

THE MACHINIST

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is a hypothetical particle that always moves faster than light. Conceptualized by a team of scientists which includes Indian scientists Mr. V.K. Deshpande and Mr. E.C.G.Sudarshan in 1962.

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DON'T LOOK BACK IN ANGER!

If you ask me, the year 2019 doesn't (even) deserve your anger! Yes, it's been a tough one – maybe the toughest for many – but there's no point in staying stuck with it. Don't let it have any of your energy, or any of your time, or any of your space. Shut the door on this past – for good! What we need to remember is that the India growth story still holds its charm. (And it is far from finished.)

The industry and the economy enjoyed a good spell right before this bad year, and for a fairly long time. In fact, IMF had recently noted that India's rapid economic expansion in recent years has lifted millions of people out of poverty! But a combination of factors led to subdued economic growth in India, IMF had added.

**“TRUE, SOME THINGS HAVE CHANGED, BUT THEY
HAVEN'T DENTED INDIA'S INHERENT POTENTIAL AS AN
ECONOMIC SUPER POWER.”**

What we need to take into account is that the reasons that contributed for the successful period still hold good. We all know that the slowdown hasn't been a domestic matter; it has been a global wave. And while most of the remaining world still struggles (due to lack of the intrinsic economic stimulus that India has), India continues to enjoy the demographic, democratic and domestic dividends that we have always been talking about. True, some things have changed, but they haven't dented India's inherent potential as an economic super power. For me, that holds absolutely true. That's why I refuse to look back in anger. Rather, I am looking ahead with a smile!

Editor & Chief Community Officer

THE MACHINIST
ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

Volume 15 Issue 1 January 2020



Chief Executive Officer **Deepak Lamba**

Chief Financial Officer **Subramaniam S**

Publisher, Print
& Production Controller **Joji Varghese**

Brand Publisher **Rishi Sutrave**
rishi.sutrave@wwm.co.in
+91 9820580009

Editor &
Chief Community Officer **Niranjan Mudholkar**
niranjan.mudholkar@wwm.co.in
+91 9819531819

Deputy Editor **Arpita Saxena**
arpita.saxena@wwm.co.in
+91 9930317046

Associate Art Director **Sanjay Dalvi**
sanjay.dalvi@wwm.co.in

Project Coordinator **Fiona Fernandes**
fiona.fernandes@wwm.co.in

ADVERTISING

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

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

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

Jangam G.
jangam.gangaram@wwm.co.in
+91 9820053063

SUBSCRIPTIONS

subscriptions.rmd@timesgroup.com
022 67427209 / 67427206

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THE MACHINIST
Star List
2020

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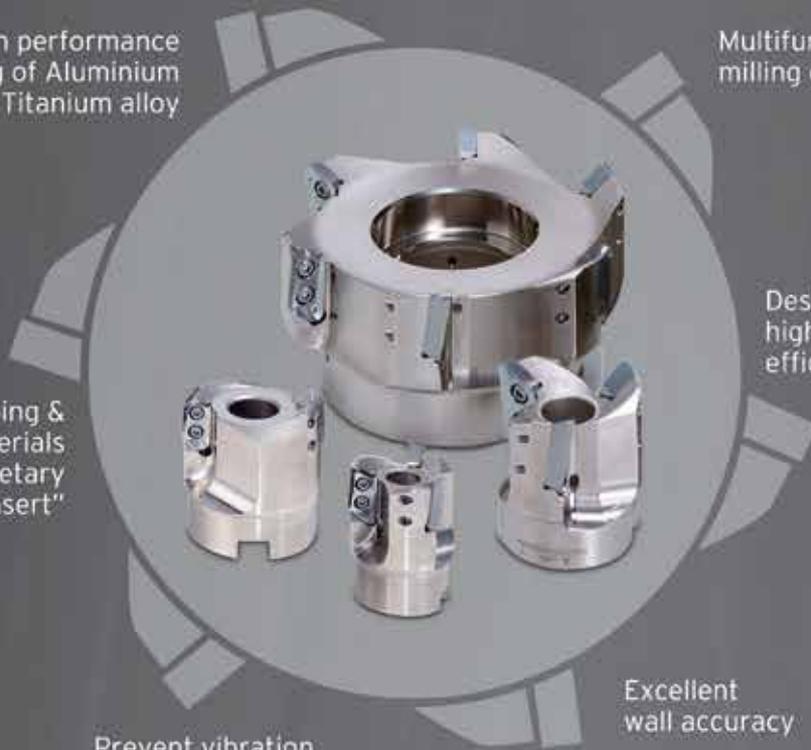
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YOUR GLOBAL CRAFTSMAN STUDIO

PM dedicates five DRDO Young Scientists Labs to the Nation

PRIME MINISTER NARENDRA MODI has dedicated to the nation five Young Scientists Laboratories of Defence Research and Development Organisation (DRDO), in Bengaluru. DRDO Young Scientist Laboratories (DYSLs) are located in five cities viz, Bengaluru, Mumbai, Chennai, Kolkata and Hyderabad. Each lab will work on a key advanced technology of importance to the development of futuristic defence systems viz, Artificial intelligence, Quantum technologies, Cognitive technologies, Asymmetric technologies and Smart materials. Speaking on the occasion, PM Modi said these labs would help in shaping the pattern of research and development in the field of emerging technologies in the country. Prime



Minister asked the scientists to prepare a definite roadmap for the new decade where DRDO should be able to set the direction and pace of scientific research in various fields in India. Addressing the scientists, the PM said India's Missile

programme is one of the outstanding programmes in the world. He also appreciated the Indian Space Programme and air defence systems. Prime Minister said India cannot be left behind in the field of scientific research.

Successful flight test of two Pinaka missiles in salvo mode

AS PART OF THE SERIES of flight trials of Pinaka missile system, two test firings have been conducted by Defence Research and Development Organisation (DRDO). The first trial was conducted on December 19, 2019, wherein one missile was fired at 75-kilometre range. The second trial was successfully conducted from Integrated Test Range, Chandipur, off the Odisha coast. The mission objective of this trial was to test low range, functioning of live warhead along with its proximity initiation and salvo launch. Two Pinaka missiles were launched in salvo mode with 60



seconds interval between two firings. Both the missiles were fired to engage a target located at 20-kilometre range and high accuracy was achieved. The missile was integrated with live warhead with proximity fuse and was tracked by multiple range systems viz. telemetry, radars, Electro-Optical Tracking System (EOTS), which confirmed the text book flight performance.

ISRO and IIA sign MoU for space technology

A MEMORANDUM OF UNDERSTANDING (MOU) between Indian Space Research Organization (ISRO) and Indian Institute of Astrophysics (IIA) for cooperation in the field of Space Situational Awareness and Astrophysics was signed by R. Umamaheswaran, Scientific Secretary, ISRO and Dr. Annapurni Subramaniam, Director, IIA at ISRO Headquarters. MOU is signed as part of ISRO's initiatives to utilize the efforts of Indian Academic Institutions in the space technology. This MoU will pave the way for future collaborations between ISRO and IIA in establishing optical telescope facilities under NETRA Project for space object tracking, studies related to space weather, Asteroids, and other Near Earth Objects (NEO).

NITI Aayog launched SDG India Index

NITI AAYOG has launched the second edition of the Sustainable Development Goals (SDG) India Index, which documents the progress made by India's States and Union Territories towards implementing the 2030 SDG targets. The SDG India Index and Dashboard 2019-20 have been developed in collaboration with the Ministry of Statistics and Programme Implementation (MoSPI), the United Nations in India, and the Global Green Growth Institute. It will be launched by Dr Rajiv Kumar, Vice Chairman, NITI Aayog, in the presence of Members

Dr Ramesh Chand, Dr VK Paul and Dr VK Saraswat, CEO Amitabh Kant, UN Resident Coordinator Renata Lok-Dessallien, MoSPI Secretary and Chief Statistician of India Pravin Srivastava, and NITI Aayog Adviser (SDGs) Sanyukta Samaddar. NITI Aayog has the mandate of overseeing the adoption and monitoring of SDGs at the national and sub-national level. The SDG India Index was the first tool developed by any large country to monitor the progress towards achieving SDGs at the sub-national level.





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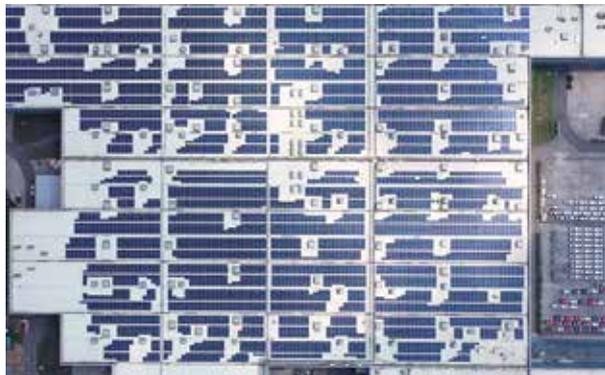
INDUSTRY 4.0 & IoT SOLUTIONS



Škoda Auto Volkswagen India goes solar

ŠKODA AUTO VOLKSWAGEN INDIA PVT LTD (SAVWIPL)

went live with the largest rooftop Solar PV power project in the Auto Industry world-wide and one of India's largest rooftop installation at its manufacturing facility in Chakan, Pune. Strengthening its position as a Green Future Factory, the additional capacity with a capacity of 8.5 MWp will offset between 15 to 20 percent of the plant's annual power requirement. The Solar PV plant has been installed under a develop



operate agreement with Amp Energy India, a global developer of flexible clean

energy infrastructure, under a power purchase agreement for 25 years. Not only does the arrangement reduce the company's dependency on non-renewable energy, the carbon offset achieved through the project is a significant milestone in its goal towards carbon neutrality. By sourcing energy from a renewable source, the Pune plant will reduce over 9000 tons of CO2 emission from its existing production process marking

a significant step toward SAVWIPL's Carbon Neutral goal by 2030.

Elgi Equipments takes over Michigan Air Solutions

ELGI COMPRESSORS USA, Inc., a subsidiary of Elgi Equipments Limited, has announced its acquisition of Michigan Air Solutions, one of the largest independent air compressor distributors in Michigan. This is an important step that Elgi has taken to expand its presence in the US and strengthen its position as a leading player in the global compressed air industry. Michigan Air Solutions was established in 2009 and has served the markets in Michigan's Lower Peninsula with compressed air expertise, a wide range of products. Its product portfolio encompasses all compressed air needs from compressors, dryers, filtration, piping, vacuum pumps, blowers, and more. "At Elgi, we focus on being the customer's preference. World class products with the lowest life cycle cost, best-in-class uptime, robust warranty programs and cost leadership achieved through technology and innovation are just some of the factors contributing to our growth and success in the USA, in a short span of 5 years. Michigan Air Solutions complements Elgi's global growth strategy, and brings significant market reach and scale, that will add further value to our product offerings and go-to-market plans across the region, said Dr. Jairam Varadaraj, MD, Elgi Equipments Ltd. "This acquisition is a continuation of our strategy to invest in select, inorganic opportunities to gain presence in the North American market," said David Puck, President, Elgi North America.

ArcelorMittal and Nippon Steel complete acquisition of Essar Steel

ARCELORMITTAL completed the acquisition of Essar Steel India Limited ('ESIL'), and simultaneously established a joint venture with Nippon Steel Corporation ('Nippon Steel'), called ArcelorMittal Nippon Steel India Limited ('AM/NS India'), which will own and operate ESIL. ArcelorMittal holds 60 per cent of AM/NS India, with Nippon Steel holding the balance. Aditya Mittal, President and CFO of ArcelorMittal, has been appointed Chairman of AM/NS India, and Dilip Oommen has been appointed AM/NS India's CEO. Commenting, Lakshmi Mittal, Chairman and CEO of ArcelorMittal, said: "The acquisition of Essar Steel is an important strategic step for ArcelorMittal. India has long been identified as an attractive market for our company and we have been looking at suitable opportunities to build a meaningful production presence in the country for over a decade. Both India and Essar's appeal are enduring. Essar has sizeable, profitable, well-located operations and the long-term growth potential for the Indian economy and therefore Indian steel demand are well known. The transaction also demonstrates how India benefits from the Insolvency and Bankruptcy Code, a genuinely progressive reform whose positive impact will be felt widely across the Indian economy."



EESL to develop EV charging infrastructure

ENERGY EFFICIENCY SERVICES LIMITED (EESL), a joint venture of four National Public Sector Enterprises under the Ministry of Power, Government of India, has signed a Memorandum of Understanding (MoU) with Hindustan Petroleum Corporation Limited (HPCL), a Maharatna oil and natural gas company for setting up of Public Charging Infrastructure as part of the National Electric Mobility Programme. The two organisations have entered into

a two-year MoU with the objective of synergising business development for set up Public Charging Infrastructure to boost electric mobility in India. The MoU covers collaboration for planning, development and installation of charging installations at suitable locations for two, three, and four-wheeler vehicles. With the installation of public charging stations, the range anxiety of EV owners is expected to reduce, which will increase the adoption of electric mobility.

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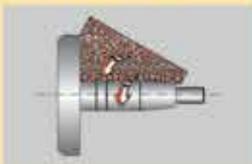


FIG-300 CNC
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FIGE-150 CNC
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AWH-1500 CNC
LONG SHAFT GRINDER



AWH-2000 CNC
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SWH-400 CNC
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Surface Grinding



SG-106 CNC
CREEP FEED GRINDER



SGR-60
ROTARY GRINDER



SG-63
HYDRAULIC / PLC

Automats



A15/25

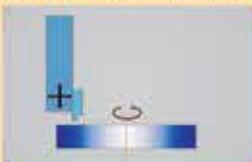


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A list of key events happening between January 2020 to November 2020, both nationally and internationally.

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FEBRUARY
5-9, 2020

Def Expo 2020
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<https://defexpo.gov.in/>

FEBRUARY
7-12, 2020

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

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26-28, 2020

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Guangzhou, China
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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

OCTOBER
8-10, 2020

India Chem 2020
Mumbai
www.indiachem.in

APRIL 22-25, 2020

Die & Mould India
Mumbai, India
<https://www.diemouldindia.org/>

NOVEMBER
23-25, 2020

Wire & Cable India 2020
Mumbai, India
<https://www.wire-india.com/>

**OUR INHOUSE
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EVENTS**



February 2020, Mumbai.



March 2020, Mumbai.

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Krishan Kohli to Head Continental's Hydraulic Brake Systems, India



Continental has recently announced that Krishan Kohli will take over as head of its Gurgaon location, and head of Business Unit Hydraulic Brake Systems in addition to his existing role as Head of Business Unit Vehicle Dynamics (VED) in India. In this new role, he succeeds Thomas Laudes, who will be taking up another leadership role within the company. Kohli brings to the table close to three decades of experience in Automotive & Commercial Vehicle businesses. Speaking on this occasion, Prashanth Doreswamy, Country Head Continental India and Managing Director, Continental Automotive, India, said, "We are delighted to have Krishan Kohli take up this additional role. He comes with a deep understanding of our industry and experience in the business." According to Krishan Kohli, "We are in the business of protecting human lives, reducing accidents, and making roads safer for everyone, regardless of the market, technology or vehicle class. Legislations have played a key role in bringing our technologies to India, and we look forward to supporting India market better. Gurgaon location has been growing; in the last two years we have achieved several production milestones here. We will

continue to focus on supporting our customers better, ensuring quality and operational excellence for business growth."

Kurk Wilks appointed Mann+Hummel President & CEO



The Supervisory Board of Mann+Hummel Verwaltungs GmbH has appointed Kurk Wilks as the new President and CEO as of January 1, 2020. Kurk Wilks succeeds Werner Lieberherr, who left the world market leader for filtration in October by mutual agreement. Kurk Wilks will manage the group together with Executive Vice President and Chief Finance Officer Emese Weissenbacher and Chief Operating Officer Nic Zerbst. Kurk Wilks has been with the company for around 20 years. He has been managing the automotive original equipment business since 2019, and will continue to do so. Kurk Wilks has previously worked in a variety of roles within Mann+Hummel in the USA. The married father of two children joined Mann+Hummel as a sales manager and worked in various other posts at the company before being named President and General Manager Original Equipment. Wilks has a degree in accounting and an MBA from Walsh College in Troy, Michigan. "I've been able to familiarize myself with all the divisions of Mann+Hummel over the past years. I am looking forward to tackling my greatest challenge yet together with Emese Weissenbacher and Nic Zerbst," said Kurk Wilks.

"Thanks to our employees and our strong brands, we are well positioned in all business units. Now we need to build on our market-leading position in the filtration sector. I am grateful to the Supervisory Board for the trust they have placed in me and that I will be responsible for providing continuity for this family business."

Stephanie Coßmann appointed to Lanxess Board of Management



Stephanie Coßmann (46), currently head of the Human Resources group function, has been appointed by the Supervisory Board to become member of the Board of Management and Labor Director. Coßmann, who holds a doctorate in law, will take up her new position on January 1, 2020. She succeeds Rainier van Roessel (62), who will resign from the Board and retire at the end of the year.

Paying tribute to van Roessel's achievements, Chairman of the Supervisory Board Matthias Wolfruber said: "13 years as Labor Director of Lanxess - that speaks for itself! Rainier van Roessel has skillfully helped shape the company over this long period. He has always been focused on objectivity, efficiency and collegial cooperation - both in his dealings with employees and in dialogue with negotiating partners and trade unions. Cooperation with the Supervisory Board was also characterized by fairness, mutual understanding and trust. On behalf of the entire Supervisory Board, I would like to express my sincere thanks to Mr. van Roessel and wish him all the best for his well-deserved retirement."

Rainier van Roessel joined Bayer in 1988 after completing his business studies and doctorate. In 2004, when Lanxess was established, he became head of the Rubber Chemicals business unit. In addition to this role, he was appointed Managing Director of Lanxess N.V. in Antwerp, Belgium, in 2006. Since 2007, van Roessel has been a member of the Board of Management and Labor Director of Lanxess AG.



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Covestro India appoints Anand Srinivasan as new MD



Covestro India has announced the appointment of Anand Srinivasan, who was the Head of Polycarbonates, as its new Managing Director. Srinivasan shouldered this role, effective 18th December 2019, from Ajay Durrani who served as the Managing Director of Covestro India for six years. Durrani has been a part of Covestro for over two decades successfully handling his responsibilities at various positions. Anand Srinivasan has been working closely with Durrani to allow a smooth transition of business ensuring continuity of leadership. After moving to India from USA, Anand took over as the Plant Manager of Ankleshwar facility and went on to head the Supply Chain Center in Mumbai. Commenting on the appointment, Stephan Rosenthal, Head of Country Platform Management, Covestro AG said, "India is one of the growing markets in the world and we are happy to have Anand as the Managing Director of Covestro India. He understands the vision of the company intrinsically and we are confident that he will effectively lead in his new role." "Together with our team and partners our focus will be to strengthen our partnerships and build new relationships for future growth. We are committed to build our product portfolio and take initiatives that touch many lives and make the world a brighter place," said Anand Srinivasan, Managing Director, Covestro (India) Private Limited.

Nils Jaeger is President Volvo Autonomous Solutions



Nils Jaeger, currently President Region EMEA, Volvo Financial Services, has been appointed President of the new Volvo Group business area Volvo Autonomous Solutions. He will report to the Volvo Group President and CEO Martin Lundstedt and be a member of the Group management team. Born in 1969, Nils Jaeger has served as President Region EMEA (Europe, Middle East and Africa), Volvo Financial Services since 2014. Before joining the Volvo Group he has held several leading positions at John Deere. As the President of Volvo Autonomous Solutions Nils Jaeger will lead a new business area responsible for further accelerating the development, commercialization and sales of autonomous transport solutions from the Volvo Group. Autonomous transport solutions, based on self-driving and connectivity technologies are well-suited for applications where there is a need to move large volumes of goods and material on pre-defined routes, in repetitive flows. In such situations, autonomous transport solutions can create value for customers by contributing to improved flexibility, delivery precision and productivity. Volvo Autonomous Solutions will constitute a new business area as of January 1, 2020, at which time Nils Jaeger will take up the position as President and Head of

Solutions. The recruitment process for his successor will now commence.

Markus Kimpel appointed new Group CFO



Markus Kimpel has been appointed new CFO of the Romaco Group. He succeeds Carsten Strenger, who will be leaving the company at his own request at the end of 2019.

