VOL 3, ISSUE 6 - MARCH-APRIL 2020

MODERN MANUFACTURING INDIA

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The Official Magazine of

Indian Machine Tool Manufacturers' Association

In Association with

Modern Machine Shop

BLOCKCHAIN: EMPOWERING MANUFACTURING SECTOR

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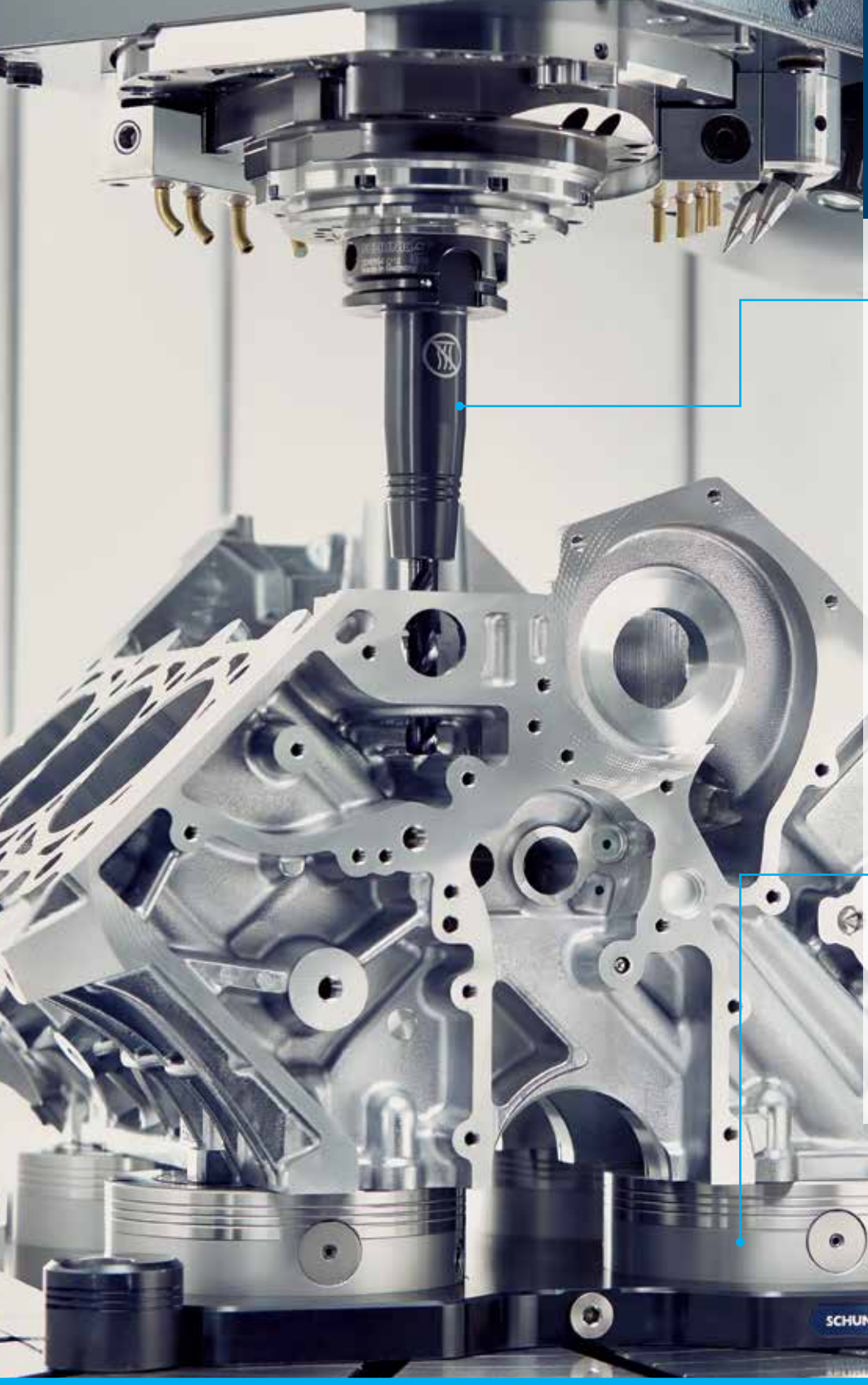

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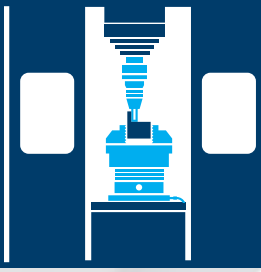

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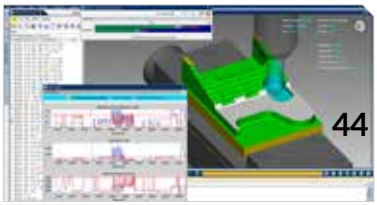

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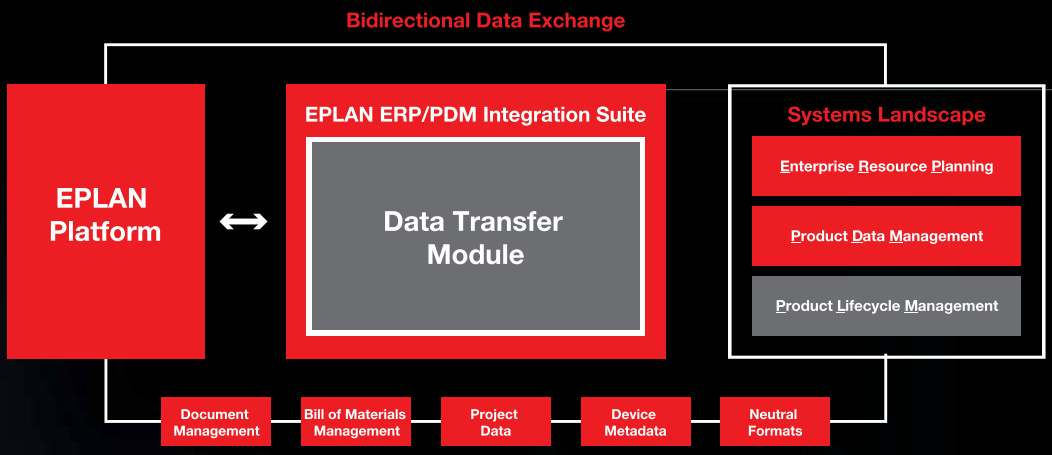

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BALANCING ACT IN UNCERTAIN TIMES

Dear Readers,

Extraordinary times need extraordinary measures and there's no doubt about it given the current situation that we are in with the outbreak of COVID-19. It isn't that mankind has faced disaster in the form of tsunami, drought, famine, or a market collapse. All these are restricted by time or geographical limits but no such limitations apply to the pandemic that we are facing as we prepare for a long overhaul.

The present situation throws up fresh challenges to the economy, and is causing disruptive impact on both the demand as well as the supply chains across various sectors. With the widespread fear gripping the people and the confidence level of consumers dropping significantly, it is believed that the uncertainties could pave way for an economic downturn. However, we see this as a cyclical correction and the industry bodies are closely working with the Government to minimize the impact of this outbreak in the long term. The industry is pushing for relevant monetary, fiscal and financial market measures to help businesses and human resources cope with the crisis.

Measures such as reduction in policy rates, providing special liquidity support for companies, deferring of repayment of loans by six months, giving MSMEs across the board interest rate subvention at 3 percent on standard loans, enhancing working capital credit to MSMEs, etc. can help stem this tide. This will also help us grow stronger in upskilling our workforce, intensify R&D and enhance capacities in indigenous production to reduce dependency on imported goods.

As the dynamics of manufacturing changes, the machine tool industry also needs to brace up to serve strategic sectors such as pharmaceuticals and medical equipment, aerospace, defence, etc., which are considered as sunrise sectors. The industry needs to leverage every opportunity to create a new manufacturing atmosphere in the country.

Indian Machine Tool Manufacturers' Association (IMTMA) stands with the Government's decision in cracking down on COVID-19 and lending its total support to the stakeholders from the manufacturing industry.

INDRADEV BABU
PRESIDENT
INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION (IMTMA)

From compact to complex:

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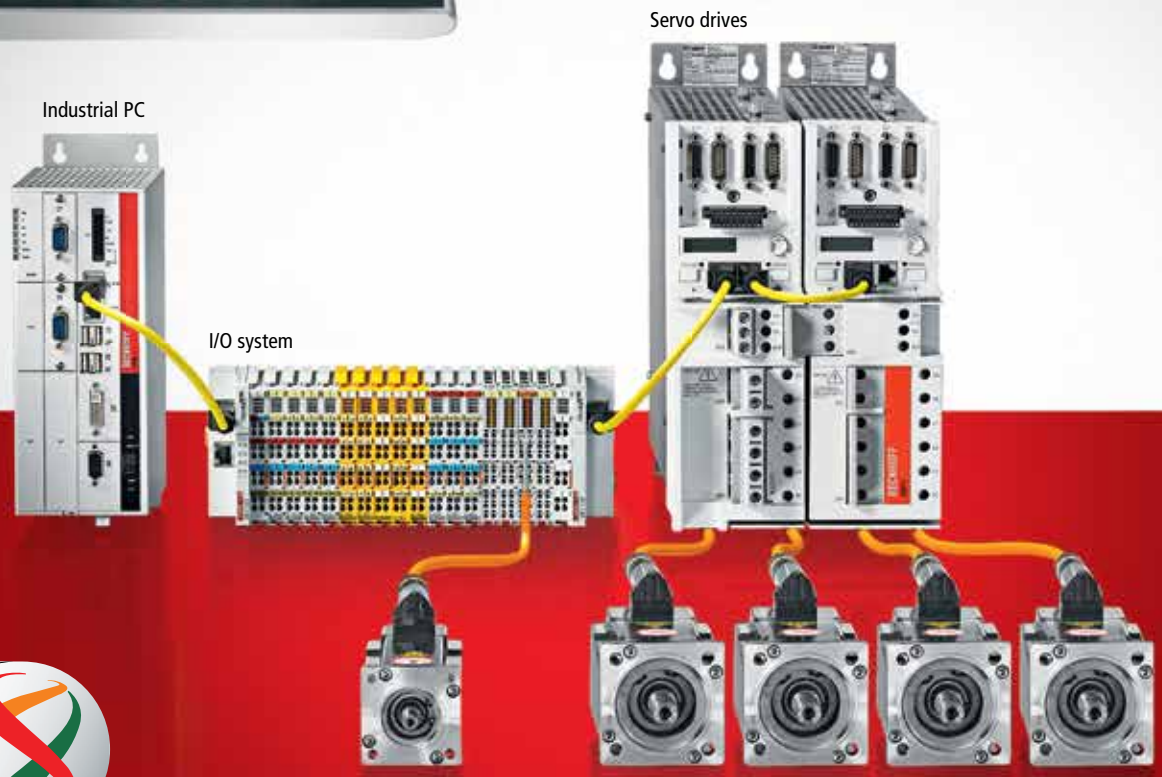

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V ANBU
DIRECTOR GENERAL & CEO
INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION

Dear MMI Readers,

Businesses and trade across the world including India are facing economic challenges and disruptions created by the outbreak of COVID-19. It becomes all the more important for manufacturing industry to continue to build its confidence levels and spearhead policy advocacy with central and state governments as well as stakeholders in a focused manner.

The manufacturing industry wholeheartedly supports the decisions taken by the government in tackling this pandemic. The industry will work closely with the government to take appropriate measures to overcome the economic slowdown with corrective measures to help it re-emerge as a strong contender. More on this will be discussed in subsequent issues of Modern Manufacturing India (MMI). As the manufacturing industry readies itself for sweeping measures, readers are invited to contribute their out-of-the-box ideas to develop the industry several notches up.

The industry will work closely with the government to take appropriate measures to overcome the economic slowdown with corrective measures to help it re-emerge as a strong contender.

I thank you for your continued interest in the activities of the Indian Machine Tool Manufacturers' Association (IMTMA), and once again urge you to provide your valuable feedback to help us understand your requirements as we move on from here. I hope that you cherish the time spent with MMI.

Thank you once again for your support.

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NOTHING IS CONSISTENT BUT CHANGE

In the days of yore, a close friend of mine was going through a traumatic phase and was astray due to a personal insurmountable loss. It was during one of those low energy days she attended a lecture by a renowned life coach. That one session instantly changed her dismay into hope. It was perhaps the simplest takeaway of nothing ever staying the same and change being the only constant in life that gave her a new perspective. Though we all know change is inevitable, yet we resist to accept the new.

Changes always happen, both planned and unexpected. A few weeks ago, we hardly knew of phrases like 'self-isolation', 'flattening the curve', and 'social distancing' till COVID-19 engulfed the world.

Globally, we are facing an unprecedented crisis and, consequently, adapting to a daily routine to control the spread of this pandemic. Most of us are working remotely as continuity and consistency matter the most in businesses and have accepted it as the 'new normal'.

Unprecedented times call for unprecedented measures. Organizations have quickly transformed their processes and making do with anything that can facilitate the work and keep it going. MMI has always focused on stories of achieving more with fewer resources in our sections on Startups and SMEs. The present issue is yet another endeavor to applause this resilient human spirit as we bring forth stories of transformation from the manufacturing sector that pave way for coping with the present times.

