in how the tools were cutting and tell that the optimized program was easier on the machine. This is probably the best thing to happen to programming since trochoidal toolpaths.”

VERICUT Product Specialist Pete Haas explained that Force works by analyzing the NC toolpath, evaluating the changing cutting conditions, and increasing or decreasing the feed rate to achieve the ideal chip thickness for any given material. Compared to CAM systems and online machining calculators, which attempt to determine average chip thickness and base the feed rate on that, Force calculates the optimal feed rate for every single line of machining code.

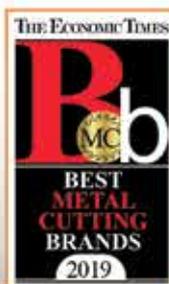
“As an example, think about driving to work each morning,” Haas said. “You encounter straight sections, curves, and sharp turns, and have to slow down or speed up depending on the road conditions. Machin-

DORMER PRAMET



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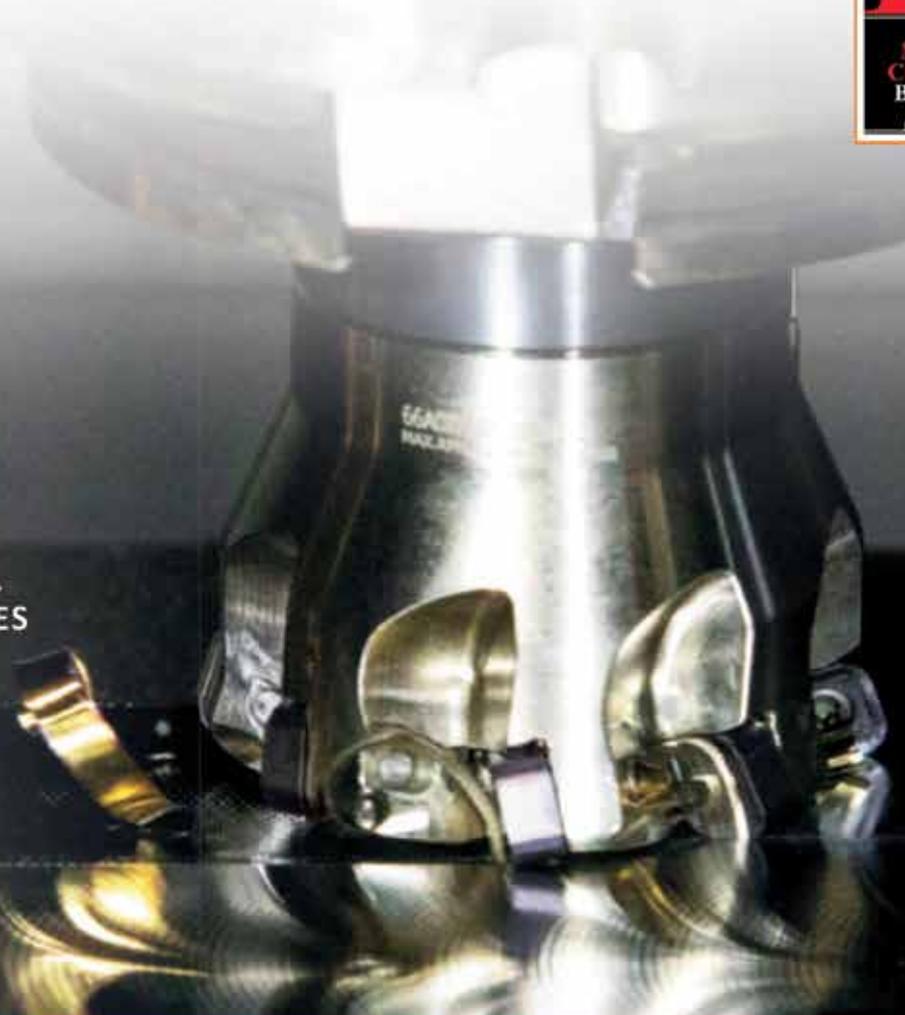
MACHINING
EFFICIENCY



HIGHER METAL
REMOVAL RATES



HIGH
OVERHANG





In the Okuma demonstration, the VERICUT Force Optimized finished part on the left was produced more than 20 percent faster than the original programmed part on the right.

The result, according to Haas, is greatly reduced cycle time, improved tool life, better part quality, and less wear and tear on CNC machine tools. It works on any material and any machine and can even be used on legacy programs.

Johnston wasn't the only one surprised by Force's capabilities. Even CGTech Technical Support Engineer Chris Davala—someone with 20 years of experience as a machinist and programmer who now works with VERICUT customers across the country—said the demo was an eye opener. "To be honest, I was a little skeptical," he said. "This was my first hands-on expe-

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Force works by analyzing the NC toolpath, evaluating the changing cutting conditions, and increasing or decreasing the feed rate to achieve the ideal chip thickness for any given material.

VERICUT Product Specialist **Pete Haas**

rience with the product, and it's not that I didn't have faith in the people who developed it, but there were some bold claims made about the potential gains. I can truly say that, after seeing Force in action, it's made a believer out of me."

That's an easy thing to say for someone employed by the product's developer. But Sandvik Coromant MTS specialist Richard Howard, who worked alongside Davala and Johnston setting up the demo, backs it up. He supplied the cutting tools and toolholders used for the demo and specified the initial machining parameters.

"As a tooling specialist, I am extremely impressed with how 'spot on' the Force software is," he said. "CGTech has done an amazing job of optimizing programs while taking into consideration tooling geometries and resulting loads. Anyone interested in higher

efficiency and prolonging tool life should look into this."

Anyone familiar with Okuma machine technology might consider Force unnecessary. That's because the OSP control offers advanced features such as Machining Navi, SERVONAVI, Super-NURBS, and adaptive machining technology. How can a third-party software package make a top-notch machine tool perform even better? There are several answers:

Force has the ability to break up the NC code into smaller bites, adjusting feed rates to maximize chip thickness and keep it constant.