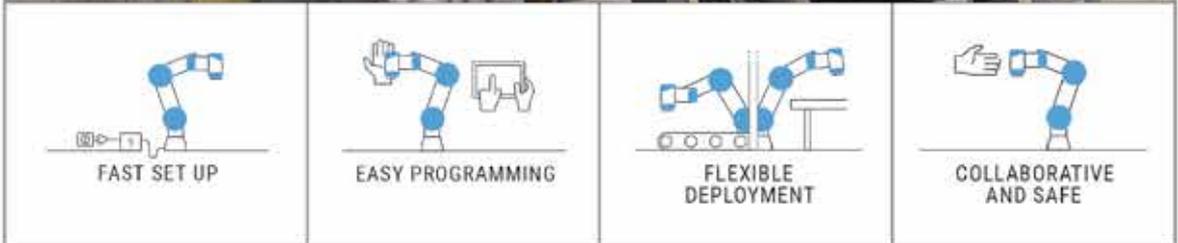
Romaco Holding GmbH has just announced the appointment of Markus Kimpel as the new Group CFO as well as Managing Director of Romaco Pharmatechnik GmbH, the manufacturing facility in Karlsruhe (Germany). He will be taking over both positions from Carsten Strenger, who is leaving the company at his own request at the end of 2019. Mr. Kimpel will in future lead the international Romaco Group's management team together with Romaco CEO Jörg Pieper. He will simultaneously work alongside Markus Regner as joint Managing Director of Romaco Pharmatechnik GmbH. Mr. Kimpel will have responsibility for Finance, Controlling, IT and Human Resources both as CFO and in his role as Managing Director of Romaco Pharmatechnik.

In the course of a career spanning nearly 25 years, Markus Kimpel has accumulated extensive management experience in the construction and automotive supplies industries as well as in the engineering sector. A native of Frankfurt, he holds a degree in Business Administration & Mechanical Engineering and has served in various management positions including Managing Director, CFO, Director Finance and Interim Plant Manager. Most recently, he was Managing Director & CFO at the Aalen-based Alfiing Special Machine Group as well as Group CFO at aluplast in Karlsruhe.



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After deploying the UR10 cobot from Universal Robots, SME Craft and Technik Industries (CATI), Pune, dramatically improved production efficiency. Being an SME, most manufacturing tasks at CATI were handled manually but the company was facing problems finding labor, and was also looking for a way to reduce the number of customer rejections for faulty components. Safety was also a key factor, as many operators work on the shop floor and the company did not want to seclude an area for robotic operations. As an SME that exports 70% of its products, Universal Robots provided the perfect solution with cobots that enabled Human Robot Collaboration. With a single UR10 installed for CNC machine tending and automatic inspection, CATI managed to skyrocket productivity by 20% and completely eradicate rejections.



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Pamela Cohn to lead Hyundai's UAM Division



Hyundai Motor Group (the Group) has appointed Pamela Cohn as vice president to lead the Group's Global Strategy and Operations at its Urban Air Mobility (UAM) Division.

In the role, Cohn, a pioneering force in establishing the UAM market, will apply her industry expertise and leadership experience from aviation consultancy firm Ascension Global to lead UAM Division's global commercial and policy efforts.

"We are fortunate to have Pamela join our leadership team," said Dr. Jaiwon Shin, Executive Vice President and Head of UAM Division of the Group. "With her strong reputation in the industry, first-hand knowledge of operational, strategic and policy opportunities in the UAM space, and track record of delivering results in traditional and future aviation, we are excited for her to scale our global footprint." Cohn brings with her a team of UAM experts from Ascension Global with extensive experience serving a range of clients across the industry on their toughest strategy, technology and policy challenges.

Tae-Jin Park to lead Kia Motors India sales



Kia Motors India (KMI) has announced the appointment of Tae-Jin Park as Executive Director & Chief Sales Officer, with immediate effect. Park will be responsible for driving Kia Motors' Sales, Marketing, Service and Network Development in the Indian market.

Park has replaced Yong S. Kim, who has played an instrumental role in establishing Kia in India and making it a household name. Kim has led the establishment of the widest network for a new automobile brand in India. He has contributed to positioning the brand amongst the Top 5 automobile manufacturers in just four months of operations. Kim is moving back to Kia Motors Corporation Head Quarters in Seoul.

Park will play a leading role in ensuring Kia maintains the positive momentum it has gained in the Indian Market. Park, brings over 30 years' experience in the automotive industry to his new role.

Gilles Le Borgne joins Groupe Renault



As of January 6th, 2020, Gilles Le Borgne joins Groupe Renault as Executive Vice-President Engineering and a member of the Group Executive Committee (CEG). He will report to Clotilde Delbos, Chief Executive Officer for an interim period.

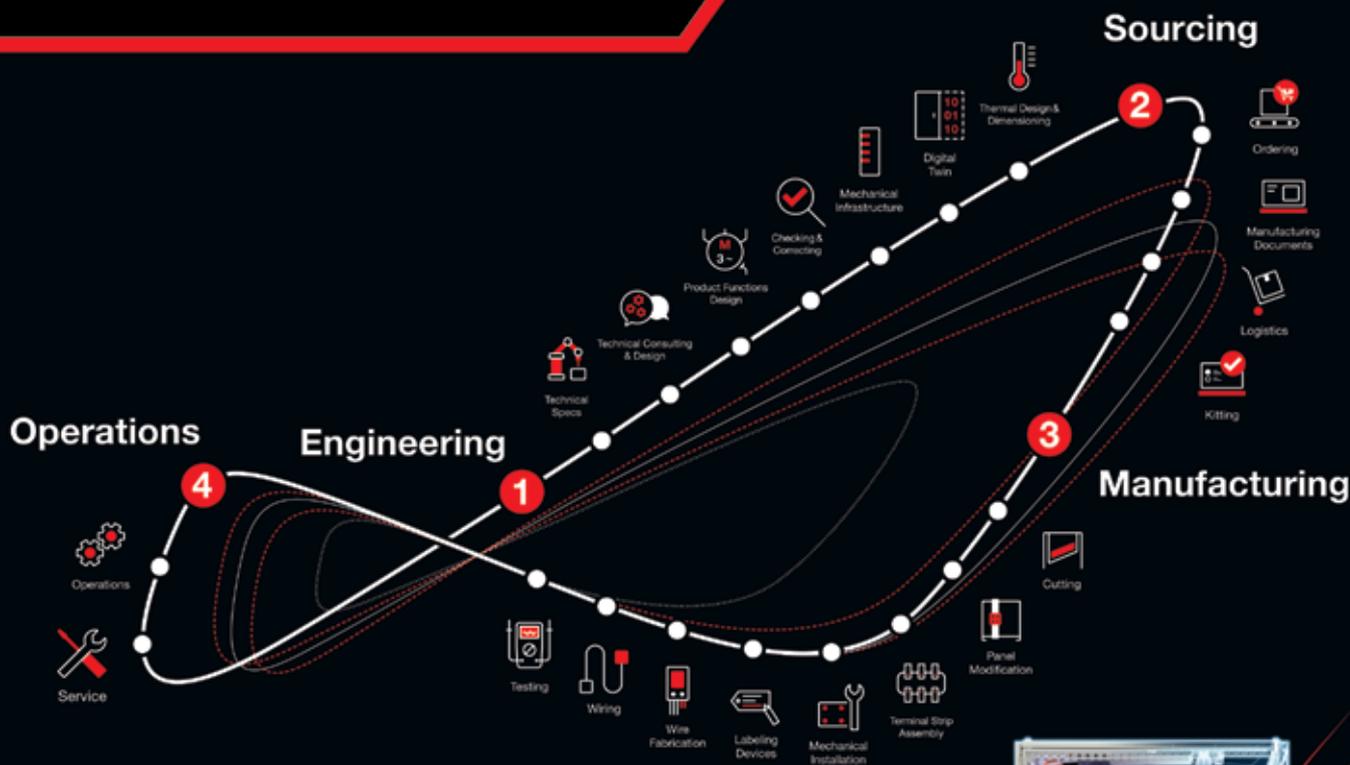
Gaspar Gascon Abellan has decided to leave the company to pursue personal projects. Clotilde Delbos paid tribute to the commitment and career of Gaspar Gascon Abellan: For thirty years, Gaspar has been involved in Renault's engineering teams and, at its head, has significantly developed powertrain engineering and contributed to the design of successful vehicles. The arrival of Gilles Le Borgne as head of the Group's product engineering teams will accelerate the transformation of our engineering and effectively consolidate our R&D in a context of high technological stakes and rapidly changing environmental regulations in Europe and around the world. His extensive experience will also help develop and optimize operational synergies.

Alok Verma takes charge as Director (HR) at HAL



Alok Verma took over as Director (Human Resources) of HAL recently. Prior to this, he was General Manager (HR) at the Corporate Office. "In these challenging times my focus would be on developing the HR function as a strategic contributor to business outcomes with new initiatives", he says. His endeavor has been to develop systems that seek to create a learning organization and a performance driven culture. Verma joined HAL in 2006 after serving National Fertilizers Limited for 19 years. A post-graduate in Labor and Social Work (LSW), he also holds Law degree and PG diploma in computer applications. He has vast and diverse experience of over three decades in the HR function.

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Piaggio launches Ape' Elektrik

Piaggio Vehicles Pvt Ltd (PVPL) launched its new electric range, Ape' Elektrik, and marked its entry into the electric vehicle segment. Ape' Elektrik will have full range of electric vehicles across various categories with Ape' E-City being the first product launched under the Ape' Elektrik range. Ape' E-City is the first 3-wheeler to have smart swappable batteries. The swappable battery concept is being brought in association with Sun mobility, a leader in electric mobility battery technology. Sun-Mobility will provide a Quick Interchange Station network. Customers can also experience an app enabled eco-system to check battery charge, recharge, locate swap stations etc. Speaking on the occasion, Diego Graffi, MD & CEO of Piaggio Vehicles Pvt. Ltd. said, "For Swappable technology, our partnership with Sun Mobility will enable customers to experience a very innovative,



smart and unique swappable smart battery eco-system in India. We have faith that with the governments focus on EVs in the 3 wheeler category and Piaggio's own vision of developing innovative EV solutions, mass adoption of EVs is a near reality."

Jaguar Land Rover acquires ATP specialist Bowler



Jaguar Land Rover has acquired Bowler, the UK-based manufacturer of all-terrain performance cars, parts and rally raid vehicles. Founded in 1985, Bowler pioneered the production of dedicated off-road competition cars in the UK and has achieved success in international rally raid events. The expertise Bowler has amassed for all-terrain vehicle dynamics, low-volume production techniques, and proving the durability of components under extreme conditions, is highly sought-after. Michael van der Sande, Managing Director, Jaguar Land Rover Special Vehicle Operations, said: "For almost 35 years the Bowler name has stood for innovation and success, with a reputation forged by its participation in the world's toughest off-road motorsport competitions. It's exciting that we're now in a position to participate in and lead the Bowler brand's future as part of Jaguar Land Rover. "At Special Vehicle Operations we are all eager to start working with our new colleagues at Bowler. Adding the Bowler team's skills and experience to those of SV, Vehicle Personalisation and Classic is a key step in our strategy to create an exciting and diverse portfolio of products and businesses within Special Vehicle Operations.

Ashok Leyland to use ABB's flash-charging technology

Ashok Leyland and ABB Power Products and Systems India Limited have signed a Memorandum of Understanding (MoU) in the public e-mobility space, to expand the eco-system for efficient and greener electric bus transportation systems in India. The MoU outlines a partnership to develop a pilot electric bus based on ABB's innovative flash-charge technology, TOSA, which tops up the battery in just seconds while passengers get on and off the bus. This avoids the need to take the vehicle out of service for recharging every few hours or having a replacement bus ready, thus minimizing the size of the fleet while increasing passenger carrying capacity.



Dr. N Saravanan, Chief Technology Officer, Ashok Leyland, said, "In this journey, to stay competitive in our Domestic and Global markets, we are joining hands with ABB to use their world-renowned TOSA technology on our e-buses to take forward our vision of expanding in the EV space."

Israeli startup TriEye collaborates with Porsche

Israeli startup TriEye, whose Short-Wave Infra-Red (SWIR) sensing technology enhances visibility in adverse weather and night-time conditions, announced a collaboration with the German sports car manufacturer Porsche, to further improve visibility and performance of Advanced Driver Assistance Systems (ADAS) and Autonomous Vehicles (AV).

Car manufacturers have recognized the need to integrate advanced sensing solutions. Even when combining several sensing solutions such as radar, lidar and standard cameras, it is not always possible to accurately detect and identify all objects on the road when visibility is limited. To address this challenge Porsche has identified TriEye's CMOS-based SWIR camera as an important component to achieve better visibility capabilities.



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THE MACHINIST
Star List
2020

The Machinist Star List was created in 2015 with the aim of recognising the iconic leaders of Indian manufacturing. This year's list spans captains of diverse industry sectors like automotive, farm equipment, construction equipment, railways and beyond. In fact, some of them represent more than one industry segment. What brings them together is their sterling performance in 2019 and the even greater promise that they hold for 2020. What also binds them is their belief in excellence and their astonishing vision. Of course, there are many other great leaders out there. But this is The Machinist Star List 2020! Elite and Exclusive!!



Ashwath Ram



Gurpratap Boparai



**Nagesh
Basavanhalli**



Rajesh Jejurikar



Subir Chowdhury



Dr. Sujatha Narayan



Vipin Sondhi



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By Niranjan Mudholkar

Ashwath Ram has taken charge at Cummins India at a time when the cycle of the business has been trending downwards. But he remains unfazed by the situation. While recognising the cyclical nature of the businesses that he runs, he is confident that market is likely to bounce back soon. More importantly, he points out that Cummins has used every downcycle to become stronger, to gain market share and to come out of it better than earlier cycle, he says. This downcycle has not been any different.

And although he has assumed the role of MD recently, he is not new to Cummins. He understands the organisation, its culture, its strengths and weaknesses quite well. He first joined Cummins in Columbus, Indiana, USA in 1991 and over the last 28 years has led business unit operations as well as key strategic transformations for the Engine Business and Power Systems in India. He also serves as Managing Director of Tata Cummins and EBU India General Manager, overseeing the Cummins joint venture and building relationships with large OEM partners, customers and suppliers.

His confidence stems from the fact that Cummins has been investing in India for decades. "We are using the downturn to optimise those investments, and then capitalise by getting the products out before time and better than what we think competition is capable of. And we will use that opportunity to gain market share and be and be even stronger than before," he says.



ASHWATH RAM

Managing Director- Cummins India

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GURPRATAP BOPARAI

Managing Director,
 Škoda Auto Volkswagen India Pvt Ltd.

By Niranjan Mudholkar

The Volkswagen Group is investing one billion euros into the implementation of the 'India 2.0' project. The project took off in 2019 and will run through 2021. And the man in charge of this massive project is Gurpratap Boparai, Managing Director, Škoda Auto Volkswagen India Pvt Ltd. "This investment is purely on upgradation of the factory here as well as for supporting our suppliers to make new cars. In addition to this amount, there is another roughly 300 million dollars that we are spending on the development of the new cars, some of which will happen in Europe and the rest here in India," he says, explaining the scope of the project. Boparai who comes with a solid background in manufacturing and engi-

"TODAY, WE DO NOT HAVE A MEDIUM SIZED SUV AND THAT'S A GROWING SEGMENT, SO WE WILL HAVE A COUPLE OF PRODUCTS IN THAT SEGMENT."

neering, is also unifying the Volkswagen Group in India under one legal entity. "This would obviously allow us to leverage our synergies in a much better than we have done it before." The company is putting the Skoda brand at the forefront as part of this Project as it believes that Skoda is best placed to address requirements of the Indian market and of the Indian customers. With regards to the product strategy, Boparai knows that the company needs to get into segments where there are volumes. "Today, we do not have a medium sized SUV and that's a growing segment, so we will have a couple of products in that segment. We will start with two cars each for Skoda and Volkswagen and then we keep adding," he says. It's going to be an uphill task for Boparai and he knows it. "We want to establish ourselves as a player that can bring in a lot of cars and not just a few cars and then stop and wait and then start again. That's something that we don't want to repeat because that really will not help us," he says. 



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NAGESH BASAVANHALLI

MD & CEO of
Greaves Cotton Limited

By Niranjan Mudholkar

It is not easy to find many CEOs walking into 2020 having delivered robust profitability in 2019! Nagesh Basavanhalli is certainly one such industry leader who has delivered on the numbers game in what will go down as one of the worst years for the industry in recent times. Greaves Cotton Limited reported a four percent growth in revenue for Q1FY20 despite the industry slowdown. And it has been growing consistently each quarter with a focus on driving business opportunities for various sectors. Little wonder that he has been re-appointed as MD and CEO of Greaves Cotton Limited for a period of five years with effect from September 27, 2019 to September 26, 2024.

“WE ARE NOW CAREFULLY DIVERSIFYING INTO BOTH - AUTOMOTIVE AND NON-AUTOMOTIVE INDUSTRIAL SECTORS.”

Speaking about the growth momentum despite tough market conditions, Basavanhalli says that Greaves has been optimistically cautious about the overall market scenario and expects positive movement banking on its diversification strategy and focus on new business. Greaves' increased stake in Ampere Electric is a testimony to Basavanhalli's diversification strategy.

He understands that today it is sensible to look at the EV space going forward with the automotive industry evolving at a fast pace and government policies changing. Elaborating on this, he says: “We are now carefully diversifying into both - automotive and non-automotive industrial sectors such as agriculture, construction etc. thus exploiting the company's full potential to achieve better business results. This will help us tap into the B2B and B2C segment.”





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RAJESH JEJURIKAR

President of the Farm Equipment Sector and a Member of the Group Executive Board at Mahindra & Mahindra Ltd.

By Niranjan Mudholkar

Rajesh Jejurikar today heads the Farm Equipment Sector (FES) at Mahindra & Mahindra Ltd.

He also oversees Swaraj Engines Limited and the Mahindra Two Wheelers businesses. With the recent announcement of restructuring in the Group, Rajesh Jejurikar will join the M&M Board as Executive Director (Auto and Farm Sectors) on April 1, 2020, with direct operational responsibility and accountability for the Sectors.

He has been spearheading the FES since 2013 with a lot of spirit and energy. The tractor business with its two brands – Mahindra & Swaraj, is the leading player in the Indian tractor market. With agriculture increasingly becoming technology-intensive and with a focus on globalisation, the Mahindra

“WE WERE BUILDING A STRATEGY TO NOT JUST SELL TRACTORS AND FARM MACHINERY, BUT TO SELL A SOLUTION.”

Group has been investing in future ready technologies to provide complete solutions to the global farming community. Jejurikar is obviously playing a key role in driving acquiring new technology and in enhancing the segment's global footprint through acquisitions in geographies as wide as Japan, Finland and Turkey.

About two years ago, the Group launched Farming 3.0 under the lead-

ership of Jejurikar, and he has pushed it hard to further consolidate Mahindra's leadership position in the segment. “When we started thinking about Farming 3.0, we were building a strategy to not just sell tractors and farm machinery, but to sell a solution, which helps our customers achieve an outcome. It is about traversing our business from being a manufacturing company, to one that will help the customer achieve outcomes. It means defining the boundary of outcomes, through improvement in yield and productivity,” he explains.

Jejurikar, who comes with a colourful experience across diverse sectors like packaged goods, advertising, media, automotive and farm equipment, is an MBA from the S.P. Jain Institute of Management. 

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SUBIR CHOWDHURY

MD & CEO, JCB India Ltd

By Niranjan Mudholkar

When Vipin Sondhi decided to move on to Ashok Leyland after a stint of 13 years, JCB India turned to Subir Chowdhury. And quite rightly so! Chowdhury has been with JCB India since 2006 and has played a huge role in building the manufacturing and engineering power house that JCB India is known to be. When Chowdhury started his journey with the organisation, JCB India had only one factory. Today, it has five factories including the world's largest for backhoe loaders in Delhi-NCR. And the sixth factory is coming up in Vadodara, Gujarat.

Well, if you happen to see a backhoe loader working in your neighbourhood,

"IN SPITE OF THE CURRENT SCENARIO, THE LONG-TERM VISION LOOKS POSITIVE."

don't be surprised if the local authorities simply describe it as JCB – irrespective of the brand or model! That's the kind of brand equity that JCB machines hold in India. As Chowdhury says: "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."

Like the rest of the economy, the

construction equipment sector too has seen a very poor 2019. So, Chowdhury has surely taken charge at a difficult time. But he is looking at the brighter side: "In spite of the current scenario, the long-term vision looks positive." And Chowdhury has a good enough reason to be hopeful. He understands that infrastructure is a key element in India's vision of becoming a five trillion US\$ economy by 2024 and thus, roads and highways must continue to be one of the key growth drivers for the construction equipment industry. "With the Government committed to building infrastructure, importantly in the rural economy, there will be opportunities for growth in the future," he says. 