> *"Change is inevitable in life. You can either resist it and potentially get run over by it, or you can choose to cooperate with it, adapt to it, and learn how to benefit from it. When you embrace change you will begin to see it as an opportunity for growth."*
>
> *– Jack Canfield*

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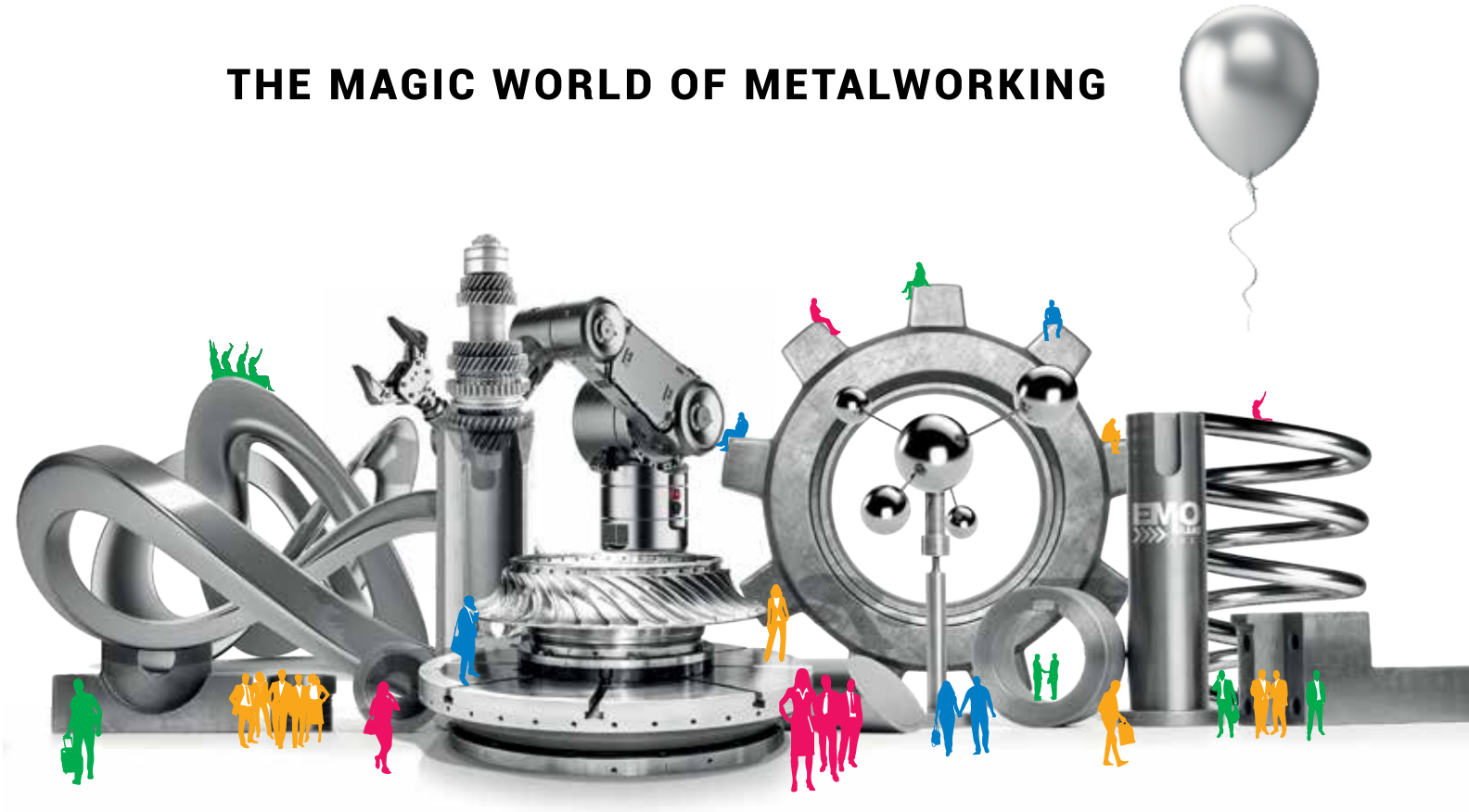

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REFLECTING AND PLANNING FOR THE YEAR AHEAD

With the new financial year drawing close, a look back to 2019-20 is crucial for setting and realizing some major goals for 2020-21....

Source: Magic Wand Media

As we move into a new financial year, it is time for us to take stock of what went well and what didn't in the year gone by and what goals we need to redefine in the coming year. Well, we have a whole new financial year ahead of us and it will do wonders if we could be a little more innovative and flexible to embrace changes so that we will be in better position as the year unfolds.

Diversification as solution

The year 2019 was perhaps the most daunting one for business and economy in recent memory. The Auto sector has had a tough time with a general slowdown in demand for new vehicles, the government's push towards BS-VI norms and the entry of electric vehicles. The increased upfront insurance premiums and new axle norms also dwarfed business opportunities.

The Auto sector disruptions posed serious challenges to the Machine Tool industry business as well which depends on the sector to a great extent. The Machine Tool industry, caught in this unprecedented global slowdown, is now pinning hopes for a turnaround. There is a general belief that the economy may come out of its lull, drawing people back to spending.

The successful debut of new automobile manufacturers in Indian market with their initial models hitting the bull's eye have perhaps given a signal to auto manufacturers that customers are looking for vehicles with added safety features and that they need to score well in those parameters. For the Machine Tool industry, it is about diversifying into niche sectors such as Defence, Railways, Power, Construction, Aerospace, Medical Equipment, and many more. Manufacturers need to intensify their R&D, enhance technological capabilities, reorient market strategies, expand their range, equip workforce with requisite skills and increase the cash flow. This will enable the Machine Tool industry to re-emerge as a market leader for various user industries.

Towards Self-Reliance

Governments across the world are intensifying their efforts to contain Coronavirus which originated from Wuhan in China. For the Auto Component industry, there's been a supply shortage from China. We must now indigenously develop components and reduce dependence on the country. With the international community looking at multiple sources of supply, India gets a significant opportunity to build expertise, be a major supplier for the world and be self-reliant. Safeguarding the health of people is a priority. The Government of India is also taking adequate steps to contain the spread of the pandemic. Indian Machine Tool Manufacturers' Association (IMTMA) remains committed in complying with the measures enacted by the World Health Organisation and extending all possible support to the Manufacturing industry in its hour of need.

Plans ahead

Recently, it was announced that the Government of India will invest ₹17 lakh crore for the Road sector within the next five years and the Construction Equipment industry can expect a 40 percent increase in sales. The Indian Railways is planning to increase its freight traffic to 3.3 billion tonne by 2030 besides using LHB coaches for all passenger trains. Under the draft Defence Production Policy 2018, the Government is eyeing $5 billion exports by 2025. The Defence Ministry is planning to fund 250 start-ups and five defence innovation hubs.

In the Power sector, the Government plans to establish renewable energy capacity of 500 GW and make some major investments by 2030 besides universal household electrification, which will increase the demand for power equipment. The centre also intends to make India a global hub for medical devices manufacturing which will attract investors from India and overseas, especially for medical devices and surgical implants. All these developments bode well for the Machine Tool industry.

India has set for itself a target to make the country a $5 trillion economy by 2025 with the Manufacturing sector contributing $1 trillion towards it. The country needs to grow at a CAGR of 14 percent in the next five years to realize this dream. Further, we need to take care of the liquidity crunch and generate impactful reforms which can spur demand. As this happens, the Manufacturing industry will re-emerge as a strong contender and the Machine Tool industry can also look for some uptick in its orders gradually.

Manufacturers need to intensify their R&D, enhance technological capabilities, reorient market strategies, expand their range, equip workforce with requisite skills and increase the cash flow.

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Indian Machine Tool Manufacturers' Association

BOLSTERING HIGH-VALUE MANUFACTURING IN INDIA

The Indian Machine Tool industry is making all the right moves to step up its game and cater to demands for high-value and high-technology machines.

Source: Magic Wand Media

The Indian Machine Tool industry has been serving the needs of various user industries such as Automobile and Auto Components, Aerospace, Defence, Railways, Power, Medical Equipment, and many more. The industry now needs to move towards the next level of growth to serve the demands for high-value and high-technology machines. For this, it has started working with institutions to develop indigenous technologies which can be price competitive as well.

Industry statistics reveal that high-value or high-precision machines are largely imported, and this leads to a widening gap between production and the consumption ratio of machines in India. Local demand for these is less and manufacturers of such machine tools need sizeable orders in the international market.

High-value manufacturing incurs high investments and a very good network for supporting and sustaining export sales and services. Countries which manufacture high-precision machine tools are established in their domain business for several years and supplanting them in a short time is an arduous task.

IMTMA's endeavors

China, for example, made a smart move by buying some European firms and learnt the tricks of the trade by investing time

and money with the support from its government. Indian Machine Tool Manufacturers' Association (IMTMA), which represents the Machine Tool industry in India, also advocated a similar approach but without much success.

In the absence of such outright support, the industry took the longer route of developing such technologies indigenously. The Advanced Manufacturing Technology Development Centre (AMTDC) set up at IIT-Madras under the aegis of the Department of Heavy Industry, Government of India and IMTMA is a classic example.

AMTDC is a unique model where an industry association leverages support of an existing academic institution to establish a much-needed facility for R&D and new product development. The initial 11 projects (all connected to machine tools and manufacturing) establish that such projects can be taken up successfully by our industry.

The technologies developed at the center include: Orbital Motion Abrasive Cutting; Direct Drive Abrasive Cutting; 5-axis Multi-Tasking Machining Center; Hydrostatic Systems for Machine Tools; Automation of Grinding Process Intelligence; Low Cost Machine Tending Robot; Electric Drives for Machine Tools; Thermal Compensation Strategy for CNC Lathe; Multi Station Robotic Grinder and Polisher; Ultra Precision Micro Machining Center; and 5-axis Universal Machining Center.

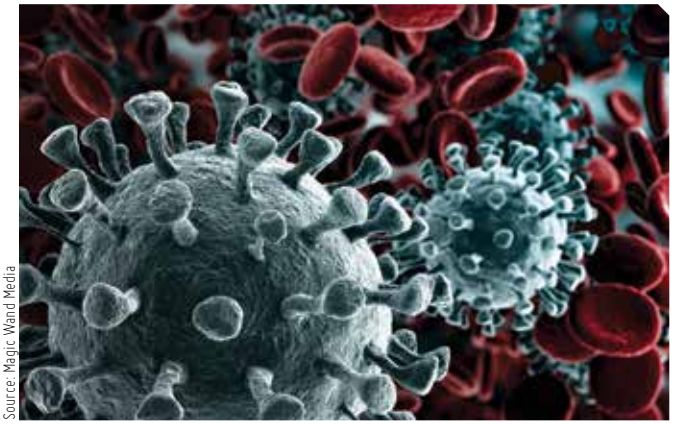
IMTMA member companies are using this facility to develop technologies and it will be beneficial for the Manufacturing sector if more companies come forward and take up such projects to develop new capabilities and products to strengthen the product range and offerings of our industry. More such centers need to come up in other parts of the country for manufacturing to kick top gear.

Also, the global push towards smart manufacturing makes it mandatory for the Machine Tool industry to develop machines that meet high performance and quality standards. This implies that the industry needs to relook its technology and design concepts as it targets high-performance outputs. As this happens, India can reduce its dependence on imports in the long run, which will also help us realize India's goal of becoming a $5 trillion economy.

The global push towards smart manufacturing makes it mandatory for the Machine Tool industry to develop machines that meet high performance and quality standards. This implies that the industry needs to relook its technology and design concepts.

No HANNOVER MESSE in 2020

Hannover, Germany - HANNOVER MESSE is not taking place this year due to the increasingly critical situation surrounding the COVID-19 pandemic. The Hannover region has issued a decree that prohibits the staging of the world's leading tradeshow for industrial technology. From now until the next HANNOVER MESSE in April 2021, a digital information and networking offer will provide exhibitors and visitors with the opportunity for economic policy orientation and technological exchange.



Source: Magic Wand Media

The corona crisis is affecting the economy, and the manufacturing industry – HANNOVER MESSE's core clientele – is already struggling with serious consequences of the pandemic. Demand and sales in German industry are declining, resulting in supply bottlenecks, production stops and reduced working hours for employees.

"Given the dynamic development around COVID-19 and the extensive restrictions on public and economic life, HANNOVER MESSE cannot take place this year," said Dr Jochen Köckler, Chairman, the Board of Management, Deutsche Messe AG.

"Our exhibitors, partners and our entire team did everything they could to make it happen, but today we have to accept that in 2020 it will not be possible to host the world's most important industrial event," he added.

12th DMI International Expo Postponed

Mumbai, India - The Executive Council of Tool And Gauge Manufacturers Association (TAGMA) has announced that the 12th edition of Die & Mould India (DMI) International, which was scheduled from April 22 - 25, 2020 at Bombay Exhibition Centre, Goregaon, Mumbai, has now been pushed to August 24 - 27, 2020.

This announcement comes in the wake of the global outbreak of COVID-19 virus that has disrupted many a trade fair happening in different parts of the world.

"In light of the current unstable situation and in the overall interest of exhibitors and visitors of the exhibition, the Executive Council of TAGMA has decided to postpone the event. We extend our sincere apologies for any inconvenience caused. The situation is beyond our control and we look forward to support and understanding from all the stakeholders," said DK Sharma, President, TAGMA.