Its optimization capabilities are proactive, not reactive, so everyone knows what to expect before pushing the cycle start button.

Performance issues are clearly identified up front, and the programmer can examine the Force Charts that illustrate projected cutting forces, chip thickness, feed rates, tool deflection and more.

For new materials, new machine tools and cutters, or even new programmers, Force eliminates the guesswork that would otherwise occur.

The result is an NC program that's both safer and more predictable, with low risk of tool breakage or scrapped parts. Operators have more confidence. Lights-out machining is performed with confidence. Profit margins are improved. And Force-optimized toolpaths "save a great deal of time during roughing," says Sandvik's Howard. Parts are machined faster and cutting tools last longer.

Haas summed it up like this: "Force charts provides NC programmers with useful information they never had before. They can quickly and easily visualize what's happening cut-by-cut as the tool moves through the material, and it's now possible to visualize excessive forces, inefficient cutting parameters, metal removal rate, power consumption, torque, and tool deflection. Force charts also expose cutting condition improvement opportunities. With one click on the Force chart, the user is taken to the exact location in the program and to the graphical review window for further analysis. The end result is full utilization of the cutting tool and the machine tool."

Okuma's Lee Johnston agreed. "At the event we were cutting titanium and saw significant improvement, but I think Force is just as suitable for machining easier materials like aluminum, and for other general purpose work. I look forward to using it on future projects." 

Source: CGTech

SAFE CABLE GUIDANCE ON THE ROBOT FOR A SMALL PRICE

New retraction system for energy chains ensures fail-safe operation of robots in modern factories

Welding, riveting, soldering: Industrial robots must work dynamically and quickly in production. Therefore, a safe and compact guidance of cables and hoses is required. This is where the three-dimensional triflex energy chains from igus are used. If the e-chains form loops in the work area of the robot, it can damage the cables and hoses as well as lead to machine failure. For this reason, igus has now developed the new low-cost TR.RSEL retraction system. The system guides the energy chain in a line on the robot, ensuring trouble-free and fail-safe operation.

Industrial robots for assembling vehicle parts in the automotive industry, for example, work with high rotations and many fast movements. Users rely on energy chains to ensure that cables for data, pneumatic and energy supply are safely guided on the robot. The triflex R e-chains from igus are very useful here because they are specially designed for industrial robotics and adapt to the three-dimensional movements of robots. However, with the growing diversity in automated production technology, it is necessary to guide not only electrical and pneumatic cables, but also hoses for bolts, rivets and screws. Since these hoses are not compatible with tight bend radii, a retraction system is required for the energy supply of the robot. For this reason, igus has now developed a new, very cost-effective retraction system triflex RSEL for its energy chains. This ensures that the e-chain is kept as compact as possible on the robot arm. The system prevents the hanging energy supply system from affecting or blocking the movements of the robot, even in highly dynamic applications. In the worst case, looping would damage the energy chain, the cables and hoses inside it, leading to machine failure.

Cost-effective and easy to retrofit retraction system

Due to its standard dimensions and its very compact design, the new retraction system can be mounted

“INDUSTRIAL ROBOTS FOR ASSEMBLING VEHICLE PARTS IN THE AUTOMOTIVE INDUSTRY, FOR EXAMPLE, WORK WITH HIGH ROTATIONS AND MANY FAST MOVEMENTS. USERS RELY ON ENERGY CHAINS TO ENSURE THAT CABLES FOR DATA, PNEUMATIC AND ENERGY SUPPLY ARE SAFELY GUIDED ON THE ROBOT.”



Cost-effective and safe: The new TR.RSEL retraction system with energy chains ensures trouble-free operation of robots. (Source: igus GmbH)

“DUE TO ITS STANDARD DIMENSIONS AND ITS VERY COMPACT DESIGN, THE NEW RETRACTION SYSTEM CAN BE MOUNTED DIRECTLY ON THE 3RD AXIS OF ALL COMMON TYPES OF ROBOTS. THIS MEANS THAT ALL EXISTING TRIFLEX R SERIES SUCH AS TRC, TRE AND TRCF CAN BE QUICKLY AND EASILY CONVERTED.”

directly on the 3rd axis of all common types of robots. This means that all existing triflex R series such as TRC, TRE and

TRCF can be quickly and easily converted. The fixed end of the energy chain can be freely selected by the new system.

Another advantage: by using the linear retraction system is the user saves additional cable length and associated costs, since no deflection is required. The triflex RSEL is available from igus as a variant with two elastomer bands in sizes 70 or 85.



*For more info, contact:
Kaushtik Ramanujachar,
Product Manager,
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CAM MEETS AEROSPACE

OPEN MIND offers efficient solutions for the aerospace industry

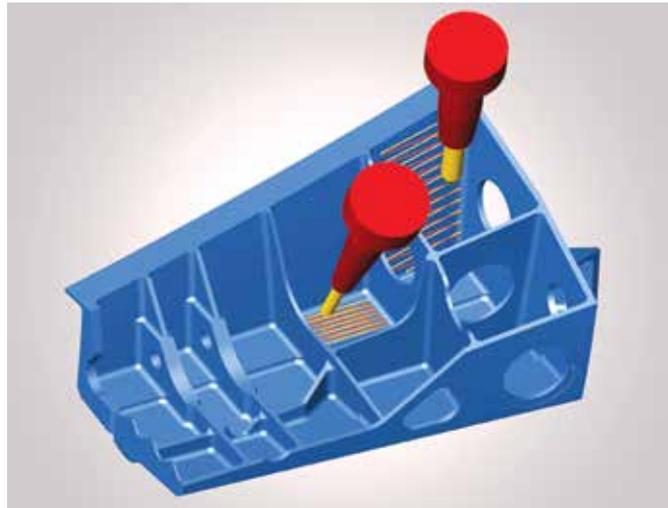
The aerospace industry is one of the most technically challenging industries in the world. There are growing pressures to look at new manufacturing methods to reduce production times and increase efficiency. One of the determining factors in the production chain is the choice of the right CAM solution. Reduced machining times with high material removal rates of up to 95 per cent require state-of-the-art CAM solutions. OPEN MIND, a leading developer of CAM/CAD-Software, offers with its CAM system hyperMILL® intelligent solutions to meet the challenges rising in the aerospace industry.