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By Niranjan Mudholkar

This is the first time that a woman leader has been included in The Machinist Star List! And Dr. Sujatha Narayan deserves every bit of recognition and success. Wabtec Corporation, the Company that she heads in India, has been in operation in this market for over two decades. “We have fuelled strong growth over the last three years through expansion of our footprint, strategic partnerships and global acquisitions, she says. Two major acquisitions have catapulted Wabtec into one of the largest rolling stock and rail equipment manufacturers globally and in India - Faiveley Transport and GE Transportation. This also presents a task. The rapid integration of the different organizations under one Wabtec umbrella to

“OUR BUSINESS THIS FISCAL HAS BEEN VERY ENCOURAGING, AND WE HAVE SEEN REVENUE GROWTH BEYOND OUR PROJECTIONS.”

leverage the scale and portfolio is a key challenge and is essential to drive synergies and operational efficiencies. “We are bringing together employees from very different companies and different levels of the product chain and uniting them with a common vision – this is the key imperative for us for the near future,” she explains.

While ensuring that, Narayan is also strengthening the organisation from the manufacturing and engineering perspectives in view of the ever-increasing competition in the railways segment. A strong proponent of Make in India, Narayan is also building Wabtec India’s position as an export hub. The results have been obvious. “Our business this fiscal has been very encouraging, and we have seen revenue growth beyond our projections in the products segment for Indian Railways and also witnessed significant growth on the Services side of the business due to higher installed base and strong customer engagement. The metro projects business has also been stable,” she shares. 

**DR. SUJATHA
NARAYAN**

Regional GM, Wabtec Corporation in India & MD, Faiveley Transport Rail Technologies India Limited, a Wabtec company

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THE MACHINIST
Star List
2020

By Niranjan Mudholkar

Having completed an amazing stint of 13 years with JCB India, Vipin Sondhi's new ride with Ashok Leyland is going to be full of expectations. As the Managing Director and Chief Executive Officer of Ashok Leyland, Sondhi is now in charge of one of the largest commercial vehicles, trucks and bus manufacturers in the world. Technological, regulatory and market disruptions have ushered in a challenging and yet exciting transition for Ashok Leyland. And with a rich career graph spanning three decades across top manufacturing and engineering brands like JCB, Honda, Tata Steel and Tecumseh, Sondhi is definitely the right man in the right place.

Sondhi is well aware that the year 2020 is going to be a make or break year for the automotive industry when he says: "The year 2020 is a landmark year, not only for Ashok Leyland but also for the larger automotive industry." The obvious reference is to the changeover from BS-IV to BS-VI emission norms. "Our focus will be to transition smoothly and introduce our unique Modular Platform for the Heavy Vehicles, along with the Phoenix platform for Light Vehicles - both will be a game changer in our industry. These steps along with our foray into international markets will push us closer to our long-term Vision to rank amongst the Top 10 Global CV manufacturers," he remarks.

Sondhi, an alumnus of IIM-Ahmedabad and IIT-New Delhi, certainly has a task on his hand. But he also has a strong and proven track record as a leader and a passionate hands-on professional. Given his positive leadership and industry-oriented focus, his journey with Ashok Leyland will surely be remarkable for the organisation as well as for the industry. 



VIPIN SONDHI

MD & CEO, Ashok Leyland Limited

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READY FOR THE GROWTH CYCLE

Cummins has invested heavily in India to build scale and capacity. So, it is ready for the next growth cycle, says **Ashwath Ram**, Managing Director- Cummins India and Tata Cummins Pvt. Ltd., Vice President- India Area Business Organization, Cummins



By Niranjan Mudholkar



You've taken charge as the MD of Cummins recently. How's been the journey so far and how do you want to take it head?

At the time I have taken over, we have already started to see that the cycle of the business is trending downwards. This business that we are in, is a cyclical business. We see the cycles vary in the different market segments, but it's a highly cyclical business. And we have a few years up and then a few years down, so we are used to dealing with cycles. Cummins actually has been very successful in dealing with these cycles. As a matter of fact, we have used every downcycle to become stronger, to gain market share and to come out of it better than earlier cycle. And this is true, not only of Cummins in India but of Cummins around the world.

So, we are working on doing what is right for the business in terms of getting better at cost management and introducing the right products. In fact, we are getting ready for some very significant product launches.

Also, we have a very strong balance sheet. For decades, we have been investing money in India. If you see the kinds of investments that we have made in the last ten years, it's over a billion dollars into capability and capacity in India. And we are going to use the downturn to optimise those investments, and then capitalise by getting the products out before time and better than what we think competition is capable of. And we will use that opportunity to gain market share and be and be even stronger than before.

//

We are going to use the downturn to optimise the investments we have made, and then capitalise by getting the products out before time and better than what we think competition is capable of.

We also have this shift from BSIV to BXVI happening in the automotive industry. How has that impacted Cummins?

As far as Cummins is concerned globally, tighter and tougher emissions are what Cummins has pushed for on its own. The reason? Cummins is the technology leader as far as clean diesel, clean fuels and performance in diesel technology is concerned. And every time the emission norms get tighter and tougher, it represents an opportunity for Cummins to gain market share, to add more value, and to actually grow.

We have seen that not just in this market, but in every other market around the world that the more tighter emissions get, it gives us an opportunity to introduce technologies that we have already proven and tested as the global market leaders. To give you an example, last year Cummins produced 1.3 million diesel engines and our next largest competitor produced less than 900,000 engines. So, we have a huge scale and technology advantage.

We already introduced some of these technologies during BSIV and they have been working very well. And now we are leveraging that same technology to get into BSVI. We have already put in capacities; these are technologies which are tested and running around the world. Over one million engines of Cummins, which are BSVI plus technologies have been running in the field around the world. We have mountains of data available on how to optimise, how to do it better and how to make it run. And now we are fine tuning it for the India requirements. And I am really confident that we will use this opportunity to again grow further to gain more market share and to serve more customers than we are currently.

Besides automotive, which are the key sectors that

Cummins in India

Seven legal entities

Revenue – Rs.16,200+ crore

10,000+ employees across
21 plants

Workforce Demographic -
34 percent Women,
66 percent Men



Cummins is focusing in India?

Cummins is a market leader in almost every sector at play. So, in on-highway, four out of ten trucks which are sold in India have a Cummins engine on it. Our goal is to want to take it to five and six. In the off-highway space, we have markets such as construction equipment. For example, in the excavator market, we have seven out of ten excavators in the country are powered with Cummins products.

We play a huge part in the power generation market. That's the market where we not only sell engines, but we also sell the entire gen-set and the Cummins brand is a well-known brand around the country. There

Cummins Megasite at Phaltan



A 225-acre campus in Phaltan, Maharashtra, that consolidates all manufacturing operations in one location; benefiting from synergies of co-location. The megasite has eight world class factories that employ more than 4500 employees. It also has common amenities like two state-of-the-art Training Centres, a gymnasium, a crèche and a Health Centre.

The eight facilities include:

Two manufacturing facilities for Mid-range mechanical and electronic engines.

An engine re-build centre.

A reconditioning facility for engines and components.

A parts distribution centre.

A generator set plant.

A high horsepower engine plant.

A Fuel System and Aftertreatment plant.



Every time the emission norms get tighter and tougher, it represents an opportunity for Cummins to gain market share, to add more value, and to actually grow.

are certain segments where we have over 70 percent or 80 percent market share. But overall, we have something like 35 percent to 40 percent market share.

In the rail market, which is growing very aggressively in India, we power the power cars. So, historically all the diesel vehicles never used to have power cars in them. India is trying to put air conditioning on every train and also to improve the functioning of the trains. We again have about 80 percent share in that market.

Then, we have the marine market and the defence market. Again, Cummins has very strong share in those segments as well. So, if you look at every market segment where diesel engine technology is required, Cummins has a dominant share.

There's a huge focus on e-mobility not just in India, but also globally. How do you look at that development?

Cummins has been investing quite significantly in automotive segment. Today, you need to look at automotive in the context of CASE, which stands for Connectivity, Automation, Subscription, and Electrification. We have been looking at all four aspects of it.

As companies are spending more money on certain technologies, they can't afford to spend money on all technologies. Whereas Cummins is a very focused power train supplier. One, it gives us an opportunity to consolidate and grow even further.

As people spend more money on other technologies, our core business is growing even faster.

But we are leveraging the growth in the powertrain to also invest in the digital space and in the e-mobility space. So, Cummins has since early 2016-17 been investing in that space. We have acquired quite a few companies, a few battery manufacturers, and battery technology manufacturers. We bought a battery company which is the largest supplier of batteries into the forklift market.

We are also converting the company from just an engine company to a complete powertrain company. And by doing that, we are able to bring much better TCO improvement to the vehicle manufacturers.

As you move from one technology to another, the powertrain still is a powertrain. You still need to understand how the vehicle works. So, we are also buying a lot of companies which we do the integration between the hardware and software to make them work better

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together. So, we have also been investing into and buying many of those technologies.

Actually, the battery represents a very small portion of the e-mobility market and there are multiple paths to electrification. We also have presence in hybrid technologies, where instead of using a very large engine, you use a much smaller engine that burns less fuel. Then, you combine that with batteries and power the vehicle. Again, you need to do a lot of integration.



We are using the growth from the existing core markets to fund the research and development into some of the new markets. So, we feel we are very well placed for future growth.

Then, you have what we call the alternate fuels. So, all of those technologies also play a big part in the journey towards the eventual hundred percent electrification.

One big direction where the market is moving is the fuel cell market, which is the hydrogen market as we as we call it. Recently, Cummins acquired a large player in hydrogen technology, called Hydrogenics. So, significant play is happening on every aspect.

And we are using the growth from the existing core markets to fund the research and development into some of these new markets. So, we feel we are very well placed for future growth. For example, India is a lagging market as far as electrification is concerned in terms of availability of the right kind of infrastructure and the right kind of clean energy. But Cummins is already in place for India's electrification drive. Our tech centres and our engineering centres are already doing R&D work not only for India but also for markets around the world. We will be ready when the time is right.



When times are bad, we actually look to use our investments, our capabilities, and our technology leadership to actually grow market share.

How has been the business in terms of numbers for Cummins?

The year 2018 was a record year. So, as compared to 2018, 2019 has been much weaker. Cummins in India has multiple entities. The largest business which Cummins runs is automotive. And we are also highly dependent on infrastructure. If you look at any of our other markets like construction, power generation, compressor and so on, all these markets are dependent on infrastructure development. And there has been a slowdown in the infrastructure spending due to various factors. I think everyone's aware of those factors. Now the infrastructure spending will slowly start. So, in the long term, we are all optimistic that the India growth story is there. It's just a short term that we are concerned about.

Do you believe that 2020 will be a better year?

The government needs to ensure that infrastructure spending needs to continue the way it was in 2018. And if that happens, I think all the other things will trigger off each other. I am a great optimist as far as India is concerned.

As I said, 2018 was a record year for Cummins, which means all markets were up. And that's how we became a \$25 billion company. So, when all markets were up simultaneously, there's very high likelihood that sometime all markets are going to be down. But fundamentally, Cummins is very, very strong company. We have already made huge investments in India and we have a very, very strong balance sheet. We are a debt free company and we have cash in hand. When times are bad, we actually look to use our investments, our capabilities, and our technology leadership to actually grow market share. I am optimistic that we will be able to do that. With the tightening emissions and the technology becoming more and more difficult, our investments in people and in technology in India will pay off. For some of these BSVI products, we are going to be at over 90 percent localization. Nobody else in the market has that kind of scale and capacity. For example, the entire truck market in India last year was 450,000 vehicles in the medium and heavy commercial space. Cummins alone has invested capacity of 300,000 engines. So, we have invested very heavily in India and as I said, we have the scale and capacity. When the next cycle comes, when the next growth spurt happens, we are already ready. And that gives me a lot of confidence. 

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By Rosemary Joshy

THE FUTURE COCKPIT – HOLISTIC HUMAN MACHINE INTERFACE

Today's cockpit must at least offer seamless integration of smartphones to the cockpit to provide driver and passenger the connected experience. The paradigm shift in cockpit of the future is when the driver becomes a passenger.



The ACES – ‘Automated, Connected, Electrified and Shared’ shaping the future of mobility is transforming the traditional cockpit into holistic Human Machine Interface that caters to both driver and passenger by providing driver information and entertainment. The ultimate goal is to make mobility safe, clean, comfortable and entertaining. The traditional cockpit focused on providing limited driver information like vehicle health status and driving parameters. Today's cockpit must at least offer seamless integration of smartphones to the cockpit to provide driver and passenger the connected experience. The paradigm shift in cockpit of the future is when the driver becomes a passenger. The future cockpit must guarantee that it is able to alert the driver to take back control of driving and at the same time entertain the driver during the autonomous driving mode. In this scenario, the user experience paves the way to technologies like integrated displays, touch display with active haptic feedback, 3D display, Augmented reality Heads-up display, etc.

A PROBABLE SCENARIO

Let us imagine a situation involving cockpit of the fu-

ture, businesswoman Rosie is with her family watching a movie on their couch, she realizes next day she has to go on a business trip. She enters the address on her mobile phone. She is ready for work the next day, enters her car, the navigation application already has set her destination. The car navigates her to the business destination. The car reminds her about a calendar entry for a teleconference which she dials in via voice command. She is tired, and the car pops up a message ‘Time for coffee break’ and suggests her favourite coffee shop along the route. While she steps out to pick up the coffee, her conference call is seamlessly transferred to her smartphone. While sipping the coffee she browses for online shopping, she continues her shopping in the wide screen of her car. She pulls out the movie that she paused last night relaxes on her way to work. Nearing her destination, she takes out her virtual keyboard to respond to her emails. She reaches her destination, hands over the control to her digital companion ‘her chauffeur’ and enters her work premise.

HUMAN-VEHICLE CONNECTIVITY

A vast majority of the companies have been researching and developing embedded systems which implements the functions that enables connectivity between human and vehicle. The general industrial consensus is that the cockpit of the future will most likely consist of an Integrated Interior Platform (IIP). The IIP is a human-machine interface that is regarded as the first



“The Integrated Interior Platform (IIP) is a human-machine interface that is regarded as the first step towards a better interaction between humans and vehicles, as it will be easy to use and configure according to each driver’s needs.”



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step towards a better interaction between humans and vehicles, as it will be easy to use and configure according to each driver's needs. The IIP combines various displays, such as glass surfaces with a head-up display (HUD) and central console cross-domain units, which shows all the actions and functions that both the driver and the vehicle can perform. The displays interact with hand-motion gestures to enable maps or other elements to be shown. Information is rapidly collected from various sources and later presented in an easy-to-read way that always keeps into account both the state of driving and drivers. Moreover, information can be rearranged to be shown on the selected display and interacted with using only one device.

Understanding what the driver needs is pivotal: thanks to the employment of high-precision sensors and cameras integrated into the instrument cluster, IIP can easily learn how the driver feels and wants. Additionally, all these actions are possible by data collection between vehicles and road elements, such as traffic signals and other road gear. The employment of 5G



“OEMs are working to ensure cybersecurity from the very beginning of the software development process and are continuously updating the processes to ensure that the vehicle is completely secured for the use of end-users.”

connectivity is crucial for the success of the technology as it enables more and faster data transfer: with 5G hyperconnectivity, vehicles will be able to communicate faster with each other about not only their speed and location but also the presence of ice or potholes on the road.

AI IS THE FUTURE

The compelling growth in data that future vehicles will automatically collect and analyze makes Artificial Intelligence a pivotal element of next-generation cockpits. Thanks to the use of algorithms, the driver's experience can be enhanced just by learning from his/her habits and giving proper recommendations at a later date. These characteristics will enable full customization of the vehicle environment: the driver will be able to decide how and where content and information should be displayed.

These new displays can show two forms of driv-

ing mode - active and autonomous. When the driver is actively driving the vehicle, important information regarding the road and the status of the car are displayed on the dashboard for the driver. The displays would show data such as distance from other cars, nearest service area, presence of potholes in the proximity or condition of the tires. On the contrary, when the vehicle will be in fully automated driving mode, the display will be shown in full size, allowing both the drivers and passengers to perform various actions and not completely focus on the road. Front seats could be reclined to relax or even turned to face the other way to favour better interaction with the passenger seating in the back seats.

CYBER-SECURITY IS A MUST

The software components in a vehicle have increased tremendously over the past few years. Through gesture recognition, AI/ ML (Machine Learning) and 5G implementation, the IIP would always be able to cater to the driver's needs. However, as the software component and connectivity increase, exposure to threats and vulnerabilities also increases. Such attacks can lead to the theft of personal data such as bank details, identity, and social media access. If the vehicle is automated, it could even result in vehicle takeover, hence, risking of lives of the passengers. To achieve connectivity, automation, and electrification, cybersecurity is a must.

OEMs are working to ensure cybersecurity from the very beginning of the software development process and are continuously updating the processes to ensure that the vehicle is completely secured for the use of end-users. Many auto companies are also setting up centres to monitor threats and vulnerabilities in real-time to ensure the patches can be done with minimum turn-around time.

IMAGINING THE POSSIBILITIES

The cockpits have witnessed tremendous transformation in the past few years. Connectivity, automation, and electrification have enabled vehicles to interact with the drivers and display real-time information such as alerts for potholes. Through AI and Machine learning, the IIPs will be able to pick-up driver-specific gestures and customize the information displayed. If the vehicle is fully automated, the driver can sit back and relax, as the whole cockpit could be transformed into an entertainment centre. 

The author is Head of Engineering, Instrumentation and Driver HMI business unit, Continental Automotive India



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BIGGER, BETTER & GRANDER!

Kailash B. Murarka, Chairman - National Executive Committee, Plastivision India 2020 (PVI 2020) tells The Machinist that PVI 2020 is emphasising on new technologies and addressing the challenges that the plastic industry is facing.

How is the plastics industry faring in India?

Every industry has its own challenges and opportunities. There is a huge scope to meet the ever-increasing demand considering the abysmal usage of per capita plastic in India compared to global standard where the plastic usage is 10 times higher. Plastic industry in India is enhancing its reach by employing global technology for better margin and output. I believe the industry is doing fairly well.

How is the All India Plastics Manufacturers Association (AIPMA) gearing up for PVI 2020?

AIPMA-PVI has chalked out a promising and exciting roadmap to attract exhibitors and visitors from India & abroad. We get this enormous networking opportunity every three years. As part of the preparation, AIPMA tries its best to reach to the smallest industry person by hosting various meets and road shows not only in India but also globally. This edition of PVI as well is not exception to it.

Please tell us about the key highlights of PVI 2020.

Addressing ever growing technological advancements, during PVI 2020 we are giving immense importance to Industry 4.0, 3D Printing, recycling, etc. Therefore, one will be able to see pavilions focusing on Industry 4.0 and 3D printing. Also, Ministries of Defence, Oil companies, Railways, have been offered special pavilion. Additionally, AIPMA is also organising Global conclave on Recycling and Waste Management (to be patronized by speakers of international repute). Moreover, other initiatives such as SME & MSME sectors hand holding will benefit the exhibitors as well visitors. We plan to attract more than 250,000 visitors.

What are your expectations from this edition?

At a time when the entire industry is facing challenges, PVI 2020 is taking lead to boost business like never before. Huge turn out and footfalls of focused visitors



“At a time when the entire industry is facing challenges, PVI 2020 is taking lead to boost business like never before. Huge turn out and footfalls of focused visitors during five days of exhibition

is expected to generate business worth thousands of crores taking business matrix to a higher level.”

during five days of exhibition is expected to generate business worth thousands of crores taking business matrix to a higher level.

Tell us about the global participation at PVI 2020.

More than 25 countries have confirmed their participation in PVI 2020. This year too China takes lead with maximum exhibitors presence with securing of largest ever stall booking in terms of area. PVI 2020 is to host international Recycling & waste conclave which will be attended by who's who of the plastic industry.

What are the challenges that the plastics industry is facing currently?

With global warming and its impact on environment, plastic is in center of discussion on every platform. The need of the hour is to educate people about ill effects of littering and challenge to make them aware how plastic can save our planet.

How will PVI 2020 help the industry?

PVI 2020 is organizing competitions. Additionally, AIPMA is playing active role in CSR activities such as beach cleaning. We are also spreading awareness on pros & cons of plastic ban. Besides these initiatives, we are putting more thrust on waste management and recycling machine manufacturers. 

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By Subrahmanyam Kanakadandi

ARTIFICIAL INTELLIGENCE IN MANUFACTURING: WHERE TO START AND HOW TO SCALE

In manufacturing, AI has already helped organizations save costs and time, and is now helping aid tasks such as product design and development.



Artificial intelligence offers potential for significant benefits across sectors. In addition to speeding up tasks and reducing errors/rework in existing functions, AI has helped organizations unlock new capabilities in their value chain. In manufacturing, AI has already helped organizations save costs and time, and is now helping aid tasks such as product design and development.