Source: Magic Wand Media

EuroBLECH 2020 Announces Extra Hall

Hannover, Germany - The 26th edition of the International Sheet Metal Working Technology Exhibition, EuroBLECH 2020, will take place from October 27 – 30, 2020 at the Hannover Exhibition Grounds in Germany. The show organizer, Mack Brooks Exhibitions, has now announced the expansion of exhibition space for EuroBLECH 2020 with the addition of a ninth hall for the first time in its history. This reflects a further increase in the exhibition space compared to the previous event in 2018, which covered a total of 89,800 sq mt.

"The additional hall will host exhibitors of joining technology, as well as surface and tool technology, which have previously been located in hall 13. The ninth hall is giving us the possibility to assign stand space to additional exhibiting companies within the entire sheet metal working technology chain represented at EuroBLECH," explains Evelyn Warwick, Exhibition Director, EuroBLECH, on behalf of the organizer Mack Brooks Exhibitions.

Currently, more than 95,000 sq mt of net exhibition space have been booked or reserved at the world's leading sheet metal working technology exhibition. This represents an increase of almost 6 percent in stand space compared to the previous show in 2018.

Source: Mack Brooks Exhibitions

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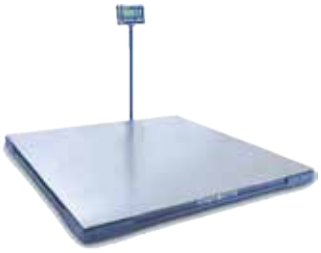

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Weiss GmbH Opens Campus in Pune

Pune, India - Weiss Automation Solutions India Pvt Ltd, the Indian subsidiary of the German-based Weiss GmbH, world's leading manufacturer of industrial rotary and linear movements in automation has recently inaugurated a campus in Chakan, Pune that will house under one roof, Weiss APAC regional HQ, India Sales Office, The Engineering Knowledge Centre, Weiss Solution Factory, Global Sourcing and Global Technical Development Centre.

Source: Weiss Automation Solutions India Pvt Ltd

(L-R): Rajesh Nath, Managing Director, VDMA India; Sanjeebit Choudhury, CEO – India, Vice President—Asia Pacific, Weiss India; Dr Juergen Morhard, Consul General of Federal Republic of Germany, Mumbai; Rakesh Makhija, Independent Director & Non Executive (Part time) Chairman – Axis Bank and Harsha Kadam, Managing Director & CEO, Schaeffler India Ltd

The new campus was inaugurated by Dr Juergen Morhard, Consul General of Federal Republic of Germany, Mumbai and Rajesh Nath, Managing Director, VDMA India in the presence of industry leaders, key customers and business partners.

"As part of the growth plan and strategy for Asia Pacific and India Market, Weiss Group has been beefing up its operations and resources in the region. As the first step in that direction, we are adding customer-facing and technical resources, competence and infrastructure," said Uwe Weiss, Group CEO, Weiss GmbH.

Besides Pune, the company has recently added regional sales offices in Delhi NCR, Ahmedabad, Chennai and Bengaluru to be close to the customers in the region and serve them better.

"In the coming years, our global knowledge of the automation industry and understanding of customers' needs across automotive and general industry applications, which combines five different Weiss technology portfolios, will be valued and beneficial to our customers here in India too," said Sanjeebit Choudhury, CEO, Weiss Automation Solutions India & Vice President, Weiss Asia Pacific.

EMO MILANO's New General Commissioner

Milan, Italy - Luigi Galdabini is the General Commissioner for EMO MILANO 2021, the world machine tool exhibition, which will be hosted at the Exhibition Centre of fieramilano Rho from October 04 - 09, 2021.

The General Commissioner was appointed during the General Assembly of CECIMO, the European Association of Machine Tool Industries. He will have the task of supervising the organization of the exhibition, and also participating in the promotion of the event through a roadshow of press conferences, which will reach the main capital cities of the world industry.

Born in 1958, Galdabini is the CEO of Galdabini S.p.A., a company located in Cardano al Campo (Varese) and a leader in the production of metal forming machine tools and machines for mechanical tests. Past President of UCIMU-SISTEMI PER PRODURRE and still a Board member of the Association, he is also a member of the Italian Delegation of CECIMO, European Association of Machine Tool Industries, of which he was the President from 2015-2017.

Source: UCIMU

IDEC Opens Sales Subsidiary

Bengaluru, India - IDEC Corporation has announced establishment of a sales subsidiary in Bengaluru for the purpose of expanding business in India. The new subsidiary has already begun operations since February 2020.

"IDEC has identified Asia Pacific, driven from our Singapore regional headquarters, as one of the key regions to achieve our ambitious global expansion goal. In order to accelerate our growth in the region, we decided to establish a sales subsidiary in India, the world's fastest growing economy with a 1.3 billion strong population and promising sustainable and stable growth perspectives," said Toshiyuki Funaki, Chairman & CEO, IDEC Corporation. "With the establishment of our India subsidiary, we aim at providing even better support and high-value services to our customers and partners in India," he added.

The scope of the business includes the development, production, and sales of various control device products that achieve safety, productivity improvement, and lower environmental impact. Ultimately IDEC is looking at an era when humans and robots will work together.

HP and Partners Help Battle COVID-19

California, USA - In the wake of the COVID-19 pandemic, HP Inc. and its global manufacturing community are preparing their 3D printing teams, technology, experience, and production capacity to deliver essential parts in an effort to combat this pandemic.

More than 1000 3D printed parts have already been delivered to local hospitals. HP's 3D R&D centers in Barcelona, Spain; Corvallis, Oregon; San Diego, California; Vancouver, and Washington are working together with partners around the world in a coordinated effort to increase production to meet the most urgent needs. Some of the 3D printing parts to help contain the virus are hands-free door openers, mask adjusters, face shields, field ventilators, FFP3 face masks.

"HP and our digital manufacturing partners are collaborating across borders and industries to identify the parts most in need, validate the designs, and begin 3D printing them," said Enrique Lores, President & CEO, HP Inc.

Source: Magic Wand Media

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Indo-German trade in Engineering

India - Germany is India's largest trading partner in Europe. From January to June 2019, the imports stood at €5.8 billion, out of which machinery imports comprised 25.6 percent and stood at €1.5 billion.

India ranks 15th globally, in the list of top 50 destinations for the German Mechanical Engineering exports. In 2019, the total import of machinery from Germany reached a volume of €3.07 billion. Among the machinery sectors, major demand of German equipment was for Power Transmission (11.6%), Machine Tools (6.9%), Valves & Fittings (5.3%) and Air Handling Technology (5.1%). Out of the total export of German Mechanical Engineering to Asia of €41 billion, India is the second largest sales market in Asia for the German engineering industry, with a share of 7.5 percent, after China (45.8%). In 2019, India imported machinery of the value €24 billion globally. Germany is the 2nd most important supplier to India globally with a share of around 15 percent.

Source: VDMA India

NMDC's Measures for Healthy India

Hyderabad, India - NMDC Ltd (National Mineral Development Corporation) is implementing preventive measures at its headquarters, offices and plants to protect its employees and their families against the global pandemic of COVID-19.

For its 5,500 employees and 20,000+ NMDC family members, measures have been implemented including thermal screening of employees at the entrance, providing masks to sanitation and security personnel, usage of sanitizers, restriction on the entry of visitors, massive awareness campaigns using visual communications like banners, posters, hoardings, electronic boards etc. Prolonged chronic treatment employees, pregnant ladies and those employees vulnerable to contagious diseases have been given work from home permission. The working hours of all employees have been shortened. Meetings are conducted via web or video conferencing.

Source: NMDC Ltd

NMDC has also distributed Do's and Don'ts pamphlets about COVID-19 prevention in its neighboring areas.

New Dates for PaintExpo 2020

Oberboihingen, Germany - Shortly after announcing the postponement of PaintExpo, originally planned for April 21 – 24, 2020, trade fair organizer FairFair GmbH has revealed the new date for the world's leading trade fair for industrial coating technology. It will now take place from October 12 – 15, 2020 at the Karlsruhe Trade Fair Center.

"We are very pleased to have found a new date for PaintExpo 2020 so quickly in agreement with Messe Karlsruhe and the exhibitor advisory board. Providing planned security for our customers, partners and the entire industry is a top priority for us," said Jürgen Haußmann, Managing Director, FairFair GmbH.

The organizer also stated that the original contracts with approximately 540 participating companies from 26 countries are still valid without restriction for the new date, as are visitor tickets.

Source: FairFair GmbH

With its exhibition portfolio covering the entire process chains for wet painting, powder coating and coil coating, PaintExpo is the world's largest and most important trade fair in the field of industrial coating.

mipart's Portfolio Continues to Grow

Weiden, Germany - The on-demand manufacturing platform mipart continues on its course of rapid and successful expansion. In the past few days, Fused Deposition Modeling (FDM), another additive manufacturing process, was launched in the online configurator. In addition, in the field of machining processes, stainless steel is now also available as a material online. At the startup pitch at the preview of the Hannover Messe, mipart was greeted with cheers.

With FDM, mipart offers an efficient manufacturing process for plastic components with high-quality results for almost all geometric shapes. The next expansion of the online configurator involves the range of materials that can be used in CNC turning and milling - customers who upload their components to mipart.com for machining can now also choose stainless steel.

Source: BAM GmbH

Schneider Electric's New CoE

Bengaluru, India - Schneider Electric, the leader in digital transformation of energy management and automation announced the launch of a Centre of Excellence (CoE) – Edge Infrastructure in collaboration with its Elite Data Centre Partners in India. This unique initiative allows the end customers to visit the partners' premises and experience the Edge Solutions of Schneider Electric, first hand.

Elite Data Center Partners are part of Schneider Electric's channel partner programme, who are offered clear and differentiated paths allowing partners to leverage pricing and benefits, gain full access to Schneider Electric's network of qualified and dedicated solution engineers, and ongoing support and visibility to where the market is going and where partners can take their business.

Venkatraman Swaminathan, Vice President & Country General Manager, Schneider Electric IT Business India, said, "In the age of evolving technologies, enterprises are constantly looking at various technological advancements like high data security, reduced downtime, flexibility, real-time monitoring, predictive maintenance etc. among others. Through this collaboration and the launch of the CoE, we will address and prevent challenges before they escalate, thereby increasing the overall profitability and reducing risk."

SYNERGY 3

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OVERCOMING THE SKILLS GAP

Organizations all over the world are suffering from the skills gap, which is one of the major causes of their performance loss. Here's what can be done to help surmount the problem...

We have entered a new decade, but a key challenge for industrial companies still persists: a looming skills gap and worker shortage. For many, a culture change and adoption of new learning methods will be required. Empowering workers with new technologies will improve training and knowledge transfer, as well as increase key operational KPIs.

This article is a round-up on industry's top stories curated to shed light on critical issues facing the manufacturing industry.

1 Skills for the Future of Manufacturing

Synopsis: The World Manufacturing Forum (WMF) published its 2019 report discussing critical issues facing workforce skill development in the manufacturing industry. Technological skills will represent the greatest increase in hourly work duties by 2030 as technology literacy becomes critical in manufacturing environments. While still having major economic implications, the skills gap will have less of an impact in the United States (0.4% of

Source: PTC

DAVID IMMERMAN
Business Analyst
PTC

GDP), compared to globally (1.1% of GDP).

Key Takeaway: Among the many recommendations, WMF suggests the use of digital technologies to innovate in the delivery of education and training.

2 Harnessing Augmented Reality to Deliver Training More Effectively

Synopsis: Even with industrial companies facing the skills gap, the method by which they educate and correspondingly how their workers learn has not changed. Our research shows information that is delivered on-demand and in-context improves knowledge retention, skills development, and key production metrics for organizations. This 'Just-In-Time' learning method delivered through innovative technologies including augmented reality is poised to greatly benefit the 2.7 billion global deskless workers.

Key Takeaway: Organizations need to look within themselves to reskill and upskill their workforce to meet new and emerging demands. Leveraging new training delivery options is essential.

3 The Work of the Future: Shaping Technology and Institutions

Synopsis: Technology advancements have generated significant promise, as well as skepticism as it will have major implications on the future of work and consequently, our role within it. Automation will undoubtedly change human work but its input into existing processes will vary and be either a substitution (for human work), complementary, or new task creation.

Key Takeaway: This MIT report presents a strong case that the future of work will ride on investing in job quality, not job quantity.

4 The State of Human Factory Analytics

Synopsis: Manufacturers striving for 'loT sizes of one', to satisfy shifting customer demands for customization, are making human advantages over machines for logical reasoning, adaptability, and dexterity more important than ever. This current state of human and machines in factories still favors the worker, with 72 percent of factory tasks performed by humans. However, tasks that are repetitive require strenuous lifting or precision are unfavorable to humans; 68 percent of defects and 73 percent of variability are caused by humans.

Key Takeaway: Moving forward, an optimized division of labor means orchestrating workers and their tasks in factories and other industrial environments. Recognizing the advantages of both humans and machines and adjusting accordingly is essential to meet future demands of customers.

5 New Frontiers in Re-skilling and Upskilling

Synopsis: There is massive economic and business incentive for re-skilling and up-skilling the workforce, yet traditional training styles are costly and out-of-context. Developing skills for the 'human' element (empathy, listening, judgement, etc.) is increasingly important as automation takes over monotonous tasks. Upskilling using technologies including AR/VR is alleviating this training challenge.

Key Takeaway: AR is also being used as a knowledge transfer solution to 'leverage the wisdom of age' to harness organization's experienced personnel's deep tacit knowledge and lessen the forthcoming skills gap.