The hyperMILL® CAM software features a broad range of machining strategies, from 2.5D and 3D strategies and solutions for high-speed cutting and high-performance cutting right through to 5axis machining and mill turning. In addition, numerous functions enable largely automated programming. Special hyperMILL® packages for machining of impeller, blisk and blade machining complete the broad portfolio. OPEN MIND's aerospace segment - civil aviation, space travel, military, reconnaissance - has industry-proven application expertise when machining engine components, turbine rings and structure parts such as connectors, ribs, housings, and landing gear. Complete machining with just one CAM software and one postprocessor for all turning and milling processes results in integrated practices for minimised machining times, while also increasing reliability.

Trend-setting 5axis technology

5axis machining centres are now standard among manufacturing companies in the aerospace industry. Fully exploiting the potential of these machines requires a powerful CAM solution in addition to other components. hyperMILL® is one of the technologically leading CAM systems that features a broad range of powerful 5axis strategies. 5axis machining makes it possible to machine challenging geometries, free-form surfaces and deep cavities significantly more efficiently. Depending on the geometry and machine kinematics, the user can choose between 5axis machining with a

“5AXIS MACHINING CENTRES ARE NOW STANDARD AMONG MANUFACTURING COMPANIES IN THE AEROSPACE INDUSTRY. FULLY EXPLOITING THE POTENTIAL OF THESE MACHINES REQUIRES A POWERFUL CAM SOLUTION IN ADDITION TO OTHER COMPONENTS.”



5axis tangent plane machining: time savings up to 90%. Image source: OPEN MIND

fixed tool angle, automatic indexing or true simultaneous machining. All toolpaths are generated fully automatically with automatic collision checking and avoidance.

OPEN MIND was one of the first CAM manufacturers to tackle 5axis technology. Since then, it has been one of the leading developers of unique and innovative 5axis CAM strategies.

Performance multiplied by three – hyperMILL® MAXX Machining

The performance package hyperMILL® MAXX Machining offers three powerful modules for finishing, roughing and drilling that make it possible to achieve impressive boosts in productivity. Manufacturing companies can realise fast economic benefits when working under increasing time and cost pressure using the innovative strategies.

Fast roughing: The roughing module in the performance package includes numerous cycles for milling in trochoidal tool paths, resulting in fast

and reliable HPC machining. Dynamic feed rate adjustment according to actual cutting conditions ensures, milling with the highest possible feed rates at all times. This results in optimal milling paths with maximum material removal and the shortest possible production times. High-speed roughing of both prismatic and curved component faces is supported.

Innovative algorithms ensure that a constant chip volume is always removed by each tooth of the milling tool. This delivers high utilisation rates without exposing the tool to undue stresses, resulting in roughing speeds that are 20 to 70 per cent higher than before.

OPEN MIND has made this fast roughing method available for all types of machining from 2.5D to 5axis simultaneous. The machining strategy increases the speed and tool life. Stress on the tool and machine is reduced at the same time.

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The finishing module of the

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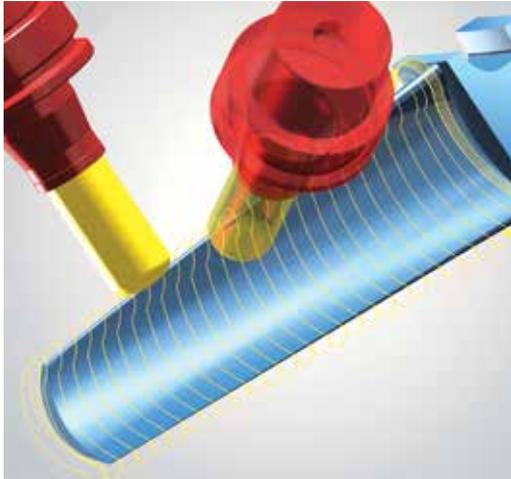
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MAC



Efficient machining of blades with hyperMILL® single blade package.
Image source: OPEN MIND

“SIGNIFICANT TIME SAVINGS CAN BE ACHIEVED WITH A SIMULTANEOUS IMPROVEMENT IN SURFACE QUALITY. THESE BENEFITS ARE ACCOMPLISHED WITH CAM STRATEGIES THAT USE THE SPECIAL SHAPE OF THE TOOLS TO BEST ADVANTAGE.”

hyperMILL® MAXX Machining performance package is an example for the optimum application of tool characteristics in combination with trendsetting CAM strategies. This module includes pre-finishing and finishing of planes and free-form surfaces with various barrel cutters. Significant time savings can be achieved with a simultaneous improvement in surface quality. These benefits are accomplished with CAM strategies that use the special shape of the tools to best advantage. The finish depends on the step-over distance and tool radius. The quality of a workpiece surface decreases as the line increment increases and improves as the tool diameter gets larger. This means that if you want to shorten the machining time by increasing the infeed rate, for example 5 mm instead of 0.5 mm, the tool radius has to be increased several times over to obtain a high surface quality at the same time. Since the tool diameter cannot be increased

at will, barrel cutters only work with a section of the desired tool diameter – a circle segment. Larger step-over distances can be realised due to its bigger radius, while achieving high quality surface finish. The hyperMILL® MAXX Machining finishing module realises fast and high-quality machining jobs. All tool paths are checked for collisions.

Finishing in record time: Time savings of up to 90 per cent

With ‘5axis tangent plane machining’, OPEN MIND has developed a special CAM innovation for plane machining. Time savings of up to 90 per cent can be achieved together with the conical barrel cutter. Path distances of six and eight mm are possible with the large radii of the conical barrel cutters. This results in optimal surfaces and longer tool life.

‘5axis tangent plane machining’ is equally well suited for straightforward and hard-to-reach planes. Tool paths are generated automatically and checked for collisions.