In our recent report on ‘Scaling AI In operations’, we wanted to understand more about the impact of AI on a manufacturers’ value chain and where the sector witnesses the most implementation of AI. We also examined the critical factors that manufacturers must focus on in order to scale these use cases across their organization. To answer these questions, we conducted a thorough research of AI implementations in 75 leading global organizations each in automotive, aerospace and defense, industrial manufacturing, and consumer product goods. We also interviewed several industry experts to gather their views on the impact that AI has made in their organization. So, what are the AI use cases that matter the most to manufacturing organizations?

INTELLIGENT MAINTENANCE

Intelligent maintenance helps organization tackle mul-

iple challenges with traditional maintenance processes. Timely and accurate maintenance of machines on the shop floor not only helps organizations save on expensive downtime costs, it also reduces the cost associated with maintenance itself. The quantum of savings just by avoiding downtime can be huge, especially for a large manufacturer. Artificial intelligence uses data received from sensors mounted on machines along with historical data on machine failures to intelligently predict when the machine may fail. Based on this information, the AI system can make recommendations to service personnel on the shop floor, while adding this new information to improve its own accuracy in future.

PRODUCT QUALITY CONTROL

Quality control is an essential part of a manufacturers’ value chain. A substandard product not only leads to scrap/wastage, but for heavily regulated industries such as automotive and consumer product goods, this can also lead to heavy fines from the regulator. Apart from the financial implications of an inferior product, organizations also face a reputational risk if such a product makes it to the customer’s hand. AI along with machine vision can help manufacturers effectively deal with quality issues on the shop floor. An AI system can be trained with a large set of images collected by shop floor cameras. The AI system uses this knowledge to compare



“Intelligent maintenance helps organization tackle multiple challenges with traditional maintenance processes. Timely and accurate maintenance of machines on the shop floor not only helps organizations save on expensive downtime costs, it also reduces the cost associated with maintenance itself.”

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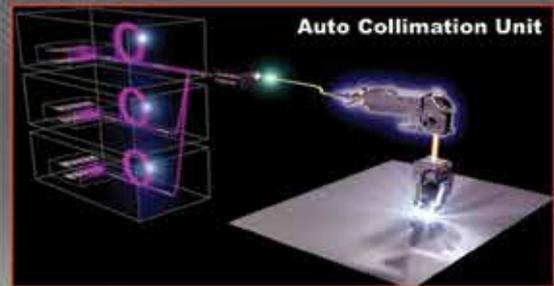


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Create robust integrations with legacy IT systems and industrial Internet of Things (IIoT) systems	Develop AI, data science and data engineering expertise with manufacturing knowledge	Continuously monitor its performance for value generated, output quality, and reliability

Source: Capgemini Research Institute analysis

with the work-in-process products to identify defective products which can then be taken off the process flow for rework/scrap.

DEMAND PLANNING

Gauging consumer demand accurately is essential to manufacturers. While overestimating demand can lead to increased inventory cost, underestimating demand results in lost revenues. Manufacturers are using machine learning to predict changes in demand as closely as possible. AI based systems can be trained using data from historical sales, third party data e.g. social media



“An AI system can be trained with a large set of images collected by shop floor cameras. The AI system uses this knowledge to compare with the work-in-process products to identify defective products which can then be taken off the process flow for rework/scrap.”

and other sector specific data to make predictions for future consumer demand basis how a particular combination of events affected demand. This allows manufacturers to make necessary changes to production schedules and raw material procurement, thus saving costs and improving overall productivity.

BUT HOW CAN ORGANIZATIONS TAKE AI TO SCALE?

One of the biggest challenges facing manufacturers is moving from proof-of-concept (POC) to at-scale deployments of AI use cases. For example, in the automotive industry, we found that by mid-2017, only 10 percent of automotive OEMs have delivered AI implementations at scale. This number increased only marginally to 14 percent by January 2019. Based on our own experience of helping large organizations scale AI and inputs from these experts, we outline the key steps

that manufacturers can take to overcome this challenge.

DEPLOY SUCCESSFUL AI PROTOTYPES IN LIVE ENVIRONMENTS

Once an AI use case has proved its value in a controlled environment, organizations must deploy it in a live environment to learn new scenarios and improve accuracy. The AI system should also be integrated with the existing IT systems at this early stage itself to avoid any integration issues as the use case is deployed at scale.

INVEST IN LAYING DOWN A FOUNDATION OF DATA AND AI SYSTEMS AND TALENT

Investing in foundational technology and AI skills is also key for long-term success. This allows organizations to maintain momentum when the value of AI has been proven by the first few use cases. It also helps in creating repeatable, faster, and easier rollouts of new AI applications in the future. Manufacturers also must work on developing their own talent pool that can take these AI use cases to scale.

SCALE THE AI SOLUTION ACROSS THE NETWORK

Once the data foundation and talent is set in place, the organization can move the AI application to the AI platform to make it accessible globally. The platform itself can be hosted on the cloud to reduce costs and aid portability. Manufacturing must also closely monitor the performance of the AI application on critical parameters such as overall business value, need for retraining, and accuracy.

Unless more organizations move from pilots and proofs-of-concept to scale, then a new 4.0 era in manufacturing will still remain an elusive goal. By adopting a scale-driven strategy – which focuses efforts on the most valuable use cases and lays down strong governance, platform and talent foundations – manufacturers can turn the revolutionary potential of AI into the next industrial revolution. 

The author is Director, Capgemini Invent India

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COMPETING WITH ROBOTS

New-age skilling platforms have the potential to change the scenario – making India an economy of opportunities that are optimally capitalised upon and realised.



The future is exciting but not secure. Technologies that are on the top of the value chain become obsolete sooner than anyone could imagine.

A report by McKinsey Global Institute, conducted in 46 countries predicts that up to 800 million global workers will lose their jobs by 2030 and be replaced by robotic automation. The rise of Artificial Intelligence and Data Analytics has changed the dynamics of the jobs market completely. Organizations are looking for an array of new-age skills among employees that can be utilized in fields like marketing, HR, operations, banking, agriculture, chemistry, data mining, cloud computing, finance, stocks and healthcare among others.

The new economy also requires professionals to possess skills such as creativity, adaptability, critical thinking, leadership and the ability to collaborate seamlessly. No one-time course at a Business School can impart all these skills among professionals.

SECTOR-SPECIFIC SKILL GAPS IN INDIA AND THE WAY AHEAD

Recent studies suggest that the Asia-Pacific region is set to face a shortage of 12.3 million professionals by 2020. India alone faces a 40 percent shortage of job-ready candidates. The IT sector requires around 40 percent of its professionals to up-skill themselves over the next few years.

Further, according to the Future of Jobs report by FICCI-Nasscom and EY, 20-25 percent of existing jobs in the BFSI sector will not exist and 15-20 percent of professionals will be working in job roles that do not

exist today. Similarly, a report by the National Skill Development Corporation (NSDC) mentions that the automobile sector will require 15 million skilled candidates by 2022.

With all sectors undergoing such disruptive transformation, what's the way out of this conundrum? Re-skilling!

RE-SKILLING THROUGH ONLINE LEARNING PLATFORMS

To remain relevant in today's fast-evolving, tech-centric job market, candidates will be expected to upgrade their skills regularly.



“The new economy also requires professionals to possess skills such as creativity, adaptability, critical thinking, leadership and the ability to collaborate seamlessly. No one-time course at a Business School can impart all these skills among professionals.”

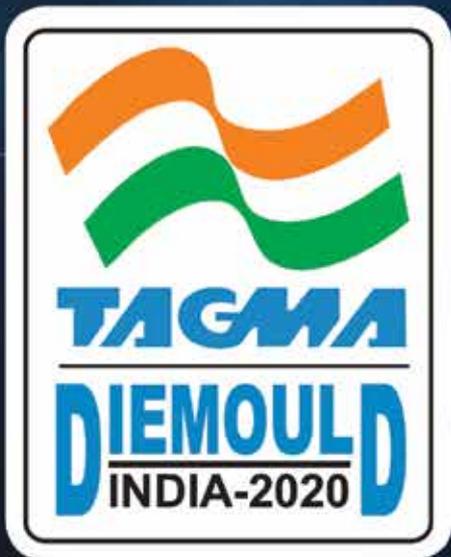
Professionals, especially in the IT sector where new roles are rapidly evolving, and new skillsets are required frequently, must continuously upskill themselves to keep up with the fast pace of emerging technologies. At this scale, e-learning platforms are the only way forward.

Also, as the number of employees looking for upskilling opportunities increases, offline skilling courses will no longer be able to accommodate this demand because the infrastructural set-up required to facilitate such large-scale upskilling is limited. Hence jobseekers will have to start looking at online channels to support their upskilling endeavours.

Thankfully, acquiring these skills through digital means is no longer a challenge. There are several online platforms that offer courses in data science, automation, blockchain, the Internet of Things, etc. 

The author is the CEO of Shine.com

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By Vikas Bhonsle

TAKING IT PERSONAL!

The proposed Data Protection Bill (PDP) is a welcoming step and it certainly puts the ownership of data in the hands of individuals while taking care not to throttle businesses and innovation.



In July 2018, the Committee of Experts on Data Protection submitted a draft of Personal Data Protection Bill, 2018 ('the 2018 Bill') to the Government of India. On the basis of recommendations made by the Committee and suggestions from various stakeholders, on 11 December 2019, the revised Personal Data Protection Bill, 2019 ('the 2019 Bill') was introduced and it finally gathered the Cabinet's approval on December 04, 2019. Although the final form of the Bill that was presented has not been revealed to the public, the government has promised that it will be adequate and in line with the global standards of data protection. This bill aims to protect the privacy of individuals with respect to their personal data.

WHAT DOES IT MEAN FOR INDIVIDUALS?

Up until now, privacy laws in India offer little protection against the misuse of your personal information. The transfer of personal data is governed by the Sensitive Personal Data and Information, 2011, which has increasingly proved to be inadequate. To empower data principals (individuals) and provide them with more control over their own data, the bill has listed out a host of rights – 'right to confirmation and access', 'right to correction', 'right to data portability' and 'right to be forgotten' as individuals fundamental right. Unless they have given explicit consent, their personal data cannot be shared or processed. Out of all these, basic rights such as the right to seek confirmation, access and rectification are exempt from any fees, thereby promoting transparency.

WHAT DOES IT MEAN TO COMPANIES?

The proposed law may have a considerable impact on companies operating in India, whether with or without a physical presence, due to its data localisation requirements and cross-border data transfer restrictions. Data localization is a polarizing concept. While some of the companies are against it, others have spoken up to support it. For ISPs the draft may bring changes as it suggests enforcing certain mandatory provisions that have a significant effect on business models, financial implications and modus operandi. One bad news for companies is that the bill's penalties are also inspired by its European cousin - the GDPR. Some violations come with a maximum penalty of either Rs 5 crore or to two percent of the global turnover of a company in the previous year (whichever is higher). For other violations, such as non-compliance with the PD-PB's cross-border transfer provisions and consent and



"One bad news for companies is that the bill's penalties are also inspired by its European cousin - the GDPR."

grounds of processing, penalties extend to Rs 15 crore or four percent of the global turnover in the previous financial year (whichever is higher).

CONCLUSION

The proposed Data Protection Bill (PDP) is a welcoming step and it certainly puts the ownership of data in the hands of individuals while taking care not to throttle businesses and innovation. It introduces an interesting mixture of data privacy rights and obligations already familiar (mainly from the GDPR) and comes forth with new, unique requirements. It is time for us and to follow leads like GDPR and set an example to the rest of the world on how a good policy can bring the whole nation together to protect the rights of everyone. 

The author is CEO, Crayon Software Experts

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DEALING WITH DISRUPTIONS!

The fifth consecutive edition of the Global Manufacturing Summit concluded successfully in Ahmedabad recently. Here's a quick overview



Hall of Fame 2019 - D K Hota

The Machinist Global Manufacturing Summit (GMS) 2019 was held successfully on December 18 at the Novotel Ahmedabad.

This was the fifth consecutive edition of the Summit that has acquired a great deal of popularity and significance amongst the manufacturing industry in India. The Summit, which started in Bengaluru in 2015, has also travelled to New Delhi (2016), Indore (2017) and Pune (2018). The theme for this year's Summit in Ahmedabad was 'Dealing with disruptions'. This theme evolved through a remarkable agenda filled with insightful presentations and exciting panel discussions. Of course, the event started off with the auspicious lamp lighting ceremony. In his opening note, Niranjan Mudholkar, Editor, The Machinist magazine congratulated the industry for showing resilience in the difficult times. While invoking the historic Dandi march undertaken by Mahatma Gandhi during India's freedom struggle, he underlined the importance of affirma-

tive action driven by positive intentions for the larger good. Like Gandhiji appealed to the nation to take action rather than being in self doubts, the Editor also urged the industry to believe in itself while marching ahead in a dynamic market.

HONOURING A LEGEND

A key highlight of GMS 2019 was the felicitation ceremony in the beginning wherein Deepak Kumar Hota, Chairman & Managing Director, BEML Ltd. was being inducted into 'The Machinist Hall of Fame 2019'. While accepting the honour, Hota narrated his journey with BEML and the immense contribution BEML to the cause of nation building. He urged the industry to work towards the 'Make in India' initiative and contribute in transforming the Indian manufacturing industry into the Best in the world. Hota, who received the honour at the hands of Niranjan Mudholkar, Editor, The Machinist magazine, also cautioned the audience with regards to the excess focus on digitalisation. Digitalisation is important but it should be looked upon as a tool. The need of the hour is to focus on and get the basics right while encouraging innovation and experimentation, he said. Hota was given a standing ovation by the audience.

The Machinist Hall of Fame has been received previously by Baba Kalyani, CMD, Bharat Forge Ltd.



Presentation by T K Ramesh

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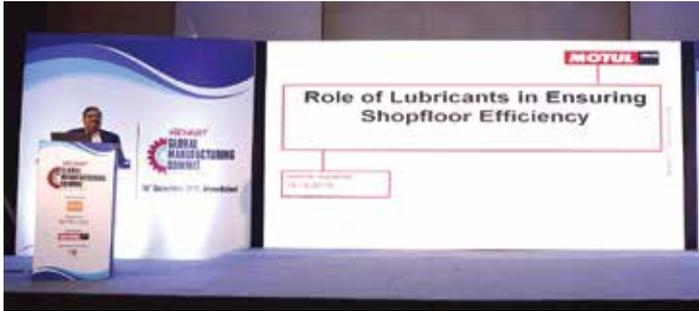
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Presentation by Neeraj Agrawal



Panel discussion with manufacturing heads

in 2015, Late Rajan Nanda, Chairman, Escorts Ltd. in 2016, Dr. Mahesh Gupta, Founder & CMD, Kent RO in 2017, and last year, it was conferred upon Kevin Flynn, President & MD, FCA India.

POWER PACKED PROGRAMME

Every Global Manufacturing Summit is driven by strong and industry oriented content. Importantly, it is presented through industry experts who have a great deal experience and expertise. GMS 2019 was no exception to this tradition.

The Hall of Fame felicitation ceremony was followed by a very insightful presentation by Anand Misra, General Manager (Quality & Launch), Ford Motor Company. Misra gave some interesting examples from various industries to show how dealing with disruption is the key to success in today's VUCA world.

We all know that the manufacturing industry is going through a huge transformation across the world. Various factors – economic & social, political & bureaucratic, technological & industrial – are at play.

These factors are changing the rules of the game, they are changing how the job is done. The people who are dealing with these factors at the forefront are the leaders – the CEOs. At GMS 2019, we had an interesting mix of leaders from the cross section of industries discussing the theme of the Summit from the leadership perspective. These included Bhaskar Bhataacharya, Managing Director, Vivanza Biosciences Ltd.; Chandan Mundhra, Chairman & Managing Director, Savē Electric Vehicle; Khushroo Pastakia, Chief Executive Officer & Managing Director, Voxtur Bio Ltd; and Manish Kothari, Managing Director, Rhino Machines Pvt Ltd. The panel, which kept the audience engaged with a very exciting discussion, was chaired by Niranjana Mudholkar, Editor, The Machinist magazine.

Niranjana also chaired the next panel discussion that involved manufacturing heads from a diverse industry sectors. These included Anand Wankhede, Head of Manufacturing, Larsen & Toubro Limited; Rajesh Anand, Plant Head, Asahi India Pvt. Ltd; Sunil Kr Das, Sr General Manager, Somany Ceramics Limited; and Yashwant Ingle, AVP – Purchasing & Operations, Shandong Heavy Industry India Pvt. Ltd. These manufacturing leaders explained the importance of empowering 'people' in the quest for excellence.

The post lunch session had two interesting presentations including one on technical aspects related to the use of lubricants in ensuring smooth operations on shopfloor. It was done by Neeraj Agrawal, Regional Manager (North & East), MotulTech India. Of course, the highlight of the afternoon session was the inspirational talk by T. K. Ramesh, MD & CEO, Micromatic Machine Tools Pvt. Ltd. TKR, as he is fondly known, spoke about "New business models for new times" covering strategies for decision making. The presentation was very well received by the audience. 



CEO panel discussion

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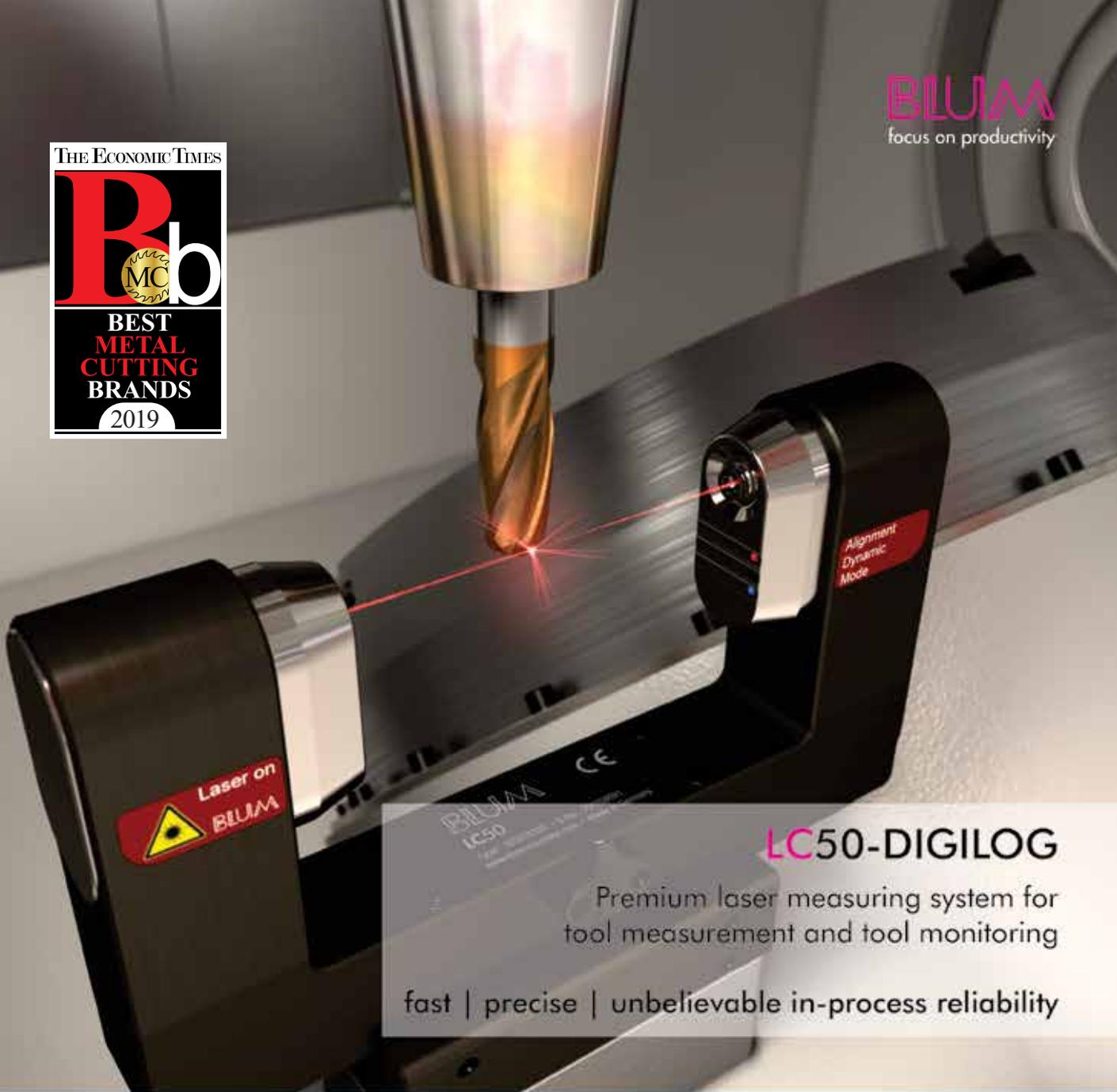
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did you know?

No BOOM BOOM!