6 Improving Operational Efficiency with Workforce Productivity

Synopsis: Industry-wide issues including the worker shortage are forcing industrial organizations to turn to digital transformation to lessen its effects while driving critical business value. Improving operational efficiency is a key outcome of digital transformation with workforce productivity as a key metric within these initiatives.

Key Takeaway: Enterprises taking a 'people-first approach' (Volvo Group) by identifying better ways to equip workers and complete tasks are driving critical operational and performance metrics.

Industry-wide issues including the worker shortage are forcing industrial organizations to turn to digital transformation to lessen its effects while driving critical business value.

FOR A LEVEL PLAYING FIELD

An insight into the current state of the European machine tool industry and why is it demanding fairness in competition...

Source: Magic Wand Media

VOLKER SCHÄFER
Deputy Chairman
VDMA – Die and Mould Association

The economic situation of many die and mould making companies, especially in the automotive supply chain, is coming to a head because new orders have been increasingly absent for nine months in some cases. Many companies have already started to lay off highly qualified skilled workers. The number of insolvencies and takeovers is increasing. There is a threat of a domino effect if this key sector for industrial series production does not soon receive adequate orders again.

Diverse current situation

In the automotive customer segment, to which my company Kuhn & Möhrlein also belongs, the companies have been running empty for about a year now, because the customers in the transition phase, due to the uncertainty of the future direction in automotive engineering, have stopped placing orders. Inquiry activity has also fallen dramatically. Other customer segments that are not directly or indirectly linked to the automotive industry are fortunately doing still better, but they too are already seeing signs of the general economic downturn in their order books and the decline in prices.

New tools for new vehicles

According to their announcements, most car manufacturers want to come into the European market in the next few years with new models, which will partly be electrically or hybrid driven, and also produce these in Europe. They will need new tools but the 'dry spell' is very long, and for some companies, probably too long. This underestimates the strategic importance of tool making because as Bob Williamson, President, the International Tool Manufacturers' Association (ISTMA), always says: "There is no series production without tool making!" He comes from South Africa, where in the last few years, significant money and effort have been invested in rebuilding the toolmaking industry as a key sector for domestic industrial production.

Time's running out

Unfortunately, we have to

assume that most companies will run out of liquidity in the next three months and that several German companies will disappear irretrievably from the market. Thereafter, customers will have to purchase an increasing share of body tooling elsewhere in the world. Furthermore, the loss of the industry's know-how, which has been built up over decades and guarantees extremely high tool quality and the quality of the parts produced with the tools to this day, is to be expected.

Competition with China

In China, there are already state-subsidized, fully automated tool factories, which in recent years have increasingly put European tool manufacturers in dire straits with fierce price wars. There, a powerful tool manufacturing industry is currently emerging, which our customers could become dependent on. Basically, there is nothing wrong with competition - and if it is fair, we are happy to face it with our excellent products. With regard to China, however, I have my doubts about fairness. We demand a level playing field!

One should not underestimate the political influence of the Chinese government on such partly state-owned companies. As it is quite dangerous for Germany and Europe as a business location. And I can well imagine that foreign competitors of the Chinese vehicle manufacturers, as B-customers, might rank behind the Chinese competition. It is, therefore, to be feared that the European vehicle manufacturers will be at a severe competitive disadvantage in the world market in all vehicle segments, even in the luxury class. This could certainly have consequences for other jobs in the automotive industry.

Chinese tools quality

So far, most Chinese tools are not quite up to our level in technical terms. But the Chinese competition has, also due to their governmental support, a much longer endurance than our medium-sized companies and cost advantages due to their high degree of automation and low wages. In this respect, it is important to know that tool making in China is part of a central governmental strategy to promote their own industrial production and its position in the world market. And once Chinese toolmakers have built up sufficient market power, prices may well be adjusted upwards. We have often experienced this in other sectors of industry, especially when competitors are no longer able to supply.

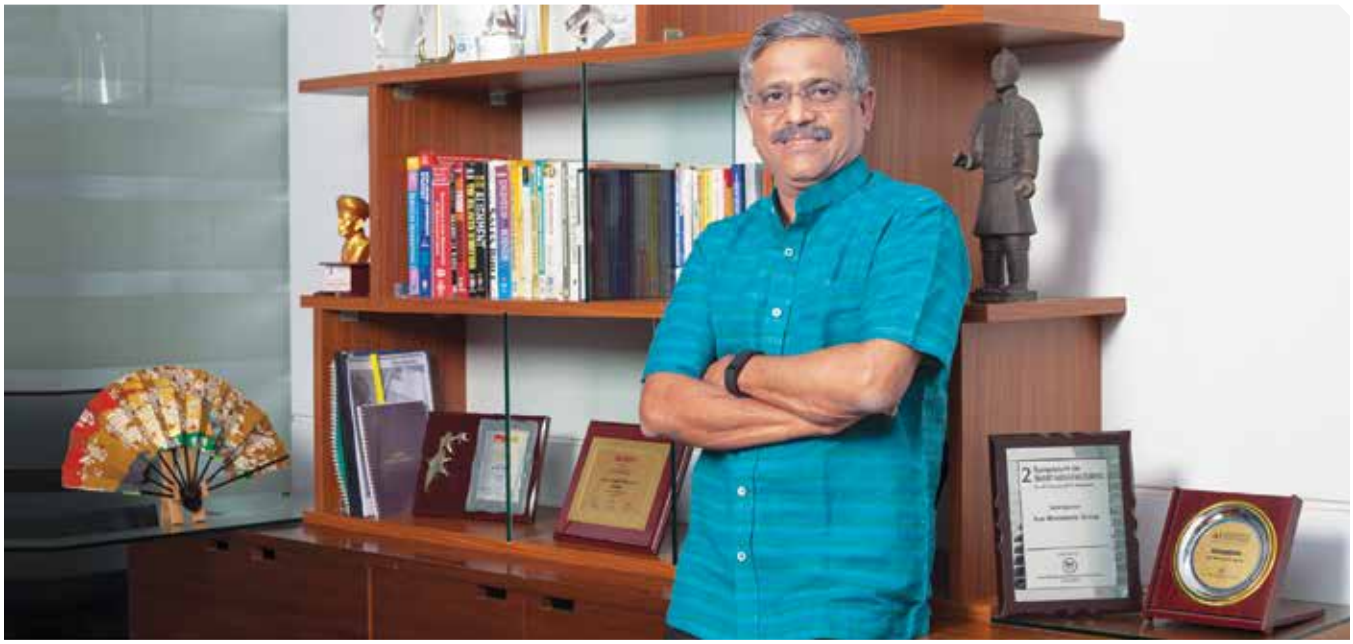
COVID-19 effect

Currently (March 02, 2020), Chinese tool factories are not fully able to deliver. Projected into the future, this means that car manufacturers will have to adapt to similar scenarios as they become increasingly dependent on a few large suppliers in individual countries. This means that in the event of an epidemic or natural disaster occurring somewhere in the world, they will suddenly no longer be able to deliver worldwide.

European players must raise their bar

We have to become even more competitive, more innovative, and automate more. We certainly have to take China as a benchmark here and then convince customers worldwide with our products in a fair market. In the short term, we need liquidity, preferably from private investors and banks, and instruments such as short-time work to bridge periods of scarce orders. Here, we also need the support of politicians. Only together are we strong! Every entrepreneur and decision-maker must personally make his constituency candidates from all political parties aware that we are not only about to lose a key industry for our industrial production, but that this might also lead to a domino effect that could endanger many more highly qualified jobs in the automotive-related industry.

We have to take China as a benchmark here and convince customers worldwide with our products in a fair market.



MARKETING APPROACH IN CRISIS

We are all going through tough times and the full economic impact of COVID-19 is yet to be understood. This is the time to look at all possible scenarios that can emerge and get prepared to work smarter in order to tackle the challenges ahead.

Following are some steps for your marketing activity during this downturn:

- Work smarter to retain your customers;
- Be visible to your target market with a relevant value proposal;
- Focus and drive conversions with your value proposal;
- Measure, test, learn and keep repeating this cycle.

No ready solution

Since all are careful about their spending, sales & marketing budgets appear as an easy cut that can be made but this at best is a short-term fix that has long-term consequences. Maintaining visibility is key for you and your company. Customer confidence is to be maintained for their continued investment with you as they want the right machine and adequate support from trustable companies. It's always cheaper to retain an existing customer than to acquire a new one.

Marketing automation costs the lowest, and is the easiest and most effective way of keeping in touch with your customers. This should not translate to email spamming. Keeping in touch with your customers in a personalized and contextualized manner at every touch point in their digital journey is important. Use your human talent to understand the value you provide and the value customer wants, and develop creative campaigns. Bring in technology and tools to automate delivery through measurable social channels. This will deliver ROI and ensure that the job gets done systematically and automatically.

> "It is not easy and there is definitely not one solution. The need is to experiment, measure, and learn. If it works, do more of the same. If it doesn't, change the strategy and move on."
>
> **T K RAMESH**
> **Managing Director and CEO**
> **Micromatic Machine Tools Pvt Ltd**

Content creation and asset production are essential ingredients of a tactical marketing campaign to keep in touch with customers – both existing and to be. Share the innovations that you are currently doing, highlight what differentiates you from your competition, and promote stories of key achievements of the team and the client wins.

Social media builds brand awareness and gets more visibility. Hence, ensure you get found at every stage of the purchasing lifecycle, from exploring new suppliers to evaluating specific offerings. What other people say about your company and its offerings is more important than what you say about yourself. Customer experience is key.

It is not easy and there is definitely not one solution. The need is to experiment, measure, and learn. If it works, do more of the same. If it doesn't, change the strategy and move on.

The views expressed by the author are personal and he can be contacted at rameshtkr@gmail.com

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FORCE OPTIMIZATION - MACHINE SAVINGS CALCULATOR

Hourly Machine Cost $
(total burden)

0 50 100

Number of Machine Tools

5

Weekly Machining Hours

80

Estimated Reduction in Machining Time
Reduce machining time by as much as 15-25% or more

25% (typical reported savings)

ANNUAL MACHINE SAVINGS
$520,000

FORCE OPTIMIZATION - CUTTER SAVINGS CALCULATOR

Hourly Cutter Cost $
(average cutter cost/cutter life hours
e.g. $100/1 hour)

0 50 100

Number of Machine Tools

5

Weekly Machining Hours

80

Estimated Increase in Cutter Life
Extend the life of your cutters up to 100% or more

+50% increase

ANNUAL CUTTER SAVINGS
$692,640

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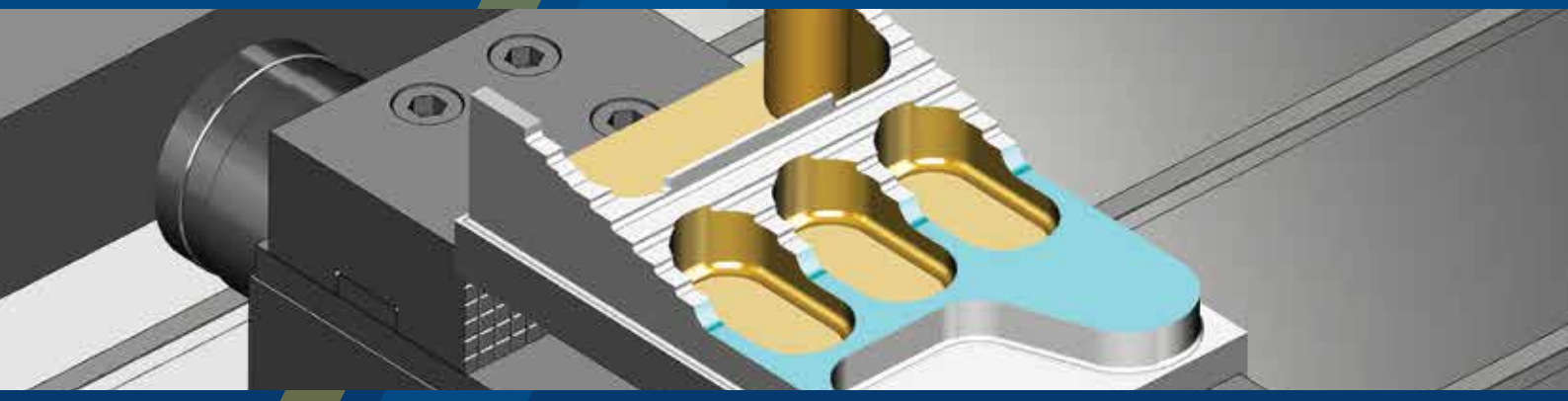

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BLOCKCHAIN: EMPOWERING MANUFACTURING SECTOR

Source: Magic Wand Media

Blockchain has the potential to revolutionize how manufacturers design, engineer, make, and scale their products. It's enabling a future with greater trust, streamlined operations, transformed pricing models and safer reputations.

In PwC's recent Global Blockchain Survey, 84 percent of executives across industries said their companies have had some involvement with blockchain, and 15 percent have live projects. It's easy to see what's driving that enthusiasm — the potential for blockchain-powered solutions to create value by helping firms to overcome challenging problems is clear. Implemented well, blockchain can increase transparency throughout supply chains, track the identity and credentials of key personnel, allow for more seamless audit and compliance functionality, and more. And industrial manufacturing companies are already seen as being out front in developing the technology — respondents in our survey ranked the sector second (tied with the energy sector and trailing only financial services) among industries leading the way on blockchain.

Source: PricewaterhouseCoopers

Blockchain basics

Few recent technological developments have created more buzz than blockchain. Perhaps even fewer are less understood.