Companies in various sectors such as aerospace, tool and mould making, or the automobile industry reap tremendous benefits from the straightforward and reliable programming strategies available with the hyperMILL® MAXX Machining finishing module.

Fast drilling in materials that are difficult to chip

‘5axis helical drilling’ is another performance strategy. Holes can be machined easily and efficiently with this solution. This cycle involves helical milling with a forward lead angle. A tilt angle to the side is then used as part of collision avoidance process.

The advantages: Only one tool is needed for different drill diameters. Pre-drilling is not necessary, and the strategy is very well suited for materials that are hard to cut. The process features safe chip removal and reduces stress on the tool.

Find more information at www.openmind-tech.com

HYUNDAI STARTS FEASIBILITY STUDY FOR FCVS IN INDIA

Hyundai Motor India Limited (HMIL) is evaluating the feasibility of bringing Fuel Cell Electric Vehicles for India. Commenting on the same, S S Kim, HMIL, said, “Progress for Humanity with Zero Emission Mobility is our responsibility and vision to make a long-term positive transformation for our future generations. We have initiated the feasibility study for Fuel Cell Electric Vehicle in India and promise to bring

The Ultimate Solution with Zero Emission Mobility. During the recently concluded first International Organisation of Motor Vehicles Manufacturer Conference in India, Korea Manufacturers’ Association (KAMA) shared the strong developments made in the area of Fuel Cell technology and also talked about the Global Success of commercially available Fuel Cell Electric Vehicle - Hyundai NEXO.

ANNOUNCING THE 3rd EDITION



January 2020 - MUMBAI

Recognizing the Best Brands of
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CATEGORIES

- Raw Materials ● Masterbatches ● Extrusion
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- Polyester Filament Yarn ...and many more

Featured brands of the 2019 edition



IS YOUR BRAND LISTED? CALL TO CONFIRM

West & North

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ranjan.haldar@wwm.co.in

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jangam.gangaram@wwm.co.in

South

Mahadev. B
+91 9448483475
mahadev.b@wwm.co.in

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

HAN® 1A: VERSATILE LIGHTWEIGHT

New range of rectangular plastic connectors – ideal for motors and smaller loads in machine engineering and automation



The modular design of the Han® 1A offers maximum flexibility for the respective application.

The industrial sector is using ever smaller machines at the same time as the modularisation of plants and systems continues to progress. What is needed are compact, modular and robust connections for connecting small loads. HARTING is responding to this trend with the Han® 1A. The rectangular connector has a whole host of advantages: the connector is suitable for the transmission of data, signals and power, and provides an ideal solution for e.g. control systems, smaller drives and switch cabinet installations.

The housings, inserts and cable glands of the new series are made of high-performance plastic, which makes the connector a lightweight. The Han® 1A is smaller than all previous Han® solutions. In comparison to the Han® 3A – the smallest rectangular connector portfolio yet – the space requirement is reduced by about one third.

“DEPENDING ON THE CUSTOMER’S REQUIREMENTS, THE NEW CONNECTOR SERIES OFFERS THE RIGHT SOLUTION. USERS CAN THUS DECIDE BETWEEN A CLASSIC METAL CLAMP LOCK AND A LATCHED LOCK ALREADY INTEGRATED INTO THE HOUSING.”

“IN ADDITION, FLEXIBILITY IS ENHANCED BY A WIDE RANGE OF USEFUL ACCESSORIES. USING E.G. CABLE GLANDS OR SINGLE-WIRE SEALS, WITHIN SECONDS THE HAN® 1A SYSTEM CAN BE TRANSFORMED FROM AN IP20 SOLUTION INTO AN IP65 CONNECTOR FOR HARSH INDUSTRIAL ENVIRONMENTS.”

The modular design of the Han® 1A offers maximum flexibility for the respective application. Solutions for a wide variety of tasks can be developed from just a small number of elements. Power ratings up to 16 A / 400 V, signals with up to 12 contacts per insert, and data at a rate of 10 Gbps (Cat. 6A) can all be transmitted.

Depending on the customer’s requirements, the new connector series offers the right solution. Users can thus decide between a classic metal clamp lock and a latched lock already integrated into the housing. There are also two options with regard to the connection technology: screw and crimp connection.

In addition, flexibility is enhanced by a wide range of useful accessories. Using e.g. cable glands or single-wire seals, within seconds the Han® 1A system can be transformed from an IP20 solution into an IP65 connector for harsh industrial environments.

Overview of the Han® 1A

Low overall weight: Thanks to plastic elements, the Han® 1A has a low overall weight, especially compared to metallic connectors.

Versatility: “Custom” solutions for a variety of applications due to the modular concept.

Han® 1A offers inserts for the transmission of data, signal and power, as well as a wide range of accessories.

Time savings: The simple “Mate & Click” design of all individual components allows the connector to be assembled in just a few seconds.

Space-saving: Han® 1A components conform to the trend towards miniaturisation. At the same time, they enable the construction of robust Han® connectors – even for harsh industrial environments.

Cost savings: The modular system consists of a small number of individual components. Virtually an unlimited number of solutions can be created from just a few different parts, which leads to a reduction of storage costs.

Data transmission up to Cat. 6A: The Han® 1A is extremely versatile. In addition to power and signal transmission, it also enables high-speed data transmission.

IP-protected, if necessary: An IP65 solution can be easily achieved by using housing elements or single-wire seals.

For more info, contact:
HARTING India Pvt Ltd;
Abhishek Bimal; Marketing
Communications Manager;
Email: abhishek.bimal@HARTING.com
or visit www.HARTING.in

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other than those mentioned here will be accepted
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For partnership opportunities:

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OIL CONDITION MONITORING OF HYDRAULIC PRESS

The OPCom Particle Monitor is a compact particle measurement device for continuous monitoring of contamination and wear in hydraulic fluids and lubricants.



OPCom Particle Monitor

Although the press manufacturer is using the system filters and off-line filtration units, they are unaware of the contamination level build up in the hydraulic oil due to regular wear and tear of the components in the hydraulic system.