Source: NASA

This artist concept of NASA's Quiet SuperSonic Technology jet reflects the airplane's final configuration following years of research and design engineering.
Credits: Lockheed Martin

What

NASA is working on an experimental piloted aircraft designed to fly faster than sound without producing the annoying sonic booms of previous supersonic aircraft. It is called X-59 QueSST (short for Quiet SuperSonic Technology)!

Why

The X-59's mission is to gather data that has the potential to aid in the opening of a new era of commercial supersonic air travel over land.

History

During the 1960s, as both the US and Europe were developing a civilian supersonic transport – the SST and Concorde, respectively – the general public made it known they did not want to endure the constant annoyance of sonic booms.

Who

The future of commercial supersonic aviation in the form of the X-59 is being built by Lockheed Martin, the company responsible for the fastest airplane in history – the SR-71 Blackbird.

How

By carefully designing the aircraft's shape and overall configuration, engineers have found a way to manipulate the shockwaves coming off an airplane flying supersonic, so they don't produce intense sonic booms.

Where

The place where some of the most important aircrafts have been built and known as the Skunk Works, a renowned Lockheed Martin division in Palmdale, California.

When

The X-59 Quiet SuperSonic Technology (QueSST) airplane remains targeted to make its first flight during 2021.

Way ahead

The X-59 will be flown above select U.S. communities to measure and record public response to its noise while flying supersonic. The resulting statistically valid data will be presented to rule makers, who will then consider lifting the ban on supersonic flight over land that has been in place since 1973.

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By Niranjan Mudholkar

WITH RENEWED ENERGY!

Every slowdown gives us opportunity to reorganise ourselves to support customers and their business, says **Niraj Seth**, President, Amada (India) Pvt Ltd



“At Imtex 2020, we are going to display flagship model of Amada Fiber Laser line-up along with the most practical laser machine for start-ups.”

The slowdown has had varying impacts on different organisations. How are you using this period?

We have witnessed a slowdown in the past as well; the year 2008 was one of the biggest. Every slowdown gives us opportunity to reorganise ourselves with new technology and improved skill to support customers and their business. We can come out of the slowdown only when our customer recovers. We support them by introducing new techniques to optimise production with higher efficiency.

This time along with Bangalore Technical centre, we have opened a new Satellite center in Faridabad where customers can reach out to our technical team to find cost effective solutions and improve their business by improving their technical know-how. To improve after sales service, we have appointed young engineers. We are training them to prepare for the next growth story.

What are some of the technological trends that are driven by customer demands?

During this difficult time, the need of the hour is to

have ‘Shorter lead time’, ‘cope with shortage of skilled manpower’, ‘Tough working condition inside a sheet metal company’, ‘Rise of wage’ and ‘Increase of cost of overtime work and outsourcing’. As a solution, we have introduced customized automation suitable to emerging market for blanking and bending process. Coupled with high speed and energy saving technology (Fiber Laser and Servo controlled machinery), the customers can improve their bottomline considerably.

What will be the highlight of your participation at Imtex 2020?

We are going to display flagship model of Amada Fiber Laser line-up along with the most practical laser machine for start-ups. Our ENSIS-AJ technology significantly increases processing capabilities. New Auto Collimation system provides unrivalled beam spot control linked with Amada’s unique Variable beam control technology. This allows single lens processing with high speed piercing, faster cutting speed and highly improved taper on thicker materials.

Besides automotive, do you see any other segments driving growth in the times to come?

Sectors like construction machinery, agricultural equipment and railways are showing better prospectus even in this scenario. Our product line up is being tuned to cater these segments.

Today, all progressive manufacturing companies are adopting Industry 4.0. What role is your organisation playing in this context?

Amada has been pioneering in factory digitisation specially for sheet metal fabrication. We have factory monitoring software that were way ahead of the time. We launched our IoT based software almost 15 years back and now IoT equipped machinery, process and software are part of our line-up. We are launching a new product that will not only connect machinery but the entire manufacturing process. The system is intelligent enough to distribute production load as per machine capability and available time. 

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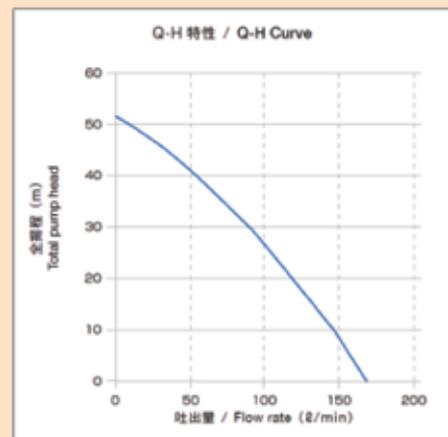


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By Niranjana Mudholkar

LOOKING INWARD AND OUTWARD!

Vivek Nanivadekar, Executive Director, FIBRO India Precision Products Pvt. Ltd. explains how the organisation has the lean period to consolidate its position for serving its customers in a better way.



“We have already started moving in the direction of diversification. We are doing market research from our perspectives to identify the potential for our product range.”

The ongoing economic slowdown has had varying impacts on different organisations. How is your organisation using this period to prepare for the next phase of growth?

This is the part of the economic cycle. Any recession will be certainly followed by upswing but may be in the different format. Every business goes through this cycle. If we could diversify at the right time, then such slowdown will impact the business marginally. In the last quarter, we could see some signs of recovery.

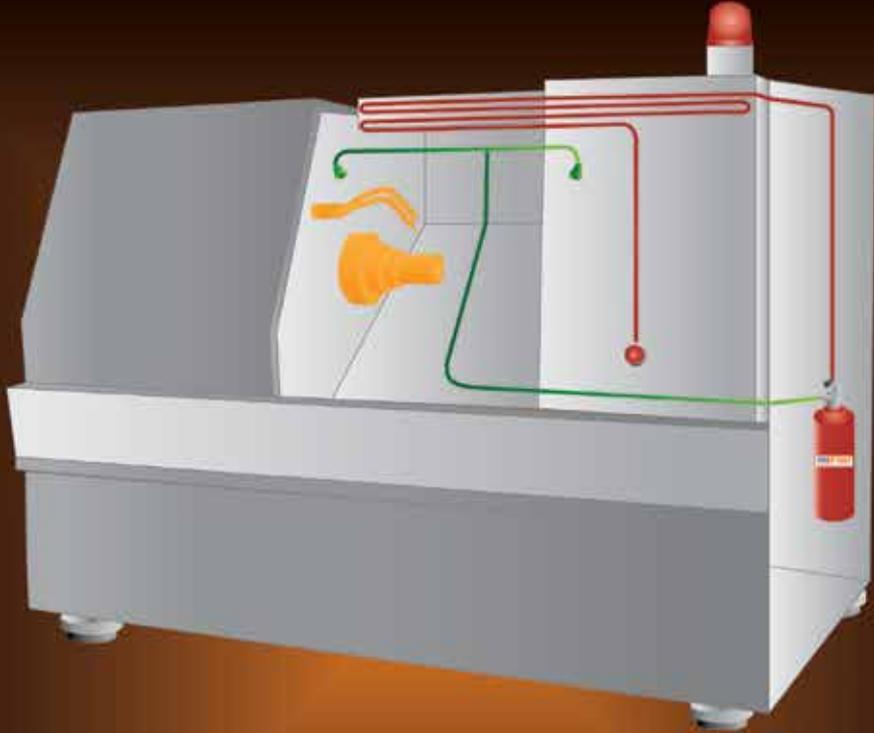
We did inward looking and outward looking. Let's see how we did outward looking. We did market survey to understand the market trends and also to understand the areas of improvement in our operation and the requirement of new product to meet the new technology. It was more of an appraisal from the customer's perspective. This gave us the direction for inward looking. We added some new products in our portfolio. We also took couple of projects for the development which would result in new products in another six months. On the marketing front, we ran special campaign through social media and also developed some case studies that would be useful to the customers in the similar segment.

As far as inward looking is concerned we identified the projects for implementing the Lean manufacturing practises such as SMED, reduction in inventory, improving the shop floor layout to eliminate the unwanted activities and so on to improve upon the lead time, cost saving and overall efficiencies. We have also invited the experts in the relevant fields to train our operating staff and workers for skill and knowledge upgradation. We are also working on improvement in our e-commerce to make it more user friendly.

What are some of the technological trends that are driven by customer demands and how are you addressing the same?

Our website is quite comprehensive where the 3D data for all the standard parts can be downloaded. Normally die designer use this data to incorporate in his design. However, sometimes, they have some doubts for which they need immediate clarification. Sometimes, they have some query about the selection of the standard part. To address this issue, we started 'Live Chat' feature on our website where one can get the clarification on the spot. Similarly, based on the customer demand we also added 'web ordering' feature on our website. We use this platform to educate the customers on the new possibilities like interconnection of nitrogen gas

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“Some of the sunrise industries in India are aerospace, packaging, white goods manufacturing, railways, medical equipment and so on.”

springs and controlling them from the single point.

We received quite encouraging response to our campaign on the social media, and day by day the number of followers is increasing quite substantially. We also started using the QR code system on our packaging which helps the customer to enter the receipt of goods in their ERP.

Are you participating at Imtex 2020?

We are not participating this IMTEX 2020 as we do not have any new development to showcase. We will be in a position to showcase the new developments in 3-4 months. However, we have increased our direct presence in the market through our own representatives.

Besides the traditional industry sectors like automotive, do you see any other segments driving growth in the times to come? How well positioned are you to cater to their requirements?

In fact, the current market situation forced all players, suppliers and vendors to look for the alternative market

segment for their respective business or forced them to diversify. This is certainly the positive side of the current market slowdown per say.

In the recent TAGMA publication, the same point was raised and elaborated in details. Some of the sunrise industries in India are aerospace, packaging, white goods manufacturing, railways, medical equipment and so on.

We have already started moving in that direction. We are doing market research from our perspectives to identify the potential for our product range. At the same time, we are also developing, modifying the product range to suit such new sectors requirement.

Today, all progressive manufacturing companies are adopting Industry 4.0. What role is your organisation playing in this context?

Industry 4.0 is the buzz word currently in the industry. We have already introduced sensors with which one can collect the data. These sensors are used in sheet metal forming process. We have developed Wireless Pressure Monitoring (WPM) system for nitrogen gas springs used in metal forming dies. This enables you to take corrective action before component gets damaged due to uneven pressure in the gas springs used in forming tool. We are also working on our rotary tables to make them Industry 4.0 compliant. However, this is going to be long drawn and continuous evolving process. 

HAL & WIPRO TO COLLABORATE IN METAL 3D PRINTING

HAL and Wipro 3D have signed an MOU recently to design, develop, prove out, manufacture and repair of Aerospace Components using Metal Additive Technology. This MoU also accentuates development, prove out and application of new material for use in Metal Additive Technology. This initiative will focus on development, prove out and production of Aerospace applications including MRO, using metal Additive Manufacturing. Prove-outs and certification of components developed using Metal 3D Printing is also a key element of this co-operation. Commenting on the collaboration, Shekhar Shrivastava, CEO, Bangalore Complex, HAL, said, “This initiative between HAL and Wipro 3D will create a unique synergy of capabilities that can accelerate the adoption of metal additive manufacturing in Aerospace in India. Qualification of parts for Aerospace is challenging as it would require prove out and extensive testing followed



by certification by regulatory authorities which may also include flight testing. This cooperation would be a unique opportunity for both the parties. Metal 3D printing has the potential to play a significant role in the success of national aerospace and defense platforms including HAL's own needs.” Pratik Kumar, CEO, Wipro Infrastructure Engineering, said, “This MoU will bring Metal 3D printing into the mainstream of India's Aerospace. Wipro 3D and HAL have worked together in the past. This further strengthens our collaborative efforts to create additive technology leadership in Aerospace.”

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By Niranjan Mudholkar

TAKING INDIA TO THE WORLD

Ceratizit Group recently inaugurated its manufacturing facility expansion in Bengaluru. The Machinist magazine caught up with **Thierry Wolter**, Member of the Executive Board, Ceratizit Group, on the occasion.



"India is a very important country both as a market and also as a manufacturing base for our group."

What is driving this investment for Ceratizit?

An investment strategy is a kind of long term strategy. It's not something that you turn on, turn off and so on. Ceratizit obviously has a long term vision. Our medium-term objective is to be within the top three players in the cutting tools industry. And therefore, India is a very important country both as a market and also as a manufacturing base for us. We want to expand that role of India, and therefore we have decided a few years ago to increase our investments and production space. When we get more orders, and we hope to get more orders soon, we will feel it more and more visible.

Are also looking at making this as an export hub?

We are already exporting products from here through Europe, but also to Southeast Asia and China because we have capabilities here that we don't have today in China or in Thailand. For example, we are doing a lot of special things for those market. So, it is first of all, India for India, India for Asia and it will be also more and more of India for the rest of the world.

Which are the key industry sectors that we are looking at to drive the growth?

I think in the past this plant has been very focused on automotive and that was very good. Today, we are still focussed on that area and that is very important but on the other hand, we are also shifting our focus to other industries. Considering the whole group and the different brands that we have, we have all the products to go very fast into aerospace. Therefore, that is one of our main focus areas as well since we have very good products.

How's been the market for Ceratizit India?

Last one year has been very, very bad. I think we have all been hurt. Everyone in the market is in minus; some are more or less depends on whether you are more in the automotive industry, or you are more in other industries that are less affected. But I think this is temporary. We are thinking long term it helps us also now to move the equipment from one building to the other because we have now more capacity. If we are running full, then, we would lose capacity by moving. So, the downturn also has a positive side to it.

Tell us about your technical center in Bengaluru.

What purpose does it serve?

Yes, more and more of our products are highly technical. It's not always easy to show it at the customers' premises because he may not have the right equipment or the people who know how to run the latest cutting tool. Therefore, this technical centre will be used more and more to train customers and to convince customers that our tools are performing. So, if the customer wants to give us some technical test on a component, we can do it here for him. That's the purpose for the customer. On the other side, we also we want to train our sales force, because our sales people are out there with the customer. In our catalogue, we have 100,000 articles, so they need to know how to use those articles and therefore, we also use this technical Centre for training our people. 

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By Niranjana Mudholkar

PROVIDING THE RIGHT SOLUTIONS!

Due to diversification of its applications in various industries, Ampco Metal India Pvt Ltd can very well tackle the current slowdown, says **Tushar Pawar**, its National Head



“Apart from automotive industry, we are mainly focusing on steel industry, metal forming, tube bending, plastic packaging, non-automotive industry and plastic industry.”

How is your organisation using the slowdown to prepare for the next phase of growth?

Ampco Metal's high-performance material which includes AMPCO® high strength aluminum bronze and AMPCOLOY® high conductive copper alloys which finds best application in industries like oil and gas, aerospace, general engineering, plastic injection, steel industry and so on. Thus, we have great opportunity to explore the industries in the current situation. Due to diversification of our applications in various industries, we can very well tackle the current situation.

Tell us about some of the key technological trends.

Customer demands the right solution for the application, and we address them by suggesting the right material based on our experience and expertise. To add to their demand, we also supply machined components or sometimes a complete assembly package as solution for their requirement. To obtain unique and consistent

raw material characteristics, Ampco Metal always uses one of the most advanced manufacturing equipment in the industry, a highly skilled engineering staff and sophisticated quality control procedures.

What will be Ampco's highlight at Imtex 2020?

Imtex brings the best of the target audience under one roof and help each other to explore and grow. Ampco Metal provides the perfect solution for today's most demanding applications, anywhere in the world. We have a comprehensive range of high performance aluminium bronzes and high conductive copper alloys for tube bending, deep drawing, rolling and forming applications. We mainly focus on audience looking for solutions in metal forming and tube bending. The show would help us to understand the problems of our customers and offer them the right solutions.

Besides automotive, do you see any other segments driving growth in the times to come?

Apart from automotive industry, we are mainly focusing on steel industry, metal forming, tube bending, plastic packaging, non-automotive industry and plastic industry. Our state of art facility in Chakan, Pune has 25000+ sq ft of shop floor and 5000 sq ft of office area. Forty tonnes of stock readily available with machining facility that includes Mazak CNC Turning centers, Mazak CNC Milling Machine, Heat Treatment furnaces, EDM/Wire cutting machines etc. We have one of the best and proven solutions for the applications in the industries.

What are you doing in the context of Industry 4.0?

With the manufacturing world marching towards the adoption of Industry 4.0, Ampco Metal also wants to gain insight into the latest in advanced technologies in the metal forming industry. Due to technological advancement in manufacturing, steel industry, forming industry, tube processing industry, stainless steel and titanium tube manufacturers and deep drawing component manufacturers are promising sectors for our high-performance alloy products. 



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Precision in Motion

By Niranjana Mudholkar

DEMOCRATIZING AUTOMATION WITH COBOTS

The versatility, user-friendliness, small footprint, and affordability of our cobots make them eminently suitable for deployment in processes that were not previously automated, says **Pradeep David**, General Manager, South Asia, Universal Robots



"As the pioneers of collaborative robots, every cobot is created to enable manufacturers of all sizes to cater to constantly changing market demands."

The ongoing economic slowdown has had varying impacts on different organisations. How is your organisation using this period to prepare for the next phase of growth?

One of the biggest strengths of our cobots is their remarkable versatility, which has enabled their deployment across an array of industries in applications. We have been primarily focused on the automotive industry, but we are now diversifying, and have made inroads into the FMCG sector. We are also seeing electronics as

an emerging vertical, with many electronics companies making their way to setting up operations in India. It is expected to be the new frontier for us, on the heels of similar success in China.

What are some of the technological trends that are driven by customer demands and how are you addressing the same?

Universal Robots is built on the foundation of Empowering People, and as the pioneers of collaborative robots, even our very first cobot was created with the mission of enabling manufacturers of all sizes to cater to constantly changing market demands. Every cobot and every update we have made till date is the result of years of R&D going into every possible aspect of our products. In 2018, we took collaborative robots to the next level and released the e-Series range of cobots, complete with a built-in Force Torque sensor, Cat. 3 PLd certified safety, and 65 patents in Robot Safety, Robot Construction, Trajectory Control, Robot Calibration & Programming. In 2019, we launched the UR16e, a 16-kg payload cobot, after noticing high demand for a greater payload collaborative robot, and to enable applications like vigorous sanding and polishing applications to higher torque screw and nut driving.

Another very unique platform that allows us to cater to customer demands is Universal Robots+ which helps automate applications even more easily. From end effectors to vision systems to software, UR+ lists industry-leading products that are tested and approved to work with us to provide customers with fast deployment, simple programming and reliable operation. The products are all created by third-parties, as a result of UR opening our interfaces to software developers. As of today, we have over 200 certified UR+ products and 400+ approved UR+ developer companies across the globe, enabling customized solutions for every need. Some notable products include the Vision Edition-U 2D image processing software by Canon, the Co-act gripper of SCHUNK, and vision systems by companies

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Cobots are classic Industry 4.0 tools in that they are digital products that continue evolving through software updates and their own programmability.

including Cognex, SICK, and Pick-it.

Besides the traditional industry sectors like automotive, do you see any other segments driving growth in the times to come? How well positioned are you to cater to their requirements?

Yes, we see increased demand from the FMCG industry and the electronics segment, and we see the majority of our business coming from these two sectors in the coming years.

Today, all progressive manufacturing companies are adopting Industry 4.0. What role is your organisation playing in this context?

At Universal Robots, we think of Industry 4.0 mainly as the Internet applied to manufacturing. Our collabora-

tive robots are fully compatible with Industry 4.0 design principles. Equipped with powerful onboard computers and TCPIP, Ethernet, Modbus, and Profinet capabilities, they are interoperable and easily able to join the Internet of Things (IoT) in any factory environment. They promote information transparency via their ability to collect data and pass it on to other systems for analysis, modelling and so on. They provide technical assistance, in the sense that they physically support humans by taking over tasks that may be unpleasant, tiresome, or unsafe for their human co-workers. They are also able to facilitate decentralized decisions. In addition, cobots are classic Industry 4.0 products in that they are digital products that continue evolving through software updates and their own programmability.

The versatility, user-friendliness, small footprint and affordability of our cobots also make them eminently suitable for deployment in processes that were not previously automated. By “democratizing” robotic automation in this way, cobots help SMEs and MNCs alike join the latest wave of automation, even if they are not ready to go all the way to Industry 4.0 

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*Customer Testimonial, November 2018

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DEFENDING THE NATION!

The year 2019 was full of remarkable events for the Ministry of Defence in India. Following are some key highlights from the industry's perspective.