A blockchain is a distributed ledger of transactions—rather than being kept in a single, centralized location, it's held by all the users in a network. In general, all these users, also known as network nodes, have copies of the same ledger. Transactions on a blockchain don't have to be financial—they simply represent a change in state for whichever data point the blockchain's stakeholders want to track. Blockchains are driven by consensus. When a user initiates a transaction, its details are broadcast to the entire network, checked by other users and accepted if there is consensus. Once a transaction has been validated, it's bundled with other transactions into a block of data.

Each block is secured via a cryptographic algorithm. This results in a unique signature for each block known as a hash. These blocks are then ordered sequentially into a chain of blocks, with each block also containing the previous block's hash. This makes it extremely difficult to tamper with a block, as altering a single piece of data would result in a different hash value, making it evident to the blockchain's users and causing the transaction to be rejected.

Some parts of this process can be done automatically with smart contracts. These involve two entities turning a business contract into code that recognizes actions on the blockchain. For example, a smart contract might recognize that a sale of an asset by 'Company A' to 'Company B' on a certain date should be for a specific price. This simplifies processes that take significant time to check.

This structure gives network participants confidence in their transaction without the need to trust each other. Nor do they need to agree on a trusted third party to make sure they're both following the rules. Because the ledger of transactions is consensus-based and distributed, records stored in it cannot be erased or changed.

Blockchain's industrial impact

Blockchain is being explored to offer solutions to long-standing industry pain points including:

- Supply-chain monitoring for greater transparency into complex, cross-constituency supply chains where delays and sourcing constraints impact production and profitability;
- Materials provenance and counterfeit detection to reduce the $4.2 trillion impact of counterfeiting and piracy on the global economy by 2022, as cited by World Trademark Review;
- Engineering design for long-duration, high-complexity products, for which delays in sharing updated engineering specifications or parts supersessions can increase rework and delay final delivery (e.g., aircraft);
- Identity management for when it is important to know who is taking an action and what their credentials are, including attorneys, auditors, engineers and technicians;
- Asset tracking to monitor complex and expensive equipment movements or intermodal logistics across carriers;
- Quality assurance that can look across a production life cycle to gauge qualifications, quality, patterns of defects, etc.;
- Regulatory compliance enhanced by indelible records of actions taken, assets' movements evidenced by permissioned consensus — available in seconds.

Blockchain-powered solutions can seamlessly aggregate all of this information, delivering significant value for industrial companies, and can also help unlock the full potential of other advanced technologies like augmented reality, IoT and 3D printing.

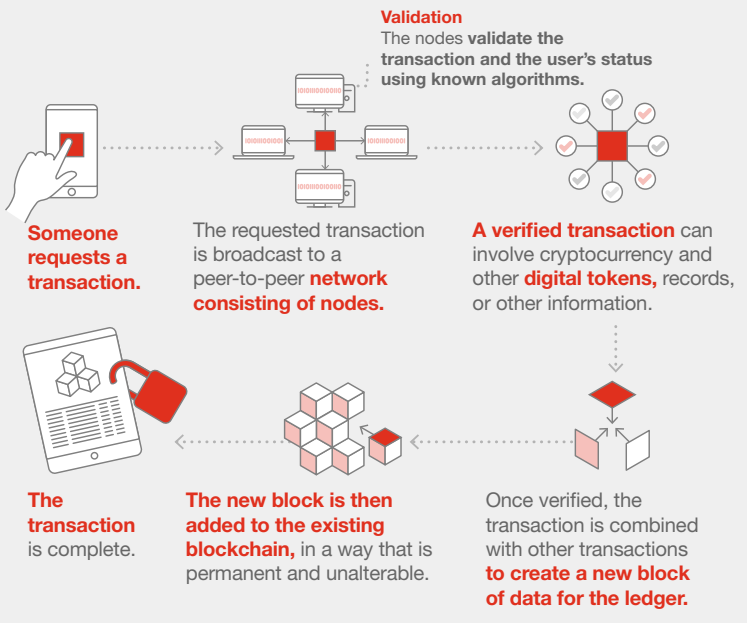
Some use cases

Following are a few examples of industrial blockchain use cases.

A typical single-aisle commercial jet is made up of 300,000-plus

A blockchain is a decentralized ledger of all transactions in a network. Using blockchain technology, participants in the network can confirm transactions without the need for a trusted third-party intermediary.

HOW BLOCKCHAIN WORKS



Source: PwC

parts, while a superjumbo can comprise more than 2 million parts. Even amid advances in sensor technology, connected devices, data analytics and cloud computing, there's still a lack of transparency (or real-time access) to information about which parts are on which planes (and in which configuration), when they were last serviced and by whom. In fact, getting a holistic, real-time picture across an entire fleet of aircraft — regardless of who might need that information (e.g., an airframer, the airline, or a key supplier) — is all but impossible.

Blockchain technology could provide the solution. It has the power to foster trust among parties who may be competitors in the marketplace but must cooperate within the common ecosystem of the airplane by balancing transparency and privacy on a distributed ledger. Not only can blockchain track the provenance of individual components, but by giving a snapshot of all the parts on a plane, it also has the ability to seamlessly record its configuration for every flight of its 30-year operating life.

The key is blockchain's ability to generate a digital birth certificate for every part that's installed in a plane and update it every time it's serviced or inspected by a technician. The data collected could include the aircraft's tail number, the part's location (GPS and/or slot location on the aircraft), the manufacturer, the permissibility of the part (e.g., supersession, 'red tag' status, etc.), the identity of each technician with whom the part has interacted as well as the location in which the service was performed.

And a blockchain-powered solution can give the right stakeholders a view of that part from birth certificate to current day, while withholding data from others to avoid revealing proprietary information or trade secrets. For example, an airframe manufacturer or airline implementing such a solution might be able to see the condition, usage, installer and manufacturer of all parts on each of its planes, while a parts manufacturer could only see aircraft in which its products are installed, but not those installed with a competitor's product. Nonetheless, even this level of visibility would give unprecedented clarity into its true market share.

A blockchain-powered solution can give the right stakeholders a view of that part from birth certificate to current day, while withholding data from others to avoid revealing proprietary information or trade secrets.

BLOCKCHAIN'S INDUSTRIAL IMPACT

Blockchain can enhance transparency and trust at every stage of the industrial value chain

Source: PwC

DATA FOR THE LIFE OF THE AIRCRAFT

Today's commercial aircraft can have hundreds of thousands or even millions of parts. Blockchain can give airframers, airlines and suppliers the level of transparency they need.

Source: PwC

Gains that can ensue

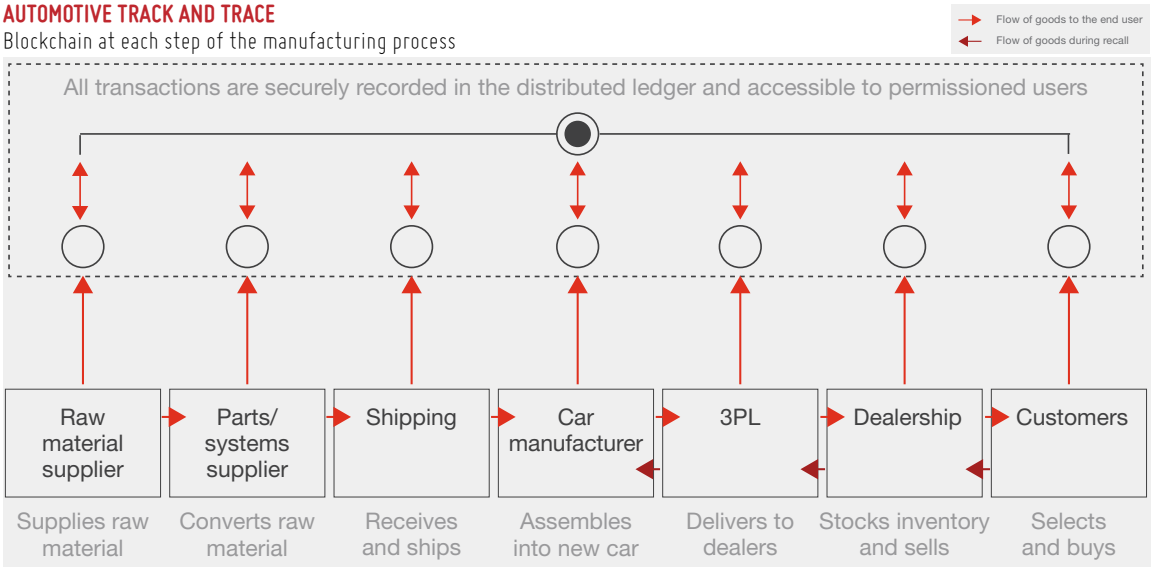
Substantial blockchain-driven gains in efficiency and safety are possible:

- **Increase asset utilization.** A real-time, continuously updated ledger of each part's condition and usage could help reduce time spent on routine inspection and maintenance of aircraft. It can also reduce airlines' needed inventory of spares.
- **Improve the aftermarket value of planes.** Jet engines maintained to the standards of their manufacturer and which include only verified authentic parts fetch premium prices on the secondary market. Such verifiability offered via blockchain could likewise boost the resale value of used aircraft.
- **Reduce the cost of flight safety.** An operator (passenger or cargo) will not use a part that is not trusted. The cost of a part with no provenance can be as little as the inventory carrying cost of that part until its history is known or as much as an aircraft on the ground for want of a part which is available, but not trusted. Knowing the history of a part in the moment in which you interact with it has the potential to significantly reduce the impact of ensuring safe flight.

Raw materials are fashioned into individual components, which are assembled into larger systems that are ultimately assembled as automobiles. But, while auto manufacturers are ultimately accountable to customers and regulators for their vehicles' reliability and safety, they can lack sufficient visibility into the

AUTOMOTIVE TRACK AND TRACE

Blockchain at each step of the manufacturing process



Source: PwC

provenance of the vehicles' parts and their journey from the mine to the showroom floor.

A blockchain-enabled solution would help automakers to track every step of that journey into all supply chain tiers. And, if a component is defective, it could help them determine the cause, whether it be poor-quality steel, the work of one of their suppliers, or an issue in their own plant. When combined with connected sensors and other Internet of Things (IoT) technology, a blockchain-powered system could even record the conditions a shipment of components faced aboard a train or container ship. That would provide a clue that rough seas or poorly controlled temperatures could have caused damage.

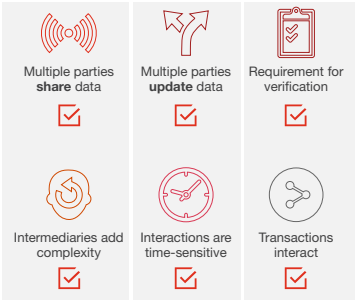
Because the companies that make up an automotive supply chain form an interdependent web, it could be beneficial for all stakeholders to have some visibility into the disposition of products. That can be difficult when the information is stored in multiple, incompatible systems.

Additional ways blockchain can help automakers manage their supply chains include:

- **Improve recall response.** Identifying which cars have components subject to a recall can be a time-consuming and resource-intensive task; the data is typically stored across multiple systems and requires reconciliation for accuracy to track products. By leveraging blockchain, vehicles with defective parts can be quickly and seamlessly identified—perhaps even before they've left the plant. And the faulty part's journey from the supplier's factory through final assembly can be traced.
- **Strengthen inventory management.** A blockchain-powered solution can help automakers and their suppliers track bottlenecks in real time throughout the supply chain and enable better inventory planning.

THE BLOCKCHAIN CHECKLIST: IS THE TECHNOLOGY RIGHT FOR YOU?

If your project checks four out of the six boxes, blockchain could be an applicable solution.



Source: PwC

Best practices for blockchain solutions

Blockchain solutions can create value for industrial companies in a number of ways. But that doesn't mean it's an equally tenable solution for all companies and even industrial manufacturing sectors. By focusing on four key areas early in their blockchain efforts, companies can set themselves on a path toward successful execution.

Make the business case: Commit to new ways of working, frame the problem and the solution, and start small, then scale out.

To be sure, blockchain can be a powerful tool — but it's not a cure-all. It's important to make sure it's a strategic fit. When there's a need for different parties to share and update data, when time is of the essence and trust between parties is needed but intermediaries add too much complexity, then blockchain-based solutions can be very effective. But if none or only one or two of those types of challenges are present, then other solutions may be better placed.

It's also crucial not to assume that a blockchain solution will be able to 'change the world' for a company or industry right from the start. It very well might, but the reality is that progress is slow going. Our survey findings reflect

If a component is defective, a block-chain empowered solution could help automakers determine the cause, whether it be poor-quality steel, the work of one of their suppliers, or an issue in their own plant.

this mentality, across industries: Of the respondents to PwC's Global Blockchain Survey who reported a blockchain project in the pilot stage, 54 percent said the effort sometimes or often hasn't justified the result. Starting small and experimenting with just a piece of the process that could ultimately be shifted onto a blockchain-based solution can help avoid frustration.

Build an ecosystem: Focus on a cooperative few, broaden your network, and work across the value chain.

Bringing together a group of stakeholders to collectively agree on a set of standards that will define the business model is perhaps the biggest challenge in blockchain. Participants have to decide the rules for participation, how to ensure that costs and benefits are fairly shared, what risk and control framework can be used to address the shared architecture, and what governance mechanisms are in place, including continuous auditing and validation, to ensure that the blockchain functions as designed.