The case involves a reputed machine manufacturer making high tonnage powder compacting machines/press, Deep Drawing Presses, Pipe Bending machines and Hydraulic Forming Presses. Current system has Pressure Line Filters & Return Line Filters. After using the OPCom Particle Monitor from ARGO-HYTOS, they realized that contamination level was beyond recommended values and hence they started using Electro-Static Oil Cleaners (Off-line) for cleaning the hydraulic oil in the machine, as and when the contamination level crosses a specified limit.

CHALLENGES/PROBLEMS

Although the press manufacturer is using the system filters and off-line filtration units, they are unaware of

the contamination level build up in the hydraulic oil due to regular wear and tear of the components in the hydraulic system. This was resulting in the,

- Failure of critical components like Piston Pump.
- Malfunctioning of Proportional Control/Servo Control Valves.
- Frequent and expensive Pump/Valves replacement.
- Unwarranted downtime, increased costs, lesser MTBF and higher MTTR.

JOINT ANALYSIS

- Identify the root cause for pump failure.
- Hydraulic Press manufacturer is delivering the machines with Oil Cleanliness Level of 17/15/12 as per ISO 4406 (Class 6 as per NAS 1638). The system in-line filters are expected to keep the oil clean. However, due to existing contamination level, the system operation leads to clogged filter elements resulting in alarm to replace filter element.

But this alarm in some cases got ignored due to production needs, allowing filter to go into bypass mode leading to circulation of unfiltered oil. This ignorance was leading to premature failure of Pumps and Valves and demanded for an online monitoring of oil cleanliness level in order to stop the machine for necessary oil cleaning to achieve desired oil cleanliness level before restart.

SOLUTION BY ARGO-HYTOS

ARGO-HYTOS has a range of Condition Monitoring Devices/Off-Line Oil Service Filter Units like,

- OPCount, Particle Counter (8-Channels)
- OPCom, Particle Monitor (4-Channels)
- LubCos H2O, Water Sensor %RH
- UMPC 045 Oil Service Unit (45 LPM)

From the above devices, the Laser based, OPCom Particle Monitor was identified to be used and linked to PLC of the machine with an interlock to stop the hydraulic press/machine in case oil cleanliness level reached 18/16/13 and in parallel provide warn-

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Machine:	High Tonnage Hydraulic Press
Products used:	OPCom, Particle Monitor to measure Oil Cleanliness Level
In use since:	Jan, 2018
System volume:	1000 L
Oil type:	ISO VG 68
Standard oil change and analysis interval:	Oil top-up
Problem:	Contaminated hydraulic oil causing hydraulic component damage leading to higher downtime and warranty costs.
Result/identified customer value:	Continuous monitoring of Oil Contamination and enhanced service life of hydraulic components leading to lesser downtime

ing (LED lights up) by raising an alarm signal. This made sure that the end user cleans the oil before the press is re-started. Thus, protecting hydraulic components against high contamination level. To begin with, this solution has been incorporated on high value machines and intention is to make it a standard feature on all their machines.

RESULTS AND BENEFITS

Maintain oil cleanliness within specified limits with real-time contamination monitoring and usage of offline filtration system, leading to enhanced hydraulic components life, leading to lesser downtime of machine and reduced warranty costs to the hydraulic machine manufacturer.



The Laser based, OPCom Particle Monitor was identified to be used and linked to PLC of the machine with an interlock to stop the hydraulic press/machine in case oil cleanliness level reached 18/16/13 and in parallel provide warning (LED lights up) by raising an alarm signal.

APPLICATION AREA

The OPCom Particle Monitor is a compact particle measurement device for continuous monitoring of contamination and wear in hydraulic fluids and lubricants.

PERFORMANCE FEATURES

Recognizing changes - Particle monitors precisely display any change in contamination of a system. Thus, you can react quickly with an increase in particle concentration and real-time countermeasures can be taken. Thus, subsequent damages are minimized, and costs are reduced.

High pressure range - The OPCom Particle Monitor is designed for operating with pressures of up to 420 bar (6090 psi). Thus, it can be directly mounted on a high-pressure line.



Forging Press

Intuitive operating - The OPCom Particle Monitor is equipped with an intensely illuminated graphic display and a keypad by which you may set up all required adjustments. The menu navigation is made up intuitively and logically.

Wide communication possibilities

- The OPCom Particle Monitor exports data to a serial interface or optionally to a CAN-Bus (CANopen+SAEJ1939). In parallel, the configurable 4-20mA interface can be connected. Over a digital alarm output you will be warned when limits are exceeded or falling below set value. Readings can run time-controlled, manually or started and stopped over a digital input. The data can also be stored on the integrated memory unit (3000 samples).

Design characteristics - On both the inlet & outlet sides, the OPCom Particle Monitor is equipped with two Minimes connections to connect the sensor generally in the off-line circuit or online to the system. The electrical connection is installed via an 8-pole M12 x 1 circular plug. The integrated data memory allows data recording over a longer period. Besides all its technical functions, the OPCom Particle Monitor scores by its compact and optical design.

Measuring principle - The OPCom Particle Monitor is an optical particle monitor which works to a so-called light extinction principle. This means that particles are classified within a measuring cell with the help of a laser regarding their size and quantity.

The device is calibrated to ISO 11943. It calculates and displays results according to ISO 4406:99, SAE AS 4059, NAS 1638 und GOST 17216.

Software - A PC-software for data recording and evaluation of the measured values can be downloaded from our website at www.argo-hytos.com. 

Source: ARGO-HYTOS

For more information and demonstration, please contact:

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CELEBRATING BRAND EXCELLENCE!

The Economic Times Best Brands in Metal Cutting and Metal Forming 2019 felicitation ceremony was a grand success.



Acemicromatic Manufacturing Intelligence Technologies - The company's software is aimed at delivering greater operational excellence and productivity. It aspires to be the global leader in providing innovative productivity solutions for manufacturing.