The Quick Reaction Surface to Air Missile (QRSAM) system developed by the Defence Research and Development Organisation (DRDO) successfully flight-tested from Integrated Test Range, Chandipur off the Odisha coast, on December 23, 2019. analysis

In a landmark decision with tremendous reform in higher defence management in the country, the Government has approved to create the post of Chief of Defence Staff (CDS) in the rank of a four-star General with salary and perquisites equivalent to a Service Chief. The CDS will also head the Department of Military Affairs (DMA), to be created within the Ministry of Defence and function as its Secretary. This follows the announcement made by the Prime Minister on August 15, 2019, in his address to the nation, inter alia, "India should not have a fragmented approach. Our entire military power will have to work in unison and move forward... All the three (Services) should move simultaneously at the same pace. There should be good coordination and it should be relevant to the hope and aspirations of our people. It should be in line with the changing war and security environment with the world... after formation of this post (CDS), all the three forces will get effective leadership at the top level." The decision will lead to improved coordination between the Armed Forces and make them more effective.

It was a red-letter day in the history of Indian Air Force when Raksha Mantri Rajnath Singh participated in the Rafale fighter aircraft handing over ceremony

at Merignac in France in October. The Medium Multi-Role Combat Aircraft will make India stronger and give a boost to its air dominance to ensure peace and security in the region. Raksha Mantri also flew a sortie in the fighter aircraft.

Rajnath Singh became the first Raksha Mantri to fly the Light Combat Aircraft (LCA) 'Tejas' at Hindustan Aeronautics Limited (HAL) Airport in Bengaluru, on September 2019.

Raksha Mantri handed over Medium Range Surface-to-Air-Missile to Indian Air Force at the Bharat Dynamics Limited premises in Hyderabad in August.

ACQUISITION

Air Defence challenges have grown manifold in the recent years especially with all pervasive threat from drones even during peace time. This challenge is compounded by employment of stand-off weapons, projectiles and munitions including cruise missiles by the adversaries. Also, over the years, there has been a substantial increase in the number of vital assets along with increase in air threat from both hostile states and malign non-state actors.

Contract for five Squadrons of Long Range Surface-to-Air Missile System i.e. S-400 missile system has been signed with the Russian Government. The equipment of the first Sqn is likely to be inducted in mid 2020.

IAF is procuring 18 Squadrons of Medium Range Surface-to-Air Missile System which has been jointly developed by DRDO and IAI. Induction of the Medium Range Surface to Air Missile System will be from

To boost Defence manufacturing under 'Make in India', Raksha Mantri Rajnath Singh chaired a Roundtable Conference with CEOs of Indian & Foreign Defence companies including MSMEs and start-ups on August 9, 2019 in New Delhi.

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The newly inducted Rafale fighter aircraft, in Merignac, France on October 08, 2019.

early 2020 onwards. Contract has been signed in September 2019 for seven additional indigenous Akash Squadrons and associated specialist infrastructure. Induction would commence from early 2021 onwards.

Rafale Aircraft: The delivery of the aircraft has commenced and the training of IAF personnel is in progress.

Additional Su-30 MKI Aircraft: IAF had contracted for 272 Su-30 MKI aircraft under various contracts. Presently deliveries are continuing under block IV contract and are likely to conclude by March 2020.

Apache Helicopter: Apache is a Tandem Seating, day/night, all weather capable platform. It is highly agile,



To further encourage the 'Make in India' initiative in Defence and Aerospace sector, Rajnath Singh accorded approval to allow Private Sector industry to compete with Ordnance Factories and DPSUs for the prestigious Raksha Mantri's Awards for Excellence on July 16, 2019.

survivable against battle damage and is easily maintainable even in field conditions. The helicopter is capable of prolonged operations in tropical and desert regions.

DEFENCE PRODUCTION

To boost Defence manufacturing under 'Make in India', Raksha Mantri Rajnath Singh chaired a Roundtable Conference with CEOs of Indian & Foreign Defence companies including MSMEs and start-ups on August 9, 2019 in New Delhi.

To further encourage the 'Make in India' initiative in Defence and Aerospace sector, Rajnath Singh accorded approval to allow Private Sector industry to compete with Ord-

nance Factories and DPSUs for the prestigious Raksha Mantri's Awards for Excellence on July 16, 2019.

Raksha Mantri launched a Dashboard of Department Defence Production (DDP), Ministry of Defence. The dashboard is available at <https://ddpdashboard.gov.in>. The DDP Dashboard contains progress on key initiatives of the Department which include Defence Exports, Defence Offsets, Defence Production, Intellectual Property Rights filed (Mission Raksha Gyan Shakti), Make in India in Defence Projects, Startups working in Defence, Investments in Defence Corridors and Artificial Intelligence Projects in Defence.

Rajnath Singh has approved setting up of a Committee under the Chairmanship of Director General (Acquisition) to review the Defence Procurement Procedure (DPP) 2016 and Defence Procurement Manual (DPM) 2009. The Committee will revise and align the procedures with the aim of ensuring seamless flow from asset acquisition to life cycle support.

It is very important to have 'Ideation, Innovation and Incubation' to achieve the goal of indigenisation and self-reliance in cutting edge-technologies. This was the underline theme of 'Def Connect 2019' organised in New Delhi on October 5, 2019. It was organised to showcase the accomplishments of the Innovations for Defence Excellence (iDEX) initiative and construct a strong outreach towards the potential future entrepreneurs of the defence sector. Third phase of Defence India Startup Challenge (DISC) thrown open to prospective startups in the event under which three challenges from the Army, Navy and Air Force. 🇮🇳

Source: Ministry of Defence



The Union Minister for Defence Rajnath Singh leading the Indian delegation and the US Secretary of Defense, Dr. Mark Esper heading the US delegation, during the bilateral meeting, in Washington on December 18, 2019.

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By Niranjan Mudholkar

EXPANDING HORIZONS!

We are contemplating not only expanding our product lines but also are looking at new markets and opportunities for strategic tie ups with global machine tool builders, says **K. Ganapathi Subramanian**, Vice President – Mktg & Sales, Gedee Weiler (P) Ltd



The on-going economic slowdown has had varying impacts on different organisations. How is your organisation using this period to prepare for the next phase of growth?

The current economic slowdown being faced by India is caused by various factors like slowdown in global economy, lack of funding available for the industry because of the curtailing of funds supplies to NBFCs, the reduced demand for automobile due to postponement of purchase decision by customers until launch of BS6 and the expected change over to electric vehicles, etc. All of these have led to a very low demand for machine tools in the last nearly one year.

While this had greatly impacted the sales volume of the standard machines, we at Gedee Weiler have always been focussing on offering turnkey solutions and customization to the extent possible based on our modular design of our products.

It has been our experience that our recently launched products like turnmill machines and Versaturn - with its enormous flexibility and ability to quick change over set ups - continue to be in demand by our customers.

As we cater to various segments of the industry, we are focussing on the sectors other than automotive.

We identify the potential needs and deliver competitive solutions to meet the exact requirements of customers.

We have utilised the time available to develop different type of automation solutions (Servo gantry, dedicated chutes with pneumatic grippers, unique unloading concepts for shaft bars and pipes, etc..) on our standard products which are already in demand and we expect this demand only to grow when the economy starts looking up.

In our pursuit for offering solutions to customers, we have identified different sources from Europe who can offer unique tooling, tool holding and work holding solutions which can greatly improve the productivity with a marginal investment that can be adopted on the existing machines of the customers, thus help our customers reduce their cost and maximize their profits.

We are contemplating not only expanding our product lines but also are looking at new markets and opportunities for strategic tie ups with global machine



“The change in the preference of consumer is radically changing the demand pattern for different products.”



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tool builders and we foresee our Company to be a name to reckon with in the global machine tools arena for precision and innovative machine tool solutions, for years to come.

What are some of the technological trends that are driven by customer demands and how are you addressing the same?

The change in the preference of consumer in every walk of life like transportation, communication, etc. brought in by the technology change, is radically changing the demand pattern for different products. This throws a challenge to machine tool builders to develop products that can cater to the fast-changing needs of industry in terms of productivity, flexibility and ability to change very quick, all at an affordable cost. While on one

“

We will continue to focus on bringing out products that combine multiple processes and are capable of adapting to automation and customization.

hand, the consumer preference is bringing in new demands, on the other hand change in skills required and / or the lack of it is a major factor that throws challenge to the machine tool industries.

It is our customers whose requirement drive us to develop new products that act as a vehicle which carries the solutions to meet their needs. As the Gedee family itself is well known for its innovative traits, the organization is focused on development of new products and solutions which help our customers reduce their cost and maximize their profits.

We will continue to focus on bringing out products that combine multiple processes and are capable of adapting to automation and customization where possible to meet the specific needs of the customers.

We have launched 'Versaturn' slant bed long stroke machine radically innovative concept of integrating zero clamping system on to the saddle that enable quick change over of T-slot tables mounted with linear tools. Optionally this is equipped with turret also for different components with shortest change over time based on zero point clamping system, making it suitable for mass as well batch production.

We set up a corporate technical center at our Coimbatore plant where customers can experience our latest products and technologies including live demos. We also have a resource center setup in Faridabad where we have a demo machine along with fully equipped application capabilities as well as after sales service spare parts back up. We contemplate to set up such resource centers in other potential markets as well in the coming years.

Besides the traditional industry sectors like automotive, do you see any other segments driving growth in the times to come? How well positioned are you to cater to their requirements?

While typically around 50 percent of the machines are supplied to the Automotive / Auto component industries, the other major segments are General engineering like pumps, valves and bearings, special applications in the White goods industry, High precision Tool room and Aerospace industry, as we offer customized and tooling solutions.

Our competitive turnmill machines launched about two years ago have found wide acceptance throughout India especially in small component segment in different industries. By offering a choice of live tool turrets, controllers, a bit of customization and strong application support, we position ourselves as a solution provider for turnmill applications.

We are developing specific products that can cater to specific applications for eg: End machining of pipes, Multi-function machine with a Y-axis capability and are enhancing the range of our Conventional lathes to meet the expected demands of the market in the coming days.

As a pioneer in precision lathe segment, we enjoy a dominant position in tool rooms, aerospace industry, training centres and leading premier institutions. Our CNC and Conventional machines find wide acceptance in the educational sector wherein we regularly supply machines to premier technical institutions. We are the largest exporter of machine tools to Germany from India. We have supplied around 1500 machines in around 5 years including high precision conventional lathes, CNC lathes in SKD conditions and also a number of CNC machines. Apart from Germany we have good presence in Indonesia where we commenced

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our business about 2 years ago and supplied nearly 100 machines including CNC lathes and Turnmill centers. While Europe will continue to be our major market, we will be consolidating our presence in Indonesia.

We see lot of potential in markets like Thailand, Malaysia and Vietnam in the coming years, where we already started focusing our attention.

Today, all progressive manufacturing companies are adopting Industry 4.0. What role is your organisation playing in this context?

The internet has changed greatly all our lives, has brought in change in various walks of life and the industry and the machine tool sector is no exception, to this. The latest concept of 'Industry 4.0' and internet of things are becoming the order of the day in man-

ufacturing industry and the need of the hour is smart machine tools that can be part of the smart factory. Intelligent machines that can easily adapt to the quick change in production processes with ease that can combine multiple operations in a single setting, facilitate monitoring of various parameters of machining, tooling, safety as well maximize productivity and at the same time be cost effective is the current trend in the machine tool industry. We displayed our Turnmill centre "Uniturn 400 HD TM" in IMTEX 2019 which was Industry 4.0 compliant. Uniturn-400 HD TM machine is equipped with 12 station dual pitch live tool turret which caters to medium range of components of dia 150 up to a length of 250 mm. Equipped with turn mill capability, this machine is well suited for mass as well as batch production of components for automobile and general engineering sectors.

We demonstrated monitoring of:

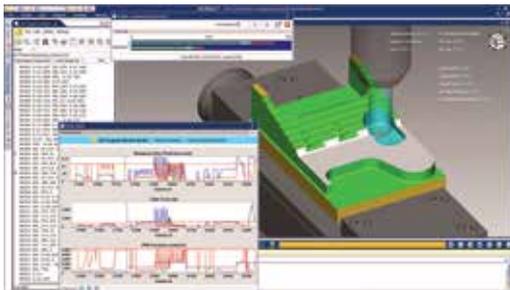
- Spindle Temperature
- Spindle Vibration level
- Coolant PH
- Hydraulic Temperature
- Axis and Spindle motor loads

Apart from above, monitoring of OEE was also part of the IOT demonstration.

Based on customer requirements we can add features / capabilities for monitoring of / collecting data of any other parameters. 

IMPROVE PRODUCTIVITY, INCREASE PROFITABILITY

CIMdata Publishes CGTech VERICUT eBook, Next Generation NC Program Operation with VERICUT Version 9.0



CIMdata, Inc., the leading global PLM strategic consulting and research firm has released an eBook focused on CGTech's numerical control (NC/CNC) simulation, verification, and optimization solution suite, VERICUT. The review features the most recent version of VERICUT, V9.0, released in November 2019.

The comprehensive review highlights new features in VERICUT version 9.0 and enhanced software

capabilities including:

- Force optimization
- Simulation and validation of additive and hybrid manufacturing processes
- Capabilities to examine composite materials layout processes
- Advanced connectivity
- Many other improvements and advancements

"CGTech continues to expand the boundaries of NC verification with their Force capabilities and support for additive manufacturing combined with their established subtractive verification techniques," says Mike Fry, Director of Manufacturing Systems Engineering Practice at CIMdata. "CIMdata believes that the use of Force consistently throughout a shop could positively impact a machining shop's competitiveness and increase its profitability."

The eBook is available at

<https://www.cgtech.com/vericut-ebook.html>

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By Niranjana Mudholkar

SHAPING THE FUTURE OF MANUFACTURING!

While witnessing a lot of action with a plethora of launches, Imtex Forming 2020 will ignite the spark for manufacturing growth., says **V. Anbu**, Director General & CEO, IMTMA



All geared up for Imtex Forming 2020?

Yes, Asia's leading exhibition on metal forming and manufacturing technologies, 'Imtex Forming 2020 & Tooltech 2020', will be organized by IMTMA at BIEC in Bengaluru from 23rd to 28th January 2020. This will be the largest Imtex Forming exhibition surpassing all previous editions.

Tell us something about the International Seminar on Forming Technology 2020 coinciding with Imtex Forming 2020.

IMTMA will organize the International Seminar on Forming Technology 2020 on 22nd January at BIEC, Bengaluru. The seminar with the theme "Shaping the Future of Manufacturing" will bring together the fraternity of forming technology users and manufacturers on a common platform to discuss related issues. Experts from Germany, Sweden, Holland, UK, USA, India, Switzerland and Italy will facilitate sessions at this International Seminar.

Dr. Asim Tewari, G.K. Devarajulu Chair Professor, Department of Mechanical Engineering, IIT-Bombay will deliver a keynote address on "Aggressive Lightweighting through Use of Composites". The seminar will also fea-

ture speakers presenting latest developments in metal forming technologies such as laser technology, future of bending automation, next generation stamping technology, production solutions for high strength aluminium, additive applications in aerospace industry, emerging technologies and smart solutions in forming, to name a few.

With clear indications of revival on the horizon, do you expect to see this reflected in the contractual value of the business deals happening at the 2020 edition?

Although the year 2019 was a challenging one for automobile industry with dipping sales and piling inventory, a revival and improvement of sales is on the horizon with winding up of BS-IV stocks and manufacturing of engines with BS-VI norms. With manufacturers adopting to production changes, the automobile and auto component industries will pick up steam again which bodes well for the machine tool industry. Imtex Forming 2020 will witness a lot of action with a pleth-



"Imtex has always been a harbinger of technologies to the doorsteps of manufacturers enabling their self-development and helping them manufacture products which can sell globally."

IMETX 2020 - Highlights

- 500+ exhibitors
- Exhibitors from around 25 countries
- 500+ live demos
- Focus on additive manufacturing and **Industry 4.0**
- Over 33,000 square metres of exhibition space
- International Seminar on **Forming Technology i2 Academia Pavilion** (an event for academia and industry to interact and explore possibilities for tie-ups)
- Connect (an awareness programme on **machine tool industry**)
- International Buyer-Seller Meet** (an interaction platform for machine tool manufacturers and international buyers)
- 40,000 + business visitor footfall expected

ora of launches not alone for automotive sector but also for many other important manufacturing segments such as railways, electronics, aerospace and defence, medical equipment manufacturing and so on. I firmly believe that Imtex Forming 2020 will ignite the spark for manufacturing growth.

Would you say Imtex has also acquired a new dimension of technology exchange and transfer through collaborations / JVs / M&A?

Imtex has always been a harbinger of technologies to the doorsteps of manufacturers enabling their self-development and helping them manufacture products which can sell globally. In its initial years IMTEX was the primary marketing platform for exhibitors to reach out to customers and sustain their business. With every passing year, the exhibition has showcased manufacturing technologies and solutions through 'live' displays and enhanced collaborations through reverse buyer-seller meets. The exhibition is showcasing digital technologies such as additive manufacturing which is driving the manufacturing industry as well as the evolutionary Industry 4.0.

In terms of technological trends, what can we expect from the exhibitors at Imtex Forming 2020?

Technologies in metal forming such as high-speed laser cutting machine, sheet metal working, welding and joining, presses, metrology, and CAD/CAM essential for Indian manufacturing will be exhibited 'live' enabling business visitors to take informed decisions. The exhibition will also feature 3D printing and technologies that form Industry 4.0 which will be showcased in dedicated arenas. 

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Sunil Sagane, Head E&I, thyssenkrupp.

thyssenkrupp Industries India is a part of the Industrial Solutions Business Area of thyssenkrupp AG, Germany. The company is located in Pune, India, with its second manufacturing unit at Hyderabad. thyssenkrupp, in the last seven decades has grown to become one of the most trusted names in the fields of Sugar Plants & Machinery, Open Cast Mining & Bulk Material Handling Systems, Cement Plants & Machinery and Industrial Boilers & Power plants.

With strong foundations and access to world-class technology today, thyssenkrupp’s plant making capabilities are helping the industry become competitive world over. The company’s nationwide branch network along with the support of thyssenkrupp’s global establishments and world-class technology enable it to meet the needs of customers on time. thyssenkrupp’s stra-

tegic vision as an EPC Contractor to execute turnkey projects is derived from its core strength of integrated engineering expertise & automation in manufacturing, which is backed by an excellent team of project executives.

The company firmly believes in delivering total customer satisfaction spanning from concept to commissioning to after sales service. thyssenkrupp’s highly competent project management capabilities are a result of its tradition of anticipating and fulfilling specific customer requirements. A highly qualified team of engineers and technicians, supported by a highly modern IT infrastructure ensures the brand of quality that is synonymous with thyssenkrupp worldwide. The emergence of a true market leader speaks volumes about the world-class technology inherent in the company’s products:

- Sugar Plant & Machinery
- Open Cast Mining & Bulk Material Handling
- Cement Plant & Machinery
- Boiler & Power Plant.

THYSSENKRUPP’S BUSINESS CHALLENGES

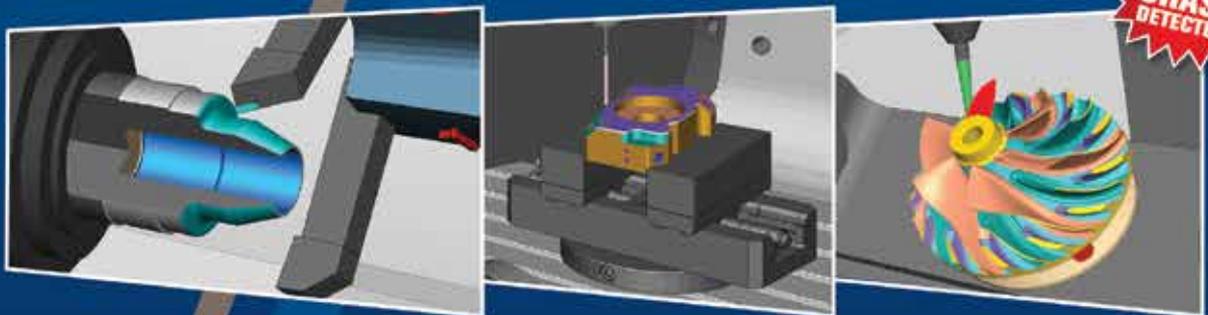
After analysis of the time spent on all the major engineering activities, it was found that 6.4 percent of total engineering hours were spent to carry out cable engineering and generate required E&I documents. Cables are required first at site to start the erection. However, cable engineering documentation is prepared in the last stage of E&I engineering due to its dependence on various vendors. As a result, the time required to supply cables, to meet desired project schedule, is not enough. Therefore, various alternatives were explored for reducing engineering time and errors, and at the same time, be flexible to meet customer demands to provide the cable engineering documentation in their format. Even though EPLAN was being used (more than 09 years now) for cable engineering, the software’s full potential was not realized, despite training the engineering personnel.

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"I also wanted to express my thanks and appreciation to EPLAN for conducting the training, understanding our requirements, providing guidance and support in a very professional and planned manner, due to which the team remained motivated and focused. The team completed the project within a short time and realized the goal of achieving higher productivity & efficiency."