There's more than one way to make these decisions. In a sponsor-led model, one company 'owns' the blockchain and can determine costs, benefits and buildout considerations, charge services to other participants in the network, and set standards that all participants in the ecosystem have to live by. This model works best for very large players that can effectively 'make the market'. A consortium-based model provides an alternative, allowing companies to be co-owners and -operators, sharing responsibility for costs, benefits, and buildout and standards amongst a group of participants. Serving as an industry consortium founder can be an effective way to guide and shape those decisions without bearing all the risk and responsibility.

Regardless of which model is used, it's still wise to start small. A manufacturer and a few suppliers and distributors can set blockchain solutions rules and parameters with a clear view of how participants at every level of the value chain can benefit, before determining how to grow the ecosystem in a mutually beneficial way.

Design deliberately: Confront risks early, consider privacy applications, and invest in data and processes

Much consideration must be given to a blockchain's design. Will it be permissionless, allowing anyone to initiate and view transactions, or permissioned, restricting access to certain parties? Though PwC's Global Blockchain Survey shows companies are adopting both of these approaches as well as developing hybrid implementations, permissioned blockchains are likely more appropriate for most enterprise solutions, since their owners or governing bodies can structure its rules with an eye to privacy and data security.

No matter which model is chosen, it's important to include cybersecurity, compliance, audit and legal specialists in important design decisions from the beginning. That will help avoid costly missteps and build trust among all members of the ecosystem.

Navigate regulatory uncertainty: Shape the trusted tech decision, monitor evolving regulation, and use existing regulation as a guide.

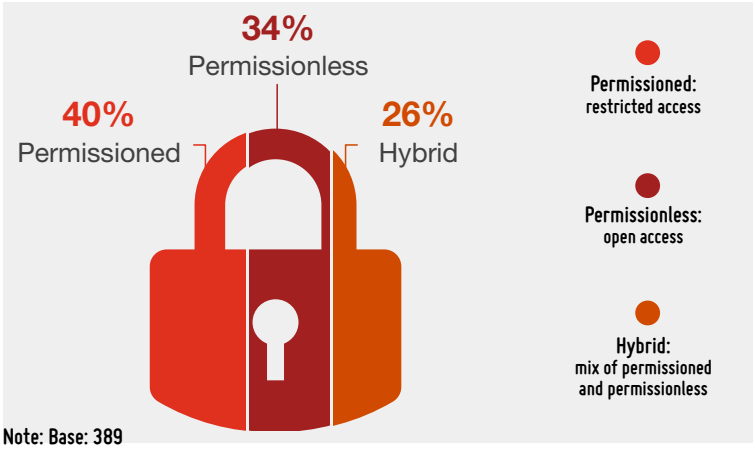
Regulators around the world are still evaluating potential responses to the increasing prevalence of blockchain-enabled solutions. And concerns about what those responses will look like remain central to firms considering the technology: Among our survey respondents, 27 percent in total and 26 percent in the US believe that regulatory concerns are the number one barrier to blockchain adoption.

Rather than waiting for regulators to set the blockchain agenda, companies that see value in the technology should be proactive. It's important to engage with regulators, elected officials and industry groups to make the case that blockchain technology can be trusted.

Remember, too, that blockchain's potential for transparency, as well as the immutable record it creates, could make it a powerful tool for regulators. The enhanced transparency it gives a business into its operations can serve regulators in the same way. That also gives it the potential to significantly ease companies' compliance burdens.

46% of respondents in the survey said finance firms are out in front, compared with 12% for industrial manufacturing. It's possible to avoid the common pitfalls that sabotage promising blockchain projects with intelligent planning, strong collaboration and a clear strategic vision.

HOW RESPONDENTS ARE DESIGNING THEIR BLOCKCHAINS



Note: Base: 389
Q: For your organization's projects, how do you address membership/participation?
Q: For your organization's projects, how do you address network access?
Source: PwC's Global Blockchain Survey 2018

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BREAKING NEW GROUND

MV Gowtama, Chairman & Managing Director, Bharat Electronics Ltd, in this insightful interview with MMI's Chief Editor Soumi Mitra, shares the company's continuous strive for exploring diversification opportunities in Defence and allied non-defence areas and the reasons PSUs show stability in growth...

Source: Bharat Electronics Ltd

The Akash Weapon System, which is testimony to BEL's commitment to the 'Make in India' initiative.

SOUMI MITRA
Editor-in-Chief
Modern Manufacturing India
soumi.mitra@magicwandmedia.in

Soumi Mitra: Please tell us about the important Defence orders that Bharat Electronics Ltd (BEL) has executed in the past three to five years?

MV Gowtama: BEL has been breaking new ground by successfully implementing projects of strategic importance, like Weapon Locating Radar for the Indian Army, Akash Missile System for the Indian Air Force and Indian Army, Coastal Surveillance System for the Coast Guard, Network Centric Systems, etc. The Akash Weapon System is testimony to BEL's commitment to the 'Make in India' initiative. Barring a few electronic components, every bit of Akash, the medium-range surface-to-air missile system, has been indigenously developed by Defence Research and Development Organisation (DRDO) with BEL as the nodal agency for integration, in partnership with companies from both the public sector and the private sector. BEL is also geared up to establish Phase-II of the Coastal Surveillance System (CSS) developed for the Indian Coast Guard (ICG) to guard India's long coast against infiltrations. BEL is also interacting with the Ministry of External Affairs for supply of the system to other friendly countries.

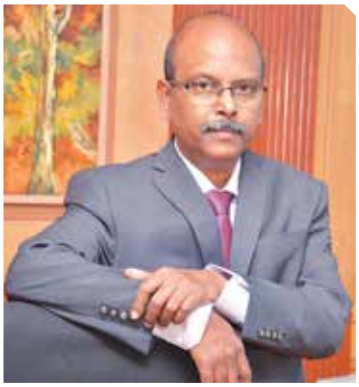
We have executed significant Defence orders during the last three to five years including supply of C4I system for the Air Force, Night Vision Devices, Ground-based Mobile Electronic Intelligence System, Low Intensity Conflict Electronic Warfare System, Schilka Weapon System Upgrade, TROPO Upgrade, L70 Gun Upgrade, Fire Control Systems, Electronic Fuzes, 3-D Tactical Control Radar, Hand Held Thermal Imager with Laser Range Finder, Battle Field Surveillance System, Advanced Composite Communication System, Submarine Sonar Suite, Ship based EW System, Low Level Transportable Radar, etc.

Mitra: It's been six decades since the inception of BEL and it has come a long way from its humble beginnings to producing a wide range of state-of-the-art equipment primarily for the Indian Armed Forces and civilian products. What are the plans in the pipeline?

Gowtama: The Defence segment continues to be BEL's main business domain, covering about 85 percent of its revenues. We will continue to focus on our core defence sectors including Communication & C4I Systems, Radar & Weapon Systems, Anti-Submarine Warfare, Electro Optics, Gun Upgrades, and Electronic Warfare & Avionics for our growth. We have been giving the much-needed impetus to exports, and have also been continuously exploring diversification opportunities in Defence and allied non-defence areas for enhanced growth.

Some of the areas BEL has already diversified into are Homeland Security and Smart City, Electronic Ammunition Fuzes, Composites, Energy Storage Systems, RF Seekers, Imaging Infra-Red (IIR) Seekers, Real Time Information System for Railways, Automatic Fare Collection Gating System for Metro rail, Intelligent Traffic Management System, Satellite Integration, Cyber Security, Unmanned Systems, Composites and Solar Power Plants.

Other areas of focus include Next Generation Indigenous Surface-to-Air Missile (SAM) System, Airborne Radars, Advanced Night Vision Devices, Indian Regional Navigation Satellite System (IRNSS), Direct Energy Weapons (DEW), Helmet Mounted Display Systems (HDMS), IT & Cloud Services, Laser based products, Explosives, Propellants, Smart Bombs etc, in the Defence segment, and Space Grade Solar Cells, and Air Traffic Control Radars in the non-defence segment.



Source: Bharat Electronics Ltd

"The Defence segment continues to be BEL's main business domain, covering about 85 percent of our revenues. We will continue to focus on our core defence sectors including Communication & C4I Systems, Radar & Weapon Systems, Anti-Submarine Warfare, Electro Optics, Gun Upgrades, and Electronic Warfare & Avionics for our growth."

MV Gowtama
Chairman & Managing Director
Bharat Electronics Ltd

As part of our portfolio expansion plans, we have formed new Strategic Business Units (SBUs)/ Micro SBUs at our Bangalore Complex to pursue business in areas such as Seekers & Missiles, Unmanned Systems and Solar Power Systems.

Future plans include operationalization of new plants at Nimmaluru for advanced Electro-Optics, Anantapur for Missile & Seeker businesses, Nagpur for Electronic Fuze business and Ibrahimpatnam for manufacture of land-based EW systems, focus on Artificial Intelligence-based projects, and several initiatives for comprehensive competency / capability building.

BEL has signed an MoU with Tamil Nadu Industrial Explosives Ltd (TEL), a state-government undertaking of the Government of Tamil Nadu, for co-operation in the explosives segment where BEL is eyeing business growth, keeping in view of its ongoing and upcoming ammunition programs.

Mitra: You have just recently got into a strategic pact with Tejas Networks. Kindly tell us about the vision behind the move.

Gowtama: BEL has signed an Memorandum of Understanding (MoU) with Tejas Networks Ltd to address requirements for IP Switches, Routers, Synchronous Digital Hierarchy, Long Term Evolution, Gigabit Passive Optical Network (GPON), Dense Wavelength Division Multiplexing, Multiplexer etc. for domestic and export markets. The MoU aims at leveraging the 'Make in India' initiative for enhanced value addition in design and development/ manufacturing and long-term support for these products.

Mitra: BEL has been partnering with private sector companies with strong complementary capabilities in alignment with the Govt's 'Make in India' initiative. Kindly tell us about your current collaborations and the ones that are to take off.

Gowtama: BEL is entering into partnerships with major private industries, both Indian and foreign, academic institutions and R&D labs to leverage each other's strengths and come up with ingenious solutions catering to emerging domestic and international market needs, thereby, creating a strong ecosystem for Indian industries to thrive and flourish.

During the recent DefExpo exhibition held in Lucknow, BEL signed a host of MoUs and agreements with both public and private sector companies. BEL signed two MoUs with Goa Shipyard Ltd for promoting exports and co-operation in the field of Composite materials-based solutions required for ships and marines.

The Company entered into an MoU with Indian Institute of Technology Madras for

BEL is entering into partner-ships with major private industries, both Indian and foreign, academic institutions and R&D labs to leverage each other's strengths and come up with ingenious solutions.

Source: Bharat Electronics Ltd

The Government is encouraging Defence exports through many policy initiatives and has set a target of ₹35,000 crore by 2024-25.

research collaboration in the areas of 'Propellants, Explosives and Related Technologies'; with Newspace Research & Technologies Limited (NRT), Bangalore, a startup company, for co-operation in Unmanned Systems; with Tech Mahindra to collaborate in Aerospace & Defence projects; with Bharat Heavy Electrical Limited (BHEL) for co-operation in the field of Defence and Non-defence products / systems; with RailTel Corporation of India Ltd for co-operation in the field of Cloud Services for domestic and international markets; with Sigtech Wireless Technologies Pvt Ltd for the manufacture of Digital Mobile Radio; with Israel Aerospace Industries (IAI) to establish a new Service and Maintenance Centre for providing product life cycle support, including repair and maintenance services, for Air Defence Systems in India; with global major Lockheed Martin to explore opportunities in F-21 fighter programme; and with JSR Dynamics, a Nagpur-based Start-up company, for manufacture and sale of Glide Weapons, Light Weight Cruise missile and Range Extension Kit.

Mitra: How much successful has BEL been in catering to the needs of evolving export markets for Defence products and systems? In what way are we beefing up our strengths to enhance exports in the Defence sector?

Gowtama: The Government is encouraging Defence exports through many policy initiatives and has set a target of ₹35,000 crore by 2024-25. BEL has identified Exports and Offsets as one of its thrust areas and has drawn up plans to offer its select products and systems to various export markets.

We are giving increased thrust to harness the export potential of our Defence products and systems including Homeland Security solutions and Border Protection systems and solutions. Having established a CSS for a few neighboring countries, we are interacting with Ministry of External Affairs for supply of CSS to other friendly countries. We are also exploring civil markets for Smart Cities, Solar Power Generation etc. in developing and third world countries.

BEL is focusing on addressing Offset obligations in various RFPs of the MoD, on account of the Offset policy incorporated in the Defence Procurement Procedure. We have identified contract manufacturing (build to print and build to spec) for foreign OEMs and partnerships in the form of Transfer of Technology of the latest systems and solutions as areas of emerging export opportunities. Efforts are also on to establish long-term supply chain relationship with global players.

In a bid to develop new markets in the Indian Ocean Region (IOR), BEL has operationalized overseas marketing offices in Vietnam, Sri Lanka, Oman and Myanmar. BEL has also expanded its Singapore and New York Regional Offices to handle marketing activities. We plan to work closely with companies in other countries to increase the geo-spatial presence.

Mitra: According to the latest government sources, state-owned enterprises contribute four times more than privately held entities. How do you perceive the reasons that public sector units (PSUs) are faring better than the private sector?