Ace Manufacturing Systems Limited - It is one of the largest manufacturers of Machining Centers in India. The company has expertise in manufacturing of CNC vertical machining centers, CNC horizontal machining centers and in providing manufacturing solutions centered around these products.

Micromatic Grinding Technologies - Starting in a rented shed, MGT now has three plants at Ghaziabad and one plant in Bangalore. Over the years, MGT has strived to build an organization with the motto of "Becoming the Best".

Amada India Pvt Ltd. - Established in April 2000, it is a wholly owned subsidiary of Amada Co. Ltd., Japan. Today, the company has a functional Technical

The Indian manufacturing industry has many choices when it comes to choosing its metal cutting and metal forming partners. With a variety of Indian and international players competing in the market, it is difficult to determine which are the best brands. In the best interest of the Indian manufacturing industry, The Economic Times along with its Knowledge Partner – BMGI consolidated the list of 100 best brands in the metal cutting and metal forming segments. From this list, 27 featured brands were felicitated at the red-carpet event that took place in Pune recently.

Ace Micromatic Group
With its four group companies

Ace Designers Ltd. - They are an undisputed market leader in India for last three decades in the CNC turning segment. The company is led by three experienced design engineers and powered by a dynamic team of more than 500 members.



and Vocational Center in Bangalore. With a legacy of 70 years in the development of metal working machinery, **Birla Precision Technologies Limited** with its division called Indian Tool Manufacturers (ITM). ITM manufactures and supplies high speed steel cutting tools in domestic and global markets. Its products are well known as 'Dagger Brand' and having the leading market share in India for drills.

Blum Novotest Measuring & Testing Technology Pvt Ltd. - It is a renowned manufacturer of high-precision measuring and testing technology. They develop and manufacture solutions to the highest quality standards and the aim of boosting their customers' productivity.

Cerazit India Pvt. Ltd. - For over 95 years, Cerazit has been developing and producing sophisticated hard material cutting and wear protection solutions. This includes solutions from highly specialized cutting tools, indexable inserts and carbide rods to new types of carbide and cermet grades for wood and stone working.

Cosmos Impex India Pvt Ltd. - Cosmos offers a wide range of latest machine tools. They believe in making a significant difference to their customers by improving their technology and productivity.

Dormer Tools India Private Limited for brand Dormer Pramet. - It is the result of a merger in 2014 between rotary tooling manufacturer Dormer and indexable specialist Pramet. The strengths of each company were combined to create a single platform, providing customers with access to a wide range of high quality, fit-for-purpose products.

Fibro India Precision Products Private Limited. - The company is engaged in manufacturing a quality proven collection of Rotary Tables and Die Set. Offered products are widely appreciated in the market for their compact design and trouble-free performance. Let's have a round of applause for the team of Fibro India.

Forbes & Company Limited. - The company manufactures precision engineering tools under the brand name Totem for threading, milling, drilling, and deburring for industrial applications. With three state-of-the-art manufacturing facilities, it is considered a manufacturing giant in the cutting tools business.

Harting India Pvt Ltd - The Harting Technology Group is a leading global supplier of industrial connectivity technology for the three lifelines - Data, Signal and Power.

igus (India) Private Limited. - igus operations in India started in 1998 with headquarters in Bangalore. The company undertakes turnkey projects in moving cable management system in numerous industries including material handling, power plants, defence, automation, and so on.

Janatics India Private Limited - It is a leading manufacturer of pneumatic products in India. Located in Coimbatore, it is an ISO 9001:2008 certified company. With over three decades of service to the industries and a DSIR approved R&D division, it exports to over 25 countries.

Jyoti CNC Automation Ltd. - It is the largest one-stop solution for computerized machine cutting tools. The company's products are manufactured and assembled locally with a customer centric approach. Jyoti caters to the wide range of industries including automobile, aerospace, allied machinery, agriculture, defence, medical equipment, etc.

Khushbu Honing - An ISO 9001:2008 certified company, Khushbu Engineers is a prominent name in manufacturing and exports of a comprehensive range of CNC single pass honing machines for various requirements. Extensively used by the leading names of industry, their products are an outcome of continuous R&D.

ET BEST BRANDS 2019 in Metal Cutting & Metal Forming	Segment
Ace Designers Ltd.	Cutting
ABB India	Cutting
Ace Manufacturing Systems Limited (AMS)	Cutting
Acemicromatic Manufacturing Intelligence Technologies (AMIT)	Cutting
Allied Machines tools	Cutting
Amada India Pvt Ltd.	Forming
ANCA Machine Tools Pvt Ltd	Cutting
Autodesk India Pvt Ltd	Cutting
Balco	Forming
Bharat Fritz Werner Limited	Cutting
Birla Precision Technologies Limited (ITM)	Cutting
Blum Novotest Measuring & Testing Technology Pvt Ltd.	Cutting
Bodor Laser	Forming
Bystronic Laser India Pvt Limited	Forming
Carl Bechem	Cutting
Carl Zeiss	Cutting
Castrol Limited	Cutting
Cerazit India Pvt. Ltd.	Cutting
Chiron India Machine Tools Pvt Ltd	Cutting
Cosmos Impex India Pvt Ltd.	Cutting
Carborundum Universal Limited	Cutting
CG Tech India	Cutting
DMG Mori India Pvt Ltd	Cutting
Doosan Machine Tools India Pvt Ltd	Cutting
Dormer Tools India Private Limited for brand Dormer Pramet.	Cutting
EMAG India Pvt Ltd	Cutting
Emkay Tools	Cutting
FFG Mag India	Cutting
Esprit CAD/CAM	Cutting
Fibro India Precision Products Private Limited.	Forming
Forbes & Company Limited for brand Totem	Cutting
Gedee Weiler Pvt Ltd	Cutting
GMT Industries Ltd	Cutting
Gravotech Engineering Pvt Ltd	Forming
Guhring India Pvt. Ltd.	Cutting
Haas Automation	Cutting
Harting India Pvt Ltd	Cutting
Hexagon Metrology	Cutting
Hypertherm (India) Thermal Cutting Pvt Ltd	Forming
igus (India) Private Limited	Cutting
Iscar India	Cutting
Janatics India Private Limited	Cutting
Jyoti CNC Automation Ltd.	Cutting
Kawa Press Systems Pvt. Ltd	Forming
Kennametal India Ltd	Cutting
Khushbu Honing	Cutting
Kyocera CTC Precision Tools Pvt. Ltd	Cutting
Lapmaster Wolters India Pvt Ltd	Forming
Lapp India Pvt Ltd	Cutting
Lakshmi Machine Works	Cutting