Sunil Sagane

EPLAN THE ENGINEERING SOLUTION PROVIDER

Challenges faced in regard to workflow, low-utilization despite training personnel at EPLAN training school were discussed. After understanding the challenges being faced, EPLAN suggested the use of "EPLAN EEC One" software and to generate schematics (in standard / custom formats) directly from the Excel inputs where-in data is collected from various vendors.

Since the output of the EEC One software module directly interacts with the present EPLAN software to generate various cable engineering documents & reports automatically without manual intervention, once the excel file input is ready, the complete cable engineering documentation is generated on the same day.

thyssenkrupp specific training was conducted by EPLAN. Live examples were exercised during training, which resulted in a thorough understanding for EPLAN users. EPLAN also helped in designing and generating Macros. EPLAN provided guidance to

standardize the structure to suit various types of projects being executed. Creation of thyssenkrupp's client specific report Formats (in EPLAN and in Excel) and templates, while providing support for one complete project and creating thyssenkrupp specific toolbars.

BENEFITS DERIVED FROM THE EPLAN

Schematic drafting is totally eliminated; therefore, cable schematic is generated without any intervention, thereby saving engineering hours. It helps in generation of error free reports from the present EPLAN software. Schematics are generated from tested and standardized schemes, hence saving hours of rework. As a result, 50 percent savings in engineering hours were achieved. Flexibility in generating documents as per client specific formats with very little effort became possible, with hours of rework saved, since drawings are error free. "EPLAN EEC One, a higher end engineering solution from EPLAN has brought in high productivity & efficiency and helped us to effectively utilize the EPLAN Electric P8," says Sunil Sagane, Head E&I, thyssenkrupp. "I also wanted to express my thanks and appreciation to EPLAN for conducting the training, understanding our requirements, providing guidance and support in a very professional and planned manner, due to which the team remained motivated and focused. The team completed the project within a short time and realized the goal of achieving higher productivity & efficiency." 

For more information, visit www.eplan.in or write to info@eplan.in

THREE PERCENT GDP FROM MINING SECTOR BY 2025: CII

As India embarks on a fast track growth towards AUS\$ 5 trillion economy by FY25, the mining sector calls for a much sharper focus and concerted efforts by the policy makers and industry players to regain 3% share in the GDP by FY25, reveals the Study Report 'Towards a Globally Competitive Minerals & Mining Industry'. The Study undertaken by Confederation of Indian Industry was released at the Mining Summit 2019 at New Delhi recently. Releasing the report, Upendra Joshi, Joint Secretary, Ministry of Mines said, "The minerals and mining industry is core to India's growth ambition of a \$US5 trillion economy. Exploration, extraction and management of minerals have to be guided by national goals and perspectives, to be integrated into the overall strategy of the country's economic development and at the same time, there should be effort to promote

domestic industry and reduce import dependency." The sector has a pivotal role to play in the 'Make in India' vision of the Prime Minister, he added. The Joint Secretary said, "Exploration can improve India's mineral security and competitive edge. There is significant scope for new mining capacities in iron ore, bauxite and coal and considerable opportunities for future discoveries of sub- surface deposits. The Geological Survey of India has almost doubled its exploration activity by implementing about 400 mineral exploration projects on various mineral commodities. Attractive provisions have been made for inviting private investment in mineral exploration through revenue sharing model. It shall also be ensured that the regulatory environment is conducive to ease of doing business with simpler, transparent and time-bound procedures for doing business."

MAIDEN EDITION

THE ECONOMIC TIMES POLYMERS



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For partnership opportunities:

(South)

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

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

Ranjan Haldar
+91 9167267474
ranjan.haldar@wmm.co.in

(West & North)

Jangam G.
+91 9820053063
jangam.gangaram@wmm.co.in

By Niranjana Mudholkar

BEYOND PROTOTYPING!

The Machinist caught up with **Rajiv Bajaj**, Managing Director Stratasys India & SEA at the Stratasys India User Forum in Bengaluru



"3D printing has become integral to the entire workflow and not just to the prototyping of parts."

How do you see additive manufacturing impacting the evolution of the industry going beyond just prototyping?

Yes, prototyping is an easy application. You have a part that you want to replicate and see how it will look good and fit into some assembly. That's basically how prototyping works with 3D printing.

But there are certain challenges that people want to solve with 3D printing. Let's say you want to make some specific jigs and fixtures for the line, or you want to add on some specific features to an existing part. Those are the areas where designers try and experiment. It's like a doodle in their hands. So, they add features in the software, quickly 3D print, check, evaluate, go back and continually improve the process.

What we understand from auto companies is that it gives them more iterations in a much lesser time. This gives them a better product in a much lesser amount of time than they would initially require.

Then, people are innovating to the extent that they are taking it to the shopfloor. They are also taking it to the quality department and they are even looking at

aspects like employee health and safety. So, 3D printing has become integral to the entire workflow and not just to the prototyping of parts.

Do you think additive manufacturing can empower start-ups?

Definitely. For example, if a start-up has to translate a design into a product line and if it has to go the traditional ways, then it is going to require many tools just to come up with the first few parts. This includes long lead times and a lot of expenses. They will have to give it at least a few weeks to happen. Whereas with 3D printing, you can print it in a few hours, evaluate, check, and show it to your investors or show it to the people who have developed this product and you are done.

That's the kind of differentiation 3D printing brings to start-ups. People who do not have a full-fledged manufacturing setup at their beck and call like big companies have, they see it as a big advantage. They indeed have an inherent advantage of the process because there's zero investment in toolings. You just go and manufacture what you want. As simple as that!

Do you think additive manufacturing will grow, if there is more skill development and more training happening?

In the journey of 3D printing, people discovered much later that design for additive manufacturing also plays a very big role. So, you have a better tool to design and you have a machine that has no constraints of the traditional processes. We firmly believe that engineers at an early learning stage itself know about the power of 3D printing, along with the constraints of manufacturing.

We are not saying 3D printing will kill traditional manufacturing or traditional manufacturing will survive long enough not to let 3D printing develop. Most intelligent and successful organisations will use both of them together in tandem and complement each other. So, with that being said, it becomes very important for the students who are coming out of the universities to know more about design for additive manufacturing



Most intelligent and successful organisations will use both traditional manufacturing and 3D printing together in tandem and complement each other.

because they are at a stage where they're experimenting with software. Software play a big role in design for additive manufacturing. And once they are out of the institute or university and go into the industry they are able to utilise it more effectively compared to the existing set of people who are tuned into the old way of manufacturing for a very long time. Design for additive manufacturing is going to become very big alongside of additive manufacturing.

How interoperable are Stratasys software and ma-

chines with other design software?

Our machines work with all design software. Grab-CAD software is a new addition to our portfolio although it's not new and has been with us for a while. It is more of a printing management and optimization software. There are CAD functionalities that are being added to it. We also have a huge portal which has collection of 3D printed parts that you can download and print; people contribute freely over there. So yes, these are definitive steps. If we have a vision of making our 3D printers part of industry portfolio, then there has to be traceability, repeatability and so on, and grab CAD will also play a key role in that in connecting it with the enterprise.

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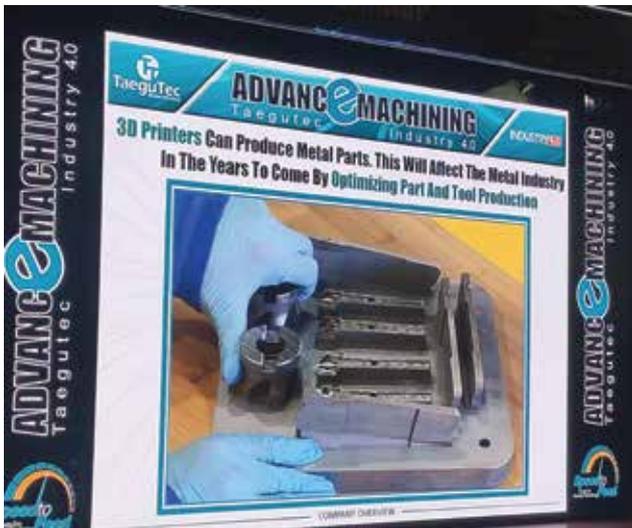
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By Niranjana Mudholkar

ADVANCE MACHINING

TaeguTec India recently launched its new product line SFEEDTEC across major manufacturing hubs in India. The Machinist magazine witnessed the unveiling at Pune done by Jacob Harpaz, President and Chairman, IMC Group



Harpaz also threw light on key industry trends like 3D Printing

“This launch is our endeavor to support our customers and partner with them in their quest for process optimisation and cost reduction.”

Jacob Harpaz, President and Chairman, IMC Group

Cutting tools major TaeguTec India (Part of the IMC Group) recently launched its new product line - the SFEEDTEC, High Speed & Feed lines across various locations in India. One such launch was in Pune, one of India’s major manufacturing centers. The launch was well attended by the company’s customers who came from wide-ranging industries like automotive, general engineering, construction equipment, aerospace, power equipment and so on. The event also saw good presence of TaeguTec’s local partners from the region.

At a time when the manufacturing fraternity across

the world is going through a slowdown, new launches like this certainly provide a ray of hope by being a confidence building measure. More so because it endeavours to address the key requirements of the industry – saving money and time! According to Jacob Harpaz, President and Chairman, IMC Group, this launch by TaeguTec has been aimed at helping customers improve their manufacturing processes while also reducing the cycle time and bringing down the cost of manufacturing. “TaeguTec believes in introducing new and better concepts through products that directly address customer requirements in an enhanced manner,” Harpaz remarked while introducing the product line in Pune. “It is our endeavor to support our customers and partner with them in their quest for process optimisation and cost reduction. The newest product line from TaeguTec – the SFEEDTEC High Speed & Feed lines – is yet another successful milestone in this journey, and we hope for all our stakeholders and most of all our customers to reap the most benefit from it,” he said.

During his insightful presentation, Harpaz remarked that the new product line, which has been innovatively engineered and smartly designed, will raise the bar in the machining world. He informed the audience that the term SFEED in SFEEDTEC stood for sharp, fast, easy, exact and durable! Besides talking about the features of the new product line, Harpaz threw light on the current scenario across the manufacturing world. While highlighting key market challenges, he urged the industry to prepare for the emerging trends. In the context of choosing the right tooling partner, Harpaz spoke about the six attributes for machining success, namely: full line supplier, product innovations, infrastructure, industry solutions, production cost, and industry trends.

He also presented an excellent machining cost analysis and explained the impact of conventional cutting tools in comparison with new generation cutting tools for cost reduction. 

ANNOUNCING THE 3rd EDITION



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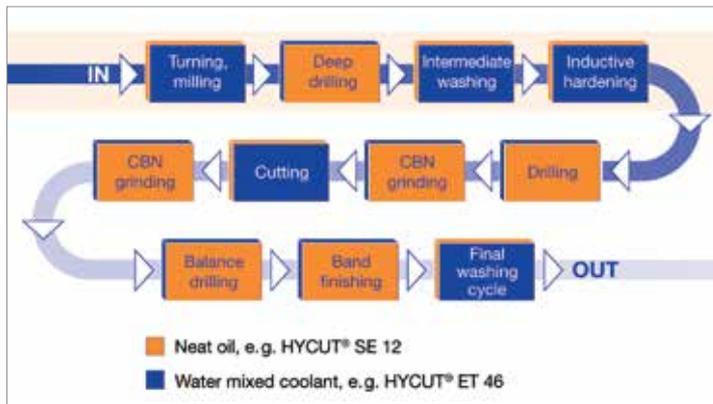
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Mahadev. B
+91 9448483475
mahadev.b@wmm.co.in

Prabhugoud Patil
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CUTTING OUT THE NEGATIVE IMPACT!

Life cycle assessment of metal removal fluid systems in metalworking applications



“In the sense of a holistic evaluation of the environmental impacts, the complete life cycle of a product is considered – from the extraction of raw material to production and usage to final disposal.”

The use of Metal Removal Fluids (MRF) or “coolants” in industrial metalworking applications is very common, due to the fact that their cooling, lubricating and flushing effects enable an efficient and economic machining process. Conventional water-miscible or non-water-miscible MRF on mineral oil basis are used. The extraction, production, usage and disposal of mineral oil, however, have various negative ecological impacts. Also, from a process chain perspective, the selection of the particular cooling lubricant has an ecological impact itself.

A large part of the used cooling lubricant is dragged off during the process due to adhesion on the workpiece. Depending on the type of cooling lubricant used in the subsequent process step, a

time-consuming intermediate washing has to be carried out. In order to prevent this inconvenience, Oemeta developed the multipurpose oil HYCUT, which can either be used as a non-water-miscible machining oil or as a water-miscible emulsion. Contrary to conventional cooling lubricants, it has been developed on the basis of renewable raw materials and results in environmental advantages.

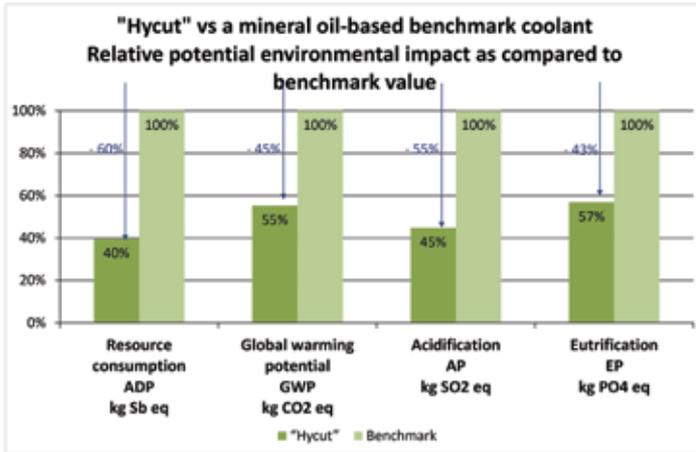
Thus, in cooperation with the Institute for Machine Tools and Production Technology of the Technical University of Brunswick, Germany, the potential environmental impacts of the HYCUT have been examined by means of a Life Cycle Assessment and compared with those of a conventional mineral oil-based reference lubricant system.

METHOD - LIFE CYCLE ASSESSMENT

In the sense of a holistic evaluation of the environmental impacts, the complete life cycle of a product is considered – from the extraction of raw material to production and usage to final disposal. Throughout this life cycle and in all processes examined, the resources consumed as well as the emissions produced are recorded and converted into environmental impacts.

The Life Cycle Assessment was carried out within the framework of a case study at the engine plant of a German automobile manufacturer located in Austria. Here, the process chain of the crankshaft manufacturing was examined, which consists of the most varied machining processes such as milling, turning, deep drilling

Key Figure	Unit	Savings
Relative savings	percent	45 percent
Absolute savings	t CO ₂ -eq	474
Comparison cars	Number cars	158 (Driving distance of 20,000 km / year and 0.15 kg CO ₂ -eq / passenger-kilometre)
Comparison people	Number people	43 [Consumption of 11 CO ₂ -eq / year (average of a German)]
Comparison flight	Number circumnavigation	51 (Flight distance of 40,000 km around the world and 0.23 kg CO ₂ -eq / passenger-kilometre)



The process chain of the crankshaft manufacturing was examined, which consists of the most varied machining processes such as milling, turning, deep drilling and grinding.

and grinding. The process chain is characterized by a frequent change in water-miscible and non-water-miscible cooling lubricants (see illustration 1).

OEMETA'S HYCUT OFFERS GOOD ECO BALANCE

In practice, the process chain is already operated with the ester-based multipurpose oil HYCUT, which is formulated, so that water-miscible and non-water-miscible components are compatible. Thus, the mutual introduction of lubricants adhering to the workpieces must not be avoided, but on the contrary, is desired.

Compared to mineral oil-based reference products, the use of this cooling lubricant in the entire produc-

tion line is much more efficient, because intermediate washing operations and waste of the MRF can be mostly prevented.

Especially the re-use of the washing agent from the workpiece cleaning as cooling lubricant for the machining processes has a positive effect on the Life Cycle Assessment. In order to take full advantage of the multipurpose oil, the planners tailored the production chain design to the particular lubricant. For example, several systems for the cleaning of workpieces, which are normally required, were not installed. The usage of the HYCUT system results in all considered environmental impact categories and with regard to the entire life cycle insignificantly lower environmental impacts (40-60 percent) than the reference system (see illustration 2).

THE SAVINGS

Regarding the Global Warming Potential (GWP), the examined case generated savings of about 470 t CO₂-eq in the annual production. These savings, for example, correspond to the environmental impact caused by the annual driving operation of 158 passenger cars (see table 1). The determined absolute values are case-specific and depend on the basis of comparison, the examined system and the considered processes. The relative values indicate the general trend of the comparison.

Thus, based on the Life Cycle Assessment it could be proved, that the use of the multipurpose oil HYCUT in metalworking applications leads to much lower environmental impacts than the use of a conventional mineral oil-based cooling lubricant with the same benefits. 

For more info, visit www.oemeta.com
or write to barthwal@oemeta.com

SWITZERLAND BASED NUM AG OPENS A BRANCH IN INDIA

NUM AG has opened a branch in Bangalore recently. With this expansion in Asia, the international company with headquarters in Teufen, Switzerland, further reinforces its position as a technology leader in the field of CNC controls. With the expansion to India, NUM increases its local presence there. "The location in Bangalore will enable us to respond much more quickly to customer enquiries and further expand our brand in the region. We have been well represented in China and Taiwan for many years and would now like to further strengthen our



position in Asia," says Rajesh Nath, Managing Director of NUM India. This latest expansion secures jobs worldwide, as well as creating new employment opportunities in India. Rajesh Nath and NUM CEO Peter von Rütli set up the branch in the south of Bangalore. "By opening a branch in India, we are exploiting

our growth potential. At the same time, the Indian team is expanding our expertise in sales, service and after-sales support," adds von Rütli. NUM believes that Bangalore, as a high-tech location, will strongly influence the CNC market in the future.

HARTING HONOURED ONCE AGAIN FOR SOCIAL RESPONSIBILITY



Gisela Eickhoff (left) and Ulrike Upmeyer celebrate the award

For the fourth year running the Harting Technology Group has been awarded gold status by rating agency EcoVadis for its Corporate Social Responsibility (CSR). “This award is a nice Christmas present for all employees,” said Gisela Eickhoff and Ulrike Upmeyer, who are responsible for CSR at the Technology Group. “In times of climate change and Fridays for Future, our customers are demanding ever-stronger evidence of our

commitment to sustainable development as well. The award shows us that we’re on the right track,” Eickhoff added. Customer requirements regarding topics such as environmental protection and occupational safety, compliance and the supply chain are increasingly being bundled and evaluated via platforms such as the EcoVadis one. These platforms offer e.g. the advantage that several customers can access results simultaneously while information need only be supplied once, not individually for each customer. Scoring is done across industries, and each company learns how it compares to the overall group.

The Harting Technology Group pursues a vision of creating “values for people”. One of the pillars is the Code of Conduct of the ZVEI, Central Association of the Electrical and Electronics Industry, which is binding on all companies in the Group. In addition, the management system for social responsibility of the holding company, the two major German production facilities and the German sales company is set up in accordance with international standard ISO 26000 and is externally audited.

SELECTING THE RIGHT MOTOR

By Rupesh Patil

The air motor is one of the toughest and most versatile power units available to today’s design engineer. It is easy to control over a wide speed range, and it produces maximum torque where it is often most needed – at start up. Atlas Copco’s pneumatic motors are compact and reliable with high power-to-weight ratios.

Lubrication-free air motors are available in sizes up to 300 W. Stainless steel motors are also available, ideal for the food and chemical industries due to their capability to withstand corrosive environments. Our ATEX certified motors work perfectly in hazardous environments where sparks or high outer temperatures might otherwise ignite explosive gases, vapour or dust.

We provide three technologies full range of high performing motors (0,1 - 6,5kW):

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Just enter the required working point for the application



“Atlas Copco turbine, piston, vane and gear motors are an ideal solution for many applications in industries like food, chemical and pharmaceuticals, transportation, packaging, pipe processing and maintenance. Customized air motors enable the customers to get the motors that fit their applications well. With strong channel partners’ network all over India, we are committed to provide global level aftersales care locally to end users of our products.”

Rupesh Patil, Business Development Manager, General Industry, Atlas Copco

and the most suitable motor will automatically be selected. 

For the selection use the Atlas Copco selection tool. “Air motor selection program” available at, www.atlascopco.com/airmotors

BIGGER, STRONGER, FASTER

New igus linear robots for cost-effective automation

Simple, precise, fast processes: these are the requirements of Cartesian robots. They are used for such things as pick-and-place applications, sorting systems and medical technology. igus has now developed a linear and room linear robot for large workspaces. The two new kinematics systems allow users to move up to five kilogrammes. Both linear robots are available directly from stock. They can also be customised to suit the customer application in question – no minimum order quantity.