Gowtama: PSUs have been instrumental in building national assets – infrastructure, logistics, invaluable intellectual property, research, etc. Established way back, they have over the years built vast infrastructure, skilled manpower and knowledge base that have helped them grow steadily and adapt to the ever-changing needs of the industry. PSUs have been leveraged to develop sectors where the private sector has been unwilling to enter due to factors such as high-investment, high-risk and low-return. At one time, they were also a significant source of employment in the formal sector. PSUs have presented the government with a safe investment option even during times of economic downturn. CPSUs have robust systems, processes and procedures in place which have stood them in good stead during adverse times. Thus, they have shown much more stability in growth compared to their private counterparts.

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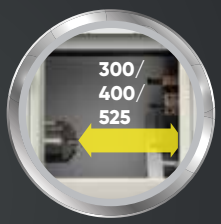
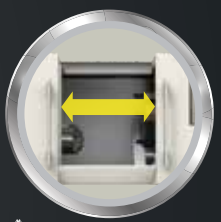
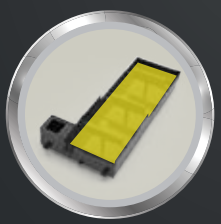


*UPTO 45% LONGER TURNING LENGTH



*UPTO 20% WIDER DOOR OPENING

*UPTO 60% WIDER CHIP EVACUATION AREA



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MAKING A DIFFERENCE

In its strive to become a one-stop shop for all laser requirements, Laser Technologies has equipped itself with the latest technical know-how, an efficient team eager to offer prompt service, and customers that vouch for it.

Source: Laser Technologies Pvt Ltd

The widespread applications of Laser in a variety of industries including manufacturing, automotive, medical, aerospace, military and defense, telecommunications, electronics etc. has boosted its demand. This has resulted in the companies of the Laser industry striving for innovations so as to achieve a competitive edge.

One such company that is ensuring it leads the pack is Laser Technologies Pvt Ltd which was founded in June 2011 by Rakesh Agarwal with a group of technocrats with the idea of creating a large umbrella organization to assist the growth of the Indian Laser industry with its years of experience in the field of Lasers and its applications.

The company represents a multitude of global manufactures, covering a wide range of solutions – Laser Marking, Laser Welding, 2D Laser Cutting, 3D Laser Cutting, Laser Cladding, and Laser Hardening. Its Laser solutions can process a wide range of materials like metal, paper, acrylic, wood, textile, leather, plastic and many more.

"Our main objective is to serve our customers with cost-effective and innovative solutions with our know-how of applications and help them fulfil their objectives," notes Agarwal.

The leader's edge

Agrawal has traveled a long way both literally from a small town in Northern Rajasthan to the financial capital of India, and metaphorically from a humble beginning to being an entrepreneur par excellence. The Founder and Managing Director of one of the fastest growing companies in the field of Lasers in the country has a corporate experience of 15 years, which was gained after his Master's degree in Electronics.

From a two-member company along with his good friend Late Sunil Rangari, Agarwal, with his remarkable business acumen and vision, has transformed Laser Technologies into a multimillion-dollar company in less than eight years with customers all over the country and liaisons with manufacturers in Europe, America and Asia.

Agarwal is also a life member of the prestigious Indian Welding Society (IWS), Indian Laser Association (ILA), Bombay Industries Association (BIA) and Laser Industries Association of India (LIAI). He is also a well-known International consultant for the Laser Industry worldwide, having affiliations with Ridgetop Research, USA; Cognolink, UK; and Coleman Research Group, USA.

POONAM PEDNEKAR
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Magic Wand Media Inc
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Accolades that deserve mention

- **Laser Technologies was the first to sell 6KW Fiber Laser in India;**
- **First to sell high-speed Paper Cutting machine in India, installed at Archies;**
- **First to sell high-end Back Light Unit making Laser machine, installed at Bangalore;**
- **First to sell the fastest Leather Processing machine, installed at Chennai;**
- **First to sell the largest CO_2 galvo-based Textile Processing machine;**
- **First to install 100 Fiber Laser Cutting machines within 2 years;**
- **40 percent repeat order because of on-time service.**

Surmounting challenges

During the initial phase, the company underwent a series of challenges. The team of two had no financial back-up or any office and staff. "The customers too had trust issues as there were no references," he shares.

The duo then had to take help of the industry friends for the office space and personal loans for finance, and hired some acquaintances at low salaries in addition to commission. Due to less manpower they worked almost 14 hours a day for the initial six months. "Within a year, we got established and never had to look back. Hence, one must never lose hope or quit. Just do your best and the best will follow you," he stresses.

Source: Magic Wand Media

"The short-term goal is to become a ₹100-crore company within this year and give employment to 50 more people. And, the long-term goal is to manufacture in India and bring India on the chart of top five Laser countries."

Rakesh Agarwal
Founder and Managing Director
Laser Technologies Pvt Ltd

A force in itself

With a well-built Sales and Service team, Laser Technologies' offices are spread out in cities such as Delhi, Mumbai, Pune, Ahmedabad and Bangalore. "Our endeavor is to become a one-stop shop for all Laser requirements," he shares.

The founding members of the company are also interested in the formation of an international Laser community in India. To demonstrate its commitment towards the Laser Technology and the growth of the Indian Laser industry, they conceptualized the idea of India's first exclusive Laser Exhibition in 2010, which provided the customers and the industry a common platform to share their applications and solutions.

"We were was also the first to advocate Fiber Laser Technology in 2011 when all the established players were selling conventional machines. We also promoted Handheld welding machines ahead of our peers in the industry," shares Agarwal with evident pride.

With an efficient team, high-quality and value for money products, good business ethics, strong customer relationships, technical know-how, and prompt service, Laser Technologies has ensured it has all the keys needed to achieve an edge over its peers.

The efforts have borne fruit with the company having earned a wide spectrum of clientele ranging from small shop owners to big MNCs like Siemens, Godrej, Bosch, and C&S Electric.

"It is extremely vital that we maintain the trust that we have built with our clients. And one of the ways is to keep communicating with them for which we engage them with a multitude of promotional activities, and update them with the latest technologies we come up with. We explain them the benefits of our technologies. They will only agree if we prove to them the value addition we can bring to the table," says Agarwal.

When asked about the plans ahead, he discloses, "The short-term goal is to become a ₹100-crore company within this year and give employment to 50 more people. And, the long-term goal is to manufacture in India and bring India on the chart of top five Laser countries." With all the moves that Laser Technologies is making, there is no room left to doubt its goals.

Laser Technologies represents a multitude of global manufactures, covering a wide range of solutions – Laser Marking, Laser Welding, 2D Laser Cutting, 3D Laser Cutting, Laser Cladding, and Laser Hardening.

Source: Magic Wand Media

TOWARDS THE GRAND DESIGN

An interesting account of how Windsor Machines could achieve enhancement in electrical drawing quality, reduction in errors and increase in productivity through EPLAN engineering design software....

Source: EPLAN Software & Services Pvt Ltd

Windsor Machines Ltd is a global plastic processing machinery manufacturer with its manufacturing facilities in India and Italy. The company owes its reputation to more than five decades of continuous improvement. From Injection Moulding Machines and Pipe Extrusion Lines to Blown Film Lines, the range of products it has developed straddle every conceivable use case.

The convergence of technological prowess with innovation has helped create machines with capacities from 350 to 2000 tonne that are at work in diverse sectors. Benchmark defining products and multiple patents add to the expanding portfolio of solutions that emerge from the advanced development centers. Some of the products include Integrated PET Preform system, ram type hydraulic machines, toggle machines, KL series two-platen machines, and patented jaw clamping system among others.

Bringing complex concepts to life

Prior to deploying EPLAN software, conceptualization was laborious and prone to errors. By virtue of the extensive range of products, standardization and voluminous data sets were routine challenges that beset the product development process. Integrating and configuring value engineering requirements was an uphill process, having to contend with the lack of standardization. Process optimization was hampered by delays attributed to manual data sets that slowed down engineering workflows.

The need to extend the value proposition was felt in a market that was upended by digitalization. Troubleshooting, integration of components in an easy to retrieve library, storage of scalable schematics, and tagging were areas that needed to be addressed on priority. Automation works best only when implemented enterprise-wide and this was one area that needed to move to the next level for creating an overarching and seamless product development workflow.

Transition to EPLAN electrical drawing solution

The advantages of EPLAN over traditional CAD solutions include the ability to automatically connect, restore or break lines, tag devices, carry

Source: EPLAN Software & Services Pvt Ltd
E: info@eplan.in

Challenge

- **Conceptualization was laborious and prone to errors. By virtue of the Windsor Machines' extensive range of products, standardization and voluminous data sets were routine challenges that beset the product development process.**

Solution

- **EPLAN's standout benefits include features that have transformed various processes. Automatic report generation, BOMs, access to library of components, storage of schematics, conversion to various formats, ease of troubleshooting and cross reference identification in electrical circuits have engendered process optimization at Windsor Machines. The reduction in time taken for preparing circuits combined with the elimination of errors has helped boost productivity and enhance quality.**

Benefits by the Numbers

- **Productivity has increased by almost 200%.**
- **number of electrical drawings has leapt from 18 to 35 per month.**
- **total elimination of errors.**
- **has undergone a transformation – errors have been slashed from 24 per month to 1 every month.**

out numbering of wires, and the automated generation of reports/BOMs. The integration/compiling of a massive library in the EPLAN Data Portal offers instantaneous access to a huge repository of components that are integral to standard products. The advanced functionalities on the portal enable the storage of a large number of scalable schematics, in addition to the ease with which various formats such as PDF, DWG, and XML files can be generated through simple conversion options. Querying for components and parts are on the next level with aided/intelligent parts selection and management. The host of features include support for pre-schematic engineering, and simplified cross reference identification in electrical circuits. This feature is presently unavailable in commercially available electrical CAD software, highlighting the futuristic and advanced nature of the solution. The solution also triggers error messages on time, helping teams to fix errors during various stages. The finer aspects of development, including calculation of cable length, mounting plate detail with cut-out and holes, are handled automatically, slashing the time required in processes.

Induction, training and support

The migration to EPLAN was worked out to the last detail, overcoming all adoption challenges. A comprehensive training session addressed the gap in skill sets and demonstrated the various methodologies for efficient generation of data. Standardization, procedures and technical details in processes were explained to the team. The shift from old CAD platform to EPLAN also involved the matching of specific requirements of Windsor Machines with various modules in EPLAN for desired outcomes. Configuration, creation of sample electrical circuits, tool demonstration, and generation of reports were showcased to participants.

On conclusion of in-depth training, a dedicated team handled all queries of team members. The interactive, self-service portal addressed most issues while the dedicated team handled other adoption challenges.

Standout benefits from EPLAN adoption

Among the numerous benefits from the migration to EPLAN, standout benefits include features that have transformed various processes. Automatic report generation, BOMs, access to library of components, storage of schematics, conversion to various formats, ease of troubleshooting and cross reference identification in electrical circuits have engendered process optimization at Windsor Machines. The reduction in time taken for preparing circuits combined with the elimination of errors has helped Windsor Machines to boost productivity and enhance quality. The simplification of processes has reduced complexities and manual intervention, helping Windsor Machines to bring innovative concepts to life in the shortest possible time.

Source: EPLAN Software & Services Pvt Ltd

Source: EPLAN Software & Services Pvt Ltd

The migration to EPLAN was worked out to the last detail, overcoming all adoption challenges. A comprehensive training session addressed the gap in skill sets and demonstrated the various methodologies for efficient generation of data.

CATCHING THE VIBRATION

Here's to know ways to achieve vibration-free internal turning, and how TaeguTec's HUSH BORE can help in the process...

Source: Taegutec India

XNMG 0904 FLP

Internal turning or enlarging a pre-drilled hole is one of the most common operations in machining cylindrical parts. The tool used for this purpose is called boring bar. The length of the bore relative to its diameter has an influence on the quality of the machined hole. This term is generally referred to as L/D ratio. This ratio influences the choice of boring bar selection as machining systems are inherently low in dampening and susceptible to different forms of vibration. In internal turning operation with long boring bar, the vibrations are more pronounced due to poor static and dynamic stiffness of the boring bar material. The chatter due to vibration has a negative effect on the surface finish, tool life and productivity.

Different vibrations

Vibrations are generally classified as free vibrations, forced vibrations and self-excited vibrations.

Free vibrations are due to external impact on the machine structure or internal impact on the boring bar when the insert passes over a hard spot in the part being produced.

Forced vibrations are a result of periodic forces that arise while turning interrupted parts like splines, keyways and with uneven depth of cut. Unbalanced masses also transmit the forces to the tool. The vibration frequency of the tool is very close to that of the frequency of the periodic forces.

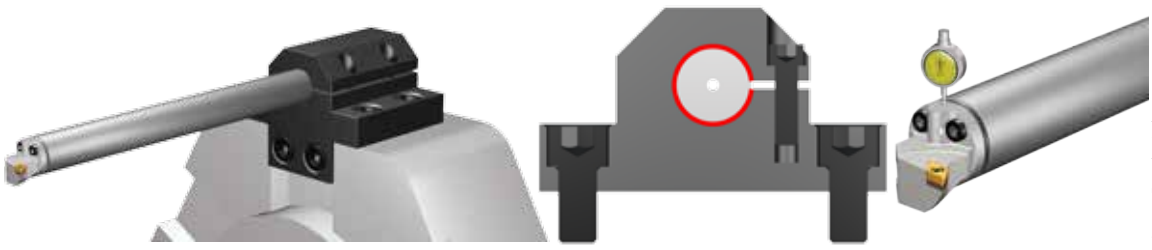
Self-excited vibrations usually are a result of the dynamic instability of the machining system. If large tool-work engagement is attempted, sudden oscillations build up in the structure and the structure vibrates in one of its natural modes of vibration.