LVD-Strippit India Pvt Ltd	Forming
MAAN Aluminium Ltd	Forming
Mahr Metrology India Pvt	Cutting
Makino India Pvt Ltd	Cutting
Mastercam India	Cutting
Mazak India	Cutting
Messer Cutting Systems India Pvt Ltd	Forming
Micromatic Grinding Technologies (MGT).	Cutting
Mitsubishi Electric India Pvt Ltd	Cutting
Mitsubishi Heavy Industries Ltd	Cutting
Mitutoyo India	Cutting
MMC Hardmetal	Cutting
MotulTech	Cutting
Murata Machinery, Ltd.	Cutting
Murata Machinery, Ltd.	Forming
Nagman	Forming
Nikon India	Cutting
Okuma India	Cutting
Omera Srl	Forming
Open Mind CAD CAM Technologies India Pvt Ltd	Cutting
PMT Machines Ltd	Cutting
Prima Power	Forming
QVI India	Cutting
Rajamane Industries Pvt Ltd	Cutting
Renishaw	Cutting
Salvagnini Machinery	Forming
S & T Machine Tools Pvt. Ltd	Forming
Sandvik Coromant	Cutting
Schuler India Pvt Limited	Forming
Schunk Intec India Pvt Ltd	Cutting
Seco Tools	Cutting
SLTL Group (Sahajanand Laser Technology Limited).	Cutting
Sphoorti Machine Tools Pvt Ltd.	Cutting
Suntech Landriani Machine Tools Pvt. Ltd	Cutting
Suresh Indu laser	Forming
Taegutec India Pvt Ltd	Cutting
Tool Grinding Technologies Inc	Cutting
TRUMPF Group	Forming
Tyrolit Superabrasive Tools Pvt Ltd	Cutting
UCAM Pvt Ltd	Cutting
United Grinding	Cutting
Universal Robots	Cutting
Usha Martin	Forming
Vargus India	Cutting
Walter Tools India Pvt. Ltd.	Cutting
Warrier Electronics with brand WEFIRE	Cutting
Wendt India	Cutting
YG1	Cutting
Yuken India	Cutting
Zoller India Pvt. Ltd.	Cutting

MotulTech - It is the industrial lubricants division of the Motul group. In India, MotulTech develops and manufactures specific high-performance product ranges for the metal working industry. The company also offers industrial and specialty lubrication. Let's invite MotulTech's team to accept the felicitation.

Murata Machinery, Ltd. - In 1961, Murata entered the field of machine tools which supports modern industry at the core. Since then, it has constructed systems that integrate machining processes for volume production by combining gantry loaders and a wide variety of peripheral equipment.

Murata Machinery, Ltd. - Murata's roots of the sheet metal machinery department can be traced back to 1970. Since then, it has pursued product development and released new products one after another, including plasma-ark combined machines and laser combined machines, and also construction of large-scale flexible manufacturing systems.

Prima Power - It is a leading specialist in machines and systems for sheet metal working. Its offering in this field is one of the widest and covers all applications like laser processing, punching, shearing, bending and automation.

Rajamane Industries Pvt. Ltd. - Rajamane was established in the year 1975 for the manufacture of coolant pump for the machine tool industry. Starting with three models, today the company produces over 100+ models to meet the various industry needs.

SLTL Group (Sahajanand Laser Technology Limited) - It undertakes manufacturing of solutions in the fields of Laser Systems, Medical, Diamond & Jewellery, RF & Microwave, Renewable Energy Machine Tools. With its high-end laser frameworks, it aims to transform industries into smart facilities!

Sphoorti Machine Tools Pvt Ltd. - Established in 1996, Sphoorti is specialised in the manufacturing of a variety of slotted tool discs and holders for CNC turning centers and turn mill centers. Today, it is a leading Indian player in this segment.

UCAM India - UCAM specializes into manufacturing of precision CNC rotary tables, index tables and pallet changing solutions for machine tool applications. These products find applications in industries including automobile, aerospace, medical & orthopaedic, etc.

Universal Robots - Founded in 2005 by three university students in Denmark, Universal Robots was the first company to deliver commercially viable collaborative robots – and transforming companies and entire industries. In India, it works with major automotive OEMs as well as with SMEs.

Warrier Electronics with brand WEFIRE - A group company of Warrier Consortium, it is focused on providing end to end solutions for a wide range of Fire-trace fire detection and suppression systems for micro environment. Besides others, its applications include LT and HT Panels as well as CNC and EDM machines. 

FIVE STARS FOR EFFECTIVE CHAMFERING

We are so accustomed to the presence of chamfers at the edges of various products that sometimes do not think about the importance of these relatively small sloped surfaces.

Chamfering is perhaps the most common operation in metal cutting. It may be found in practically every machining process. Chamfers and – to a lesser degree - fillets feature on almost all external and internal corners of parts. Chamfers are simpler to manufacture than fillets, which explains why they prevail. We are so accustomed to the presence of chamfers at the edges of various products that sometimes do not think about the importance of these relatively small sloped surfaces. Chamfers prevent hand injuries, make assembly easy, reduce stress concentration, and constitute necessary elements of a product design.