To survive on the market, both large industrial players and small companies need automated solutions that will quickly pay for themselves. For years, Cartesian robots have been a means of choice in automation technology. They allow users to complete their tasks quickly, easily and cost-effectively. All that is required is a little bit of programming effort. igus' lubrication-free linear axes developed in several stage. Depending on the application's requirements, two-axis linear or flat linear robots and three-axis room linear robots can be selected. At Motek, igus introduced a new line robot and a new room linear robot with an enlarged workspace, which allows users to move even greater loads across larger area.

Low Cost Automation with lubrication-free linear robot solutions

The two linear robots consist of pre-configured linear modules, aluminium linear axes, NEMA stepper motors and encoders. The new line robot can transport loads of up to 50 N in a workspace of 800x500mm at a maximum speed of up to 1 m/s. "The investment risk for the line robot is manageable, so that our automated pick-and-place applications for assembly tasks pay for themselves in less than six months. This means that decision makers have a low level of risk," says Alexander Mühlens, Head of Automation Technology at igus. The new room linear robot is a good option for more complex tasks. It can transport loads of up to 50 N in a

"THE INVESTMENT RISK FOR THE LINE ROBOT IS MANAGEABLE, SO THAT OUR AUTOMATED PICK-AND-PLACE APPLICATIONS FOR ASSEMBLY TASKS PAY FOR THEMSELVES IN LESS THAN SIX MONTHS. THIS MEANS THAT DECISION MAKERS HAVE A LOW LEVEL OF RISK."
ALEXANDER MÜHLENS, HEAD OF AUTOMATION TECHNOLOGY AT IGUS.



Bigger, stronger, faster: the new igus lubrication-free room linear robot moves heavy loads across large workspaces. Loads of up to 50 N can be transported in a workspace of 800x800x500 millimetres at a maximum speed of 0.5 m/s. (Source: igus GmbH)

"THE NEW ROOM LINEAR ROBOT IS A GOOD OPTION FOR MORE COMPLEX TASKS."

workspace of 800x800x500mm at a maximum speed of 0.5 m/s. Two ZLW toothed belt axes and one GRR gear rack axis ensure precise guidance and lubrication-free operation.

For fully automated sorting tasks

The new linear robot solutions are used in pick and place, bin picking and sorting tasks. Most of these processes have been moved to the end of the production line. This was also true at FachPack 2019 in the showcase of SSI Schäfer, the intralogistics specialist. The new drylin room linear robot automated the provision of sensitive products using a transport box with a thermoform insert. The specially developed packaging and the use of a linear robot allowed various coloured handles to be

pre-sorted for the production of a household appliance. There are other linear robot use scenarios in microelectronics and automated testing.

Customise room linear robot design

In addition to the stock items, users can assemble their own linear robot with strokes of up to six metres at <http://www.igus.in/robot-enquiry> and request a quotation from igus. Depending on customer requirements, axis length and various motors can also be configured with such items as energy chains and cables from igus.

For more info, contact:
Ragesh Kumar, Product Manager,
igubal®, xiros, bar stock, igus (India)
Private Limited,
Email: ragesh@igus.in, or
visit www.igus.in

NO SETUP, NO DOWNTIME FOR SMART FACTORIES

With the use of network communication, new digital technologies combine physical manufacturing systems with virtual worlds of knowledge and 3D modelling.



Figure 1: MULTI-MASTER Heads

A FURTHER ADVANTAGE OF USING TOOLS WITH EXCHANGEABLE HEADS IS THEIR ABILITY TO CUSTOMIZE TOOL CONFIGURATION ACCORDING TO THE REQUIREMENTS FOR MACHINING A SPECIFIC PART.

Manufacturing is on the eve of comprehensive digitizing, which in one way or another will impact almost all its stages: product design, process planning, machining, assembly, and more. The driving force behind the changes is a series of technological breakthroughs related to the fourth industrial revolution, known as Industry 4.0.

With the use of network communication, new digital technologies combine physical manufacturing systems with virtual worlds of knowledge and 3D modelling. The target is significantly increased output but as manufacturing systems considerably improve their intellectual features and decision-making capabilities, they necessarily become more complicated and more expensive. Minimizing the downtime of such systems is a 'must' for the development of every system component such as machine tools, workholding device or a cutting tool. Cutting tools can not only cut metal but also cut downtime, depending on their design concept. Assembled cutting tools

with exchangeable cutting heads from cemented carbides are very common in metalworking today. If two decades ago there were very few systems built on an exchangeable head principle, now practically every leading cutting tool manufacturer has this type of system in its product range.

Advances in tool grinding and reshaping machines have simplified production of solid carbide tools and their regrinding. This in turn has resulted in an increased number of medium and small tool manufacturers, and a growth of regrinding services. It might have been expected that the solid carbide design approach would seriously challenge the exchangeable alternative and quickly regain lost ground. However, this has not happened, and, in fact, the situation is reversed: progress

in machine tool engineering and the current trend towards smart manufacturing hold good promise for the future of assembled cutting tools with exchangeable heads.

An example of this apparent contrast may be provided by taking a look at ISCAR – a leader in the field of cutting tool manufacturing. ISCAR introduced the "no setup" principle in tools with exchangeable heads, whereby replacing a worn head would not require any additional setup operation for adjustment, and therefore the head could be changed without removing a tool from the machine. The source of this 'no setup' feature is high repeatability of the exchangeable heads that is ensured by a face contact between the head and a tool body, and strict tolerance limits for the head area protruding over the body. The 'no setup' principle was successfully realized in ISCAR's MULTI-MASTER (Fig. 1) and SUMOCHAM (Fig. 2) rotating tool families. In non-rotating products, the new MULTI-F-GRIP (Fig. 3) and LOGIQ-5-GRIP parting and grooving tool families represent the fruits of a different approach where the assembled tool comprises a tool block and an indexable multi-pocket adapter carrying replaceable inserts. Due to the high precision of the assembly components, the pocket indexing does not require additional setup. Both "no setup" concepts provide significant reductions in machine downtime.

Along with the benefits in reducing downtime, these tools feature exceptional versatility.



Figure 2: SUMOCHAM Drills

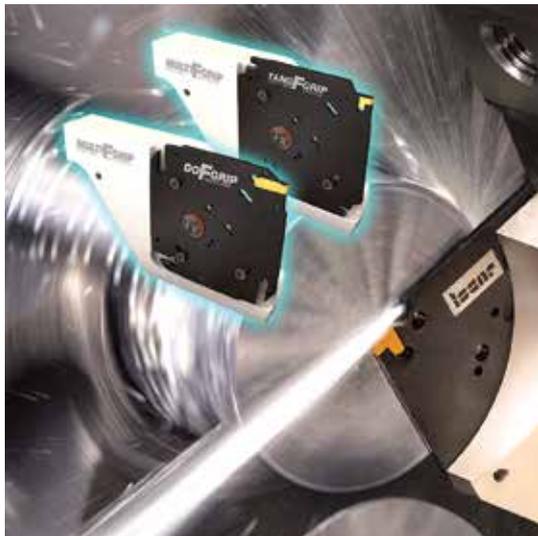


Figure 3: MULTI F GRIP _Tools

The MULTI-MASTER, for instance, where the head is suitable for mounting in different tool bodies, and the body can carry different heads, enables thousands of tool combinations for a broad range of applications, including milling shoulders, faces, slots or complex surfaces and machining holes or chamfers. MULTI-F-GRIP, a family of non-rotating tool blocks and 4-pocket adapters, integrates both TANG- and DO-GRIP inserts. Not so long ago, versatility was considered as the main advantage of the tools with exchangeable heads; however, recent progress in machine tool building and, especially, the trend towards smart manufacturing based on Industry 4.0 concepts, returned 'no setup' capabilities to the fore.

Advanced regrinding allows restoration of cutting geometry of a worn solid carbide tool with high accuracy. However, the tool changes dimensions; and putting it into operation demands preliminary setup and appropriate corrections in a CNC program. This causes a reduction in effective cutting time, diminishing productivity which in turn increases production costs.

However, a 'no setup' quick-change cutting head eliminates the need for supplemental measurements or program corrections and does not require any additional setup units. This is why the 'no setup' capability of a cutting tool plays a significant role in a smart metalworking factory. From this point of view, 'no setup' assembled tools with exchangeable carbide heads, such as MULTI-MASTER and SUMOCHAM, can be considered as a good match for a smart factory. Understanding the benefits of this capability makes it clear why ISCAR considered tough tolerance limits for the overhang as an essential design requirement when the company started development of these two lines, some twenty years ago.

A further advantage of using tools with exchangeable heads is their ability to customize tool configuration according to the requirements for machining a specific part. Multitasking machines that enable various types of cutting in one single-step process have become very popular in industry. These machines have driven-tool capabilities for combining machining by rotating and no-rotating tools, which can significantly improve productivity. In addition, machine tool builders offer a range of options to supplement a standard CNC lathe with driven-tool functions, and so transform the lathe to a multitasking machine. The power characteristics of a typical driven-tool unit are similar to the parameters of a typical small machining center. The MULTI-MASTER line features a wide variety of tool bodies ("shanks") with different adaptations, reducers and extensions, which ensure an optimum configuration and minimize tool overhang (Fig. 4). This greatly contributes to reducing bending load on the driven tool unit mechanism to improve performance and tool life.



Figure 4: MULTI-MASTER Tools in multifunction machine tool post

Implementing Industry 4.0 concepts into the metalworking industry is exemplified by the integration of the "no setup" principle in assembled tools with exchangeable heads. And it is not only about saving cemented carbide; the new developments have generated important capabilities to maximize machining output and decrease production costs.

At the same time, it is precisely these capabilities that might demand stricter requirements for appropriate design parameters, particularly regarding the tightening of axial repeatability tolerances.

FIT FOR THE DIGITAL FUTURE

The LAPP e-learning modules on industrial data communication are not just for employees, they are also available to customers and partners.



ETHERNET - AN ETHERNET CONNECTION ENABLES DATA TO BE TRANSFERRED FROM ONE DEVICE TO ANOTHER IN A CLOSED NETWORK.

INDUSTRY 4.0 - THE UMBRELLA TERM REFERS TO INTELLIGENT NETWORKING OF MACHINES AND PROCESSES IN INDUSTRY. PEOPLE OFTEN TALK ABOUT THE FOURTH INDUSTRIAL REVOLUTION.

LAPP makes its employees experts and supports its customers in finding their way through the jungle of technologies and protocols. An extensive range of programmes has been set up including webinars, traditional face-to-face training sessions, boot camps and a certified two-year programme specially developed for global experts in industrial data communication in the LAPP Group.

Perspective in industrial communication

The trend towards networked smart factories is providing new challenges for many different groups of users – from electrical installation engineers to factory planners and operators. The LAPP qualification initiative includes different programmes depending on the complexity of the challenge. At the same time, the requirements for LAPP employees are changing: New opportunities and increasing complexity mean that LAPP customers are looking for more intensive and in-depth advice. LAPP's aim is to enable its sales employees to accurately analyse customers' needs and help them find integrated, consistent solutions. To achieve this, they need a much higher level of technological and system knowledge than before, particularly when it comes to industrial

FIELDBUS - FIELDBUS IS A NETWORKING METHOD TO CONNECT ACTUATORS AND SENSORS, FOR EXAMPLE IN COMPLEX MACHINES IN MANUFACTURING TECHNOLOGY.

data communication. Giving them this specialist knowledge in a contemporary, appealing and efficient way is one of the main aims of the industrial data communication qualification initiative at LAPP. "Many of our customers are speaking to us about the issue of industrial data communication and the associated challenges. Therefore, it is essential to make sure our employees and customers are continuously kept up to

on various continents is not a viable solution – especially as we also wanted to involve customers", says Dr. Hilmar Döring, Member of the Board responsible for Human Resources and Organisational Development. "It doesn't make sense logistically. It would take too long and doesn't match our idea of how knowledge is best communicated these days." As a result, LAPP is using e-learning for the basics, with learning

"MANY OF OUR CUSTOMERS ARE SPEAKING TO US ABOUT THE ISSUE OF INDUSTRIAL DATA COMMUNICATION AND THE ASSOCIATED CHALLENGES. THEREFORE, IT IS ESSENTIAL TO MAKE SURE OUR EMPLOYEES AND CUSTOMERS ARE CONTINUOUSLY KEPT UP TO DATE ON THE ISSUE." GEORG STAWOWY, THE LAPP HOLDING AG BOARD MEMBER RESPONSIBLE FOR TECHNOLOGY AND INNOVATION.

date on the issue", says Georg Stawowy, the Lapp Holding AG Board Member responsible for Technology and Innovation.

The focus is on understanding the challenges that could arise in specific applications and providing professional advice as early as possible. Because of the number of participants involved it was clear that: "Holding face-to-face courses with a trainer for thousands of employees

modules on topics including "Principles of automation", "Automation components", "Fieldbus" and "Ethernet". LAPP developed the e-learning modules in cooperation with the Fraunhofer Institute for embedded systems and communication technology.

All modules are available in ten languages. They can be found online at: <https://lappgroup.knowhow.de/modules-en.html>

EXPANDING THE OPTIONS FOR EFFICIENT HOLE-MAKING

Dormer Pramet's hole-making assortment has grown with several new additions.



The Hydra range now includes a 12xD for deep hole applications and a 1.5xD option for improved rigidity in shallow hole and plate drilling.

The global cutting tool manufacturer Dormer Pramet has extended its range of Hydra replaceable head drills, launched a solid carbide drill for aluminum and added a new spotting drill. Providing a highly cost-effective option for large diameter drilling, the Hydra program supports structural and general engineering applications. Its range of solid carbide heads – for steel, stainless steel and cast iron – are married together with a hardened steel body.

Existing body options – 3xD, 5xD and 8xD – have been expanded with a 12xD for deep hole applications and a 1.5xD option for improved rigidity in shallow hole and plate drilling.

Providing consistently high performance, even after numerous head changes, the range of bodies incorporates coolant holes to improve cutting efficiency and swarf evacuation. The exact fit between head and body maximizes tool rigidity for superior hole accuracy and precise tolerances.

Also, one body can fit multiple solid carbide head sizes, reducing inventory requirements. In addition, heads can be easily changed without removing the body from the spindle, minimizing machine downtime.

Meanwhile, Dormer Pramet has extended its Force

“PROVIDING A HIGHLY COST-EFFECTIVE OPTION FOR LARGE DIAMETER DRILLING, THE HYDRA PROGRAM SUPPORTS STRUCTURAL AND GENERAL ENGINEERING APPLICATIONS. ITS RANGE OF SOLID CARBIDE HEADS – FOR STEEL, STAINLESS STEEL AND CAST IRON – ARE MARRIED TOGETHER WITH A HARDENED STEEL BODY.”

hole-making assortment, with a solid carbide drill for all types of aluminum, from soft to abrasive grades. The flute and cutting geometry of the new Force N range features a 32° helix angle. This helps to break swarf into small manageable chips and reduce exit burr, which



Force N is a solid carbide drill for all types of aluminum, from soft to abrasive grades.

can occur when drilling soft materials.

Offering high metal removal rates and reduced thrust forces to improve hole quality and productivity, Force N is available in 5xD and 8xD lengths with through coolant. Dormer Pramet's existing assortment of solid carbide drills includes Force X for use across a variety

“THE FLUTE AND CUTTING GEOMETRY OF THE NEW FORCE N RANGE FEATURES A 32° HELIX ANGLE. THIS HELPS TO BREAK SWARF INTO SMALL MANAGEABLE CHIPS AND REDUCE EXIT BURR, WHICH CAN OCCUR WHEN DRILLING SOFT MATERIALS.”

of materials and Force M for stainless steel.

Finally, Dormer Pramet has launched a new solid carbide drill for fast and accurate spotting. The R125 has a 150° self-centering point geometry, making it ideal for use with high performance drills with point

angles around 140°. Providing consistent performance and repeatability in all materials, a multi-layer TiAlN coating ensures longer tool life, improved cutting-edge stability and wear protection.

For more information, please visit www.dormerpramet.com or contact your local sales office

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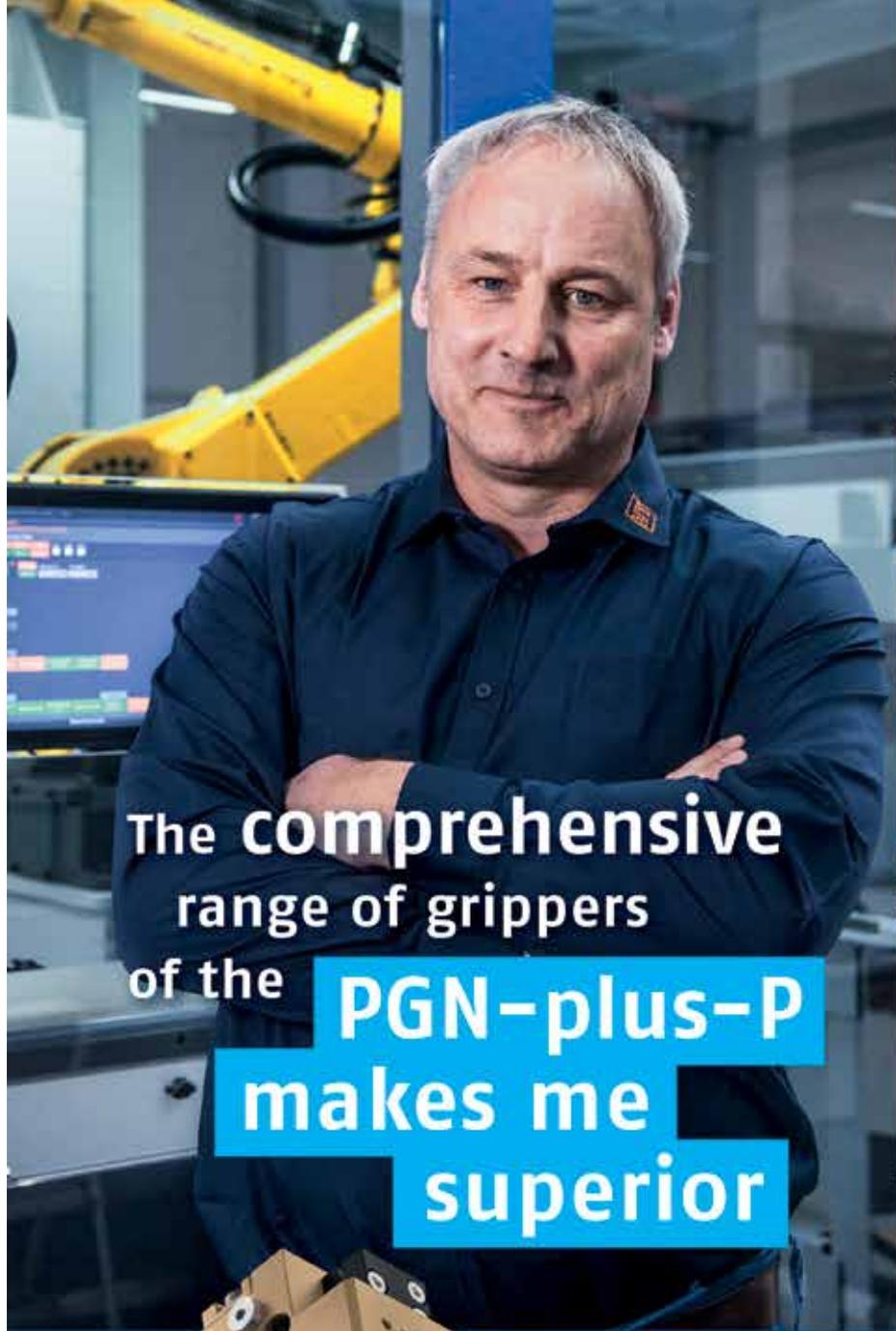


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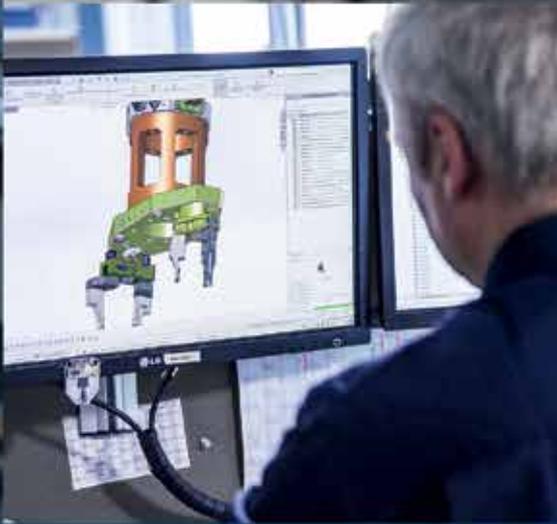
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