Traditionally, chamfering is considered as a simple operation. Usually, it is performed by different cutting tools, which are not very sophisticated. A straight-turning tool or a milling cutter featuring a 45° cutting edge angle or a drill with a 90°-point angle are typical representatives of such tools. At the same time, the application field of rotating chamfering tools is not limited by typical chamfering operations but also includes deburring and beveling, countersinking and undercutting, back chamfering in holes and along edges, undercutting and V-cutting, spot drilling and center drilling. A rotating chamfering tool is extremely versatile and, in an ideal scenario, should be capable of performing all the mentioned machining operations effectively and efficiently. However various objective limitations, primarily dimensional, place serious obstacles in creating this perfect tool and the existing solutions tend to be far from ideal. Understanding the most preferable features of the tool from the customer's point of view is critical for designing modern chamfering tools to overcome these challenges. Especially here, in chamfering, which seems so simple as to be sometimes disregarded, manufacturers look to cutting tool producers for an ultimate simple, productive, cost-effective and versatile solution.

Such an approach resonates with ISCAR's concept of advanced intelligent tools. Following this principle, the company developed various rotating chamfering tools.

MULTI-MASTER, ISCAR's family of assembled

“A ROTATING CHAMFERING TOOL IS EXTREMELY VERSATILE AND, IN AN IDEAL SCENARIO, SHOULD BE CAPABLE OF PERFORMING ALL THE MENTIONED MACHINING OPERATIONS EFFECTIVELY AND EFFICIENTLY.”



Fig 1: MULTI MASTER HCD head

“THE ECONOMICAL TWO-FLUTE MM H HEADS AND FULLY GROUND MULTI-FLUTE MM E HEADS ENSURE EFFECTIVE CHAMFERING AND REMOVING BURRS, PARTICULARLY WHEN APPLIED TO CUTTING RELATIVELY SMALL-SIZE AREAS OR WORKPIECES.”

tools with exchangeable cutting heads, provides several chamfering options. The economical two-flute MM H heads and fully ground multi-flute MM E heads ensure effective chamfering and removing burrs, particularly when applied to cutting relatively small-size areas or workpieces. One of the heads, multi-functional MM HCD (Fig. 1), a real champion due its high popularity, is suitable for efficient machining external and internal chamfers, burrs, center- and spot

drilling, and countersinking. The secret of the head success is an ultimate cutting geometry that features combining negative and positive axial rakes. Together with a positive radial rake, the design principle results in a strong cutting edge and excellent chip former to guarantee a smooth and light cut - even in hard machining conditions - and reliable chip flow.

The dovetail-shape heads (Fig. 2), another MULTI-MASTER product, are available with 45°, 60° and 75° entering angles. They are capable of both generating dovetail groove or slots and perform back chamfering; the multi-tooth

design of the heads ensures high productivity when performing this operation.

Drilling a hole with a chamfer by one single pass, for example in pre-thread

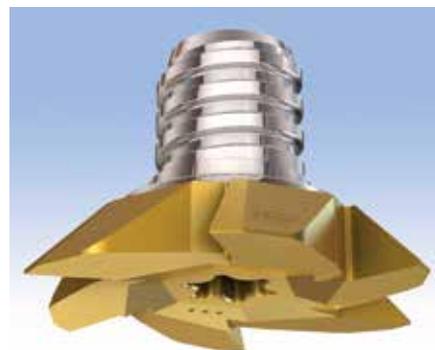


Fig 2: MULTI MASTER GRIT 28K-45D-6T10_head



Fig 3: DCNT combined drill

drilling, is a preferable option for every manufacturer. The operation can be performed by applying a combined hole making tool that combines drilling and countersinking features (Fig. 3). However, an almost endless number of hole depths significantly limits tool capabilities and technically necessitates the manufacture of many special tool versions, each adapted to a specific hole size. This problem

“ONE CHAMFERING TOOL DESIGN IS INTENDED ESPECIALLY FOR SMALL MANUFACTURERS AND MAINTENANCE DEPARTMENTS. THIS IS A VERSATILE CHAMFERING ENDMILL WITH AN ADJUSTABLE CUTTING EDGE ANGLE.”

is overcome by mounting a chamfering ring in the body of a standard ISCAR CHAMDRILL drill, in the desired position according to the drill tip, and thus configure a tool that can perform drilling and chamfering in one operation.

One chamfering tool design is intended especially for small manufacturers and maintenance departments. This is a versatile chamfering endmill with an adjustable cutting edge angle. The endmill



Fig 4: CHAMFMILL cutter with 5 point star insert

features a rotatable cartridge that carries an indexable insert. Due to adjustability of the cutting edge, the tool enables milling chamfers with various angles and eliminates the need for different tools for different chamfer angles. The angle scale, engraved on the cartridge, makes adjusting simple and friendly. Nevertheless, the “cost” of high versatility is a single chamfering edge – the multi-functional adjustable design provides only one cutting tooth.

ISCAR’s recently launched CHAMFMILL family of indexable milling cutters is designed for front and back chamfering (Fig. 4), with applications including machining small outer and inner chamfers and removing burrs. The key element of the family is a pentagonal insert carried by the cutters. The star-like shape features 10 cutting edges: 5 for front and 5 for back chamfering.

Although seemingly simple, the design of effective chamfering tools needs to take into consideration various factors, including whether the chamfers are external or internal, breaking sharp edges and removing burrs, chamfers in holes, productivity, versatility, and more. To the question of which tool would be considered as a five-star product, one could answer that the best chamfering tool is the one that the customer has chosen according to their needs.

WIENERBERGER TO INVEST IN ITS INDIA FACTORY

Wienerberger AG, the € 3.3 bn global player in the construction sector, announces to invest INR 30 crore in their Kunigal factory, located in the Tumkur district of Karnataka. The announcement was made by Christof Domenig, CEO, Wienerberger Building Solutions, Wienerberger AG on the company’s 200th anniversary and the 10th anniversary of operating in India at Wienerberger’s factory in Kunigal. The investment will enable the

company to support its expansion plans including an upgrade and an implementation of new equipment in the factory, converting to natural gas as a fuel and launch of new building solutions that will enable construction practices to be simplified and faster with less resource consumption. The Kunigal factory affirms usage of state-of-the-art technology like Robotics and has extremely energy-efficient manufacturing processes.



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