Some directions

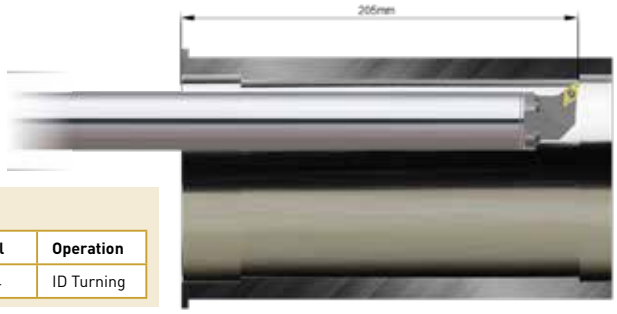
The key to eliminate or reduce vibration from the cutting tool is to increase static stiffness, adjust cutting parameters, increase dynamic stiffness, use positive geometry and positive rake insert to reduce cutting forces. In addition, an entering angle close to 90° and smaller corner radius will direct the feed force in the axial direction of the boring bar thereby reducing deflection.

To increase static stiffness, select the largest possible diameter for the boring bar and minimum length required to do the operation. The maximum overhang of solid steel boring bars is up to 3x diameter. Solid carbide boring bars are recommended up to 5x diameter, as carbide has three times more co-efficient of elasticity than steel. However, when machining with high overhangs of more than 5x diameter, even the use of a solid carbide shank can cause vibrations. Machining high depth to diameter bores requires the boring bar to have higher dynamic stiffness. Use of passive dampers in the boring bar close

Source: Taegutec India



Source: Taegutec India



1.1 cm^3/min

Cycle time 15min 46sec

Productivity +590%

7.8 cm^3/min

Cycle time 2min 16min

Source: Taegutec India

Case Study

Part Name	Material	Operation
Sleeve	SUS 304	ID Turning

Boring bar machining range (based on maximum depth of cut)

Maker	Insert	Holder	V (m/min)	f (mm/rev)	ap (mm)	Coolant	MRR (cm^3/min)
TaeguTec	DCMT 11T304 FG TT9215	QS40A-10D QH40-SDUCR-11	207	0.15	0.25	Wet	7.8
Existing	DCMT 11T304	S50U-PDUCR 11	45	0.1	0.25	Wet	1.1

Leading cutting tool company, TaeguTec offers vibration-free boring bar line with ex-changeable heads for deep boring known as HUSH BORE.

to the cutting area increases the dynamic stiffness.

Knowing HUSH BORE

TaeguTec, a leading cutting tool company, offers vibration-free boring bar line with exchangeable heads for deep boring known as HUSH BORE.

The HUSH BORE's damping system, which is located inside the shank close to the cutting area, dramatically damps vibrations and enables boring up to L/D = 10 with good surface finish and longer tool life. It also ensures increased feed and cutting speed, making it more productive.

Shanks of the HUSH BORE line are available as standard items in seven different diameters (Ø16, 20, 25, 32, 40, 50, 60 mm) and 2 lengths (7XBD, 10XBD). The various exchangeable heads can be securely fastened with serrated couplings located in the boring bars. The corrosion resistant stainless-steel boring bars are with through coolant facility directly to the cutting tip for better tool life.

The exchangeable heads give the flexibility to choose from a wide range of insert shapes from the ISO range (CCMT 09T3, DCMT 11T3) and economical RHINO series of double-sided inserts. The RHINO-X-TURN double-sided insert XNMG 090404 FLP with high positive rake can be used in rough boring applications.

Boring bar machining range (based on maximum depth of cut)

HUSH BORE	
Carbide shank	
Steel shank	

Source: Taegutec India

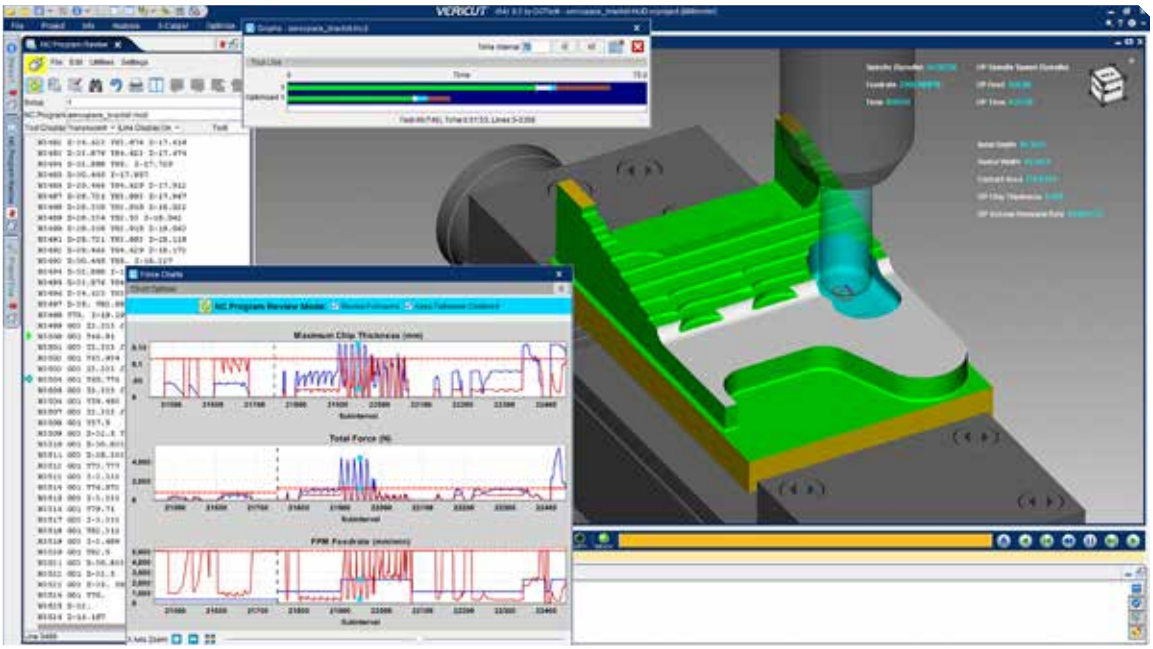
Setting instructions

The below recommended setting instructions are to be followed for effective and efficient use of the HUSH BORE system.

- The mounted shank requires a minimum length of 4XBD
- The holding system should be a slit type so that the shank cylinder will have full surface contact
- Set the shank to the holder so that the head's upper surface is horizontal to the gauge. This ensures center height.

A SHOW OF FORCE

Industry leaders CGTech, Okuma, and Sandvik Coromant collaborate on feedrate optimization technology.



Source: CG Tech

Once in a while, a new technology rolls around that promises to change the face of machining – Computerized numerical control (CNC), Carbide cutting tools, Multitasking machines, Additive manufacturing. Set aside your favorite Star Wars aphorism, but the most recent of these game-changers is Force, the newest addition to Irvine, California-based CGTech Inc.'s VERICUT suite of toolpath simulation, verification and optimization software products.

Forceful results

According to Pete Haas, VERICUT Product Specialist, CGTech, the Force module uses physics-based optimization methodology to reduce cycle times by 40 percent or more and improve tool life significantly. "It's the perfect example of data-driven manufacturing," he said. "Force helps machinists and programmers to make decisions based on facts, not guesses, past experience, or tribal knowledge. Most importantly, Force does the heavy lifting by providing the optimal cutting solution for the NC Programmer."

On milling and turning applications alike, Force optimization works by analyzing cutting conditions encountered during simulation and looking for opportunities to increase feedrates where possible, slowing down when cutting forces or spindle power demands are excessive, and breaking up motions into smaller blocks as needed to both maximize chip thickness and keep it consistent throughout the cut.

Seeing is believing

John Giraldo, Aerospace Engineer, Sandvik Coromant Inc., had a chance to put Force through its paces recently. "To be honest, I used Force on a program that I'd already optimized with a popular CAM system, so I really wasn't expecting much improvement. But Force lopped 40 percent off the cycle time on the first go. It was pretty impressive to watch," he said.

After seeing the results, he wanted a chance to spread the good word on Force, so when a customer came to him with a tool life problem machining Haynes 282—one of the more difficult to machine nickel-based superalloys—he was ready.

"Using a trochoidal toolpath (i.e. a more efficient way to mill a slot or pocket by using circular movements with lighter radial engagement at higher feedrates) to machine a deep pocket in a cylindrical casing, they were burning up two end mills per pocket," he said. "With Force optimization, we increased tool life to five pockets per tool—

a tenfold improvement—and reduced cycle time by 25 percent to boot. It made a night and day difference."

"About the only downside is that we have to rethink all of our machining parameter recommendations when we know that one of our cutting tools will be used with a Force-optimized program. It's made a huge improvement on everything we've thrown at it," added Giraldo.

As with many of his customers, he has been using VERICUT for 'around eight years or so' to simulate NC toolpaths and, therefore, avoid crashing an expensive machine tool. He also works with many of the industry's leading CAM systems, so is quite familiar with modern programming technology. He's no stranger to toolpath optimization, and because his customers are coming to him with their problem jobs, he's also no stranger to difficult materials and challenging workpiece geometries.

"VERICUT Force achieves what feedrate calculators can't and what manufacturers have been trying to do for many years—True constant chip thickness machining," he said. "Instead of maintaining a constant feedrate throughout the cut, with chip thickness changing as the tool encounters varying amounts of material, VERICUT Force speeds up or slows down to keep cutting forces steady. It's very similar to how a machinist might dial the feedrate override up or down based on the sounds coming out of the machine, except that VERICUT does it proactively and more effectively, rather than reacting to cutting noise levels," he shared.

Doing the math

It is important to note that CGTech has done its homework. VERICUT Force has been developed over the last few years through actual on-machine testing, first with an advanced manufacturing research center, and then using its own dynamometer force measurement system.

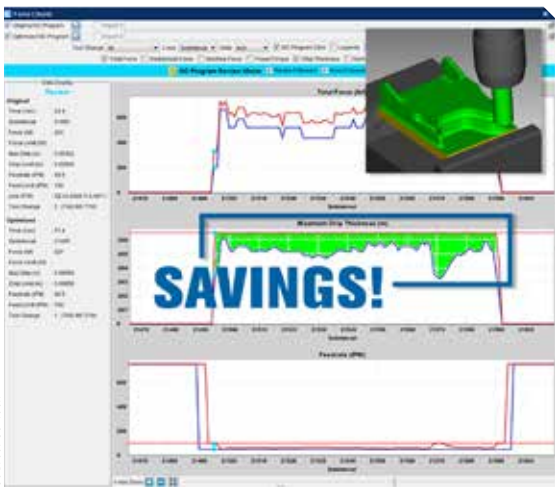
Wade Anderson, Technical center and Product Specialist's Sales Manager, Okuma, has firsthand seen the effort CGTech has put into the development of the Force material files that make Force tick. "Everything we've seen so far has been phenomenal," Anderson said. "They've set up dyno equipment on some of our CNC lathes and milling machining centers, and are taking cuts on different materials, using a range of speeds and feeds, and measuring how much force is encountered for each cut."

Use the Force

Haas said the ability to create these Force material files has recently become available to end users via a software option called 'Force Calibration'. This will not only allow customers to fine-tune Force optimization based on their specific cutting tools and operating parameters, but addresses the needs of those in the aerospace, nuclear, medical, and other industries using proprietary materials that cannot be shared. As for Giraldo's earlier quip about machining recommendations, Haas noted that determining the correct force settings is actually quite simple. If you're using one of Sandvik Coromant's Plura end mills, for example, all you have to do is look up the tool data and plug it into Force along with a few parameters like chip thickness, helix and rake angles, and the number of flutes. Or even easier, download the cutting tool data from CoroPlus directly into VERICUT. The software takes care of the rest.

"Force is now a mature product with proven results in the industry, from large landing gear parts to small medical device components and everything in between," Haas said. "The payback for our Force product can be quite fast—depending on the part and quantity, most shops achieve ROI within 3 to 6 months."

"But it's not just about going faster, or making more money," he added. "Force-optimized programs are safe because the software protects the NC program from machining excesses using programmer-defined limits on feedrate, cutting forces, power consumption, and tool deflection. As a result, we've consistently seen significantly reduced cycle times, greatly improved tool life thanks to less heat and rubbing, and the cutting tool is now utilized to its full performance potential. And as with VERICUT itself, Force works with anyone's machine tool and anyone's NC program, whether it's newly-created or a legacy file from ten years ago. It's simply a great tool for any shop to have in its machining toolbox," Haas concluded.



Source: CG Tech

Force helps machinists and programmers to make decisions based on facts, not guesses, past experience, or tribal knowledge. Most importantly, Force does the heavy lifting by providing the optimal cutting solution for the NC Programmer.

MAKING REMOTE WORK EASIER

As long as shops take steps to prepare, they can use their ERP systems to enable many employees to work from home and increase social distance for those who need to be in the shop during the coronavirus pandemic.

As more companies are implementing remote work and social distancing policies amid the coronavirus pandemic, manufacturers are considering what steps they can take to protect their employees. According to Paul Van Metre, Founder, ProShop ERP, ERP systems can be used to facilitate remote work for many job shop employees, and social distancing for those employees for whom remote work isn't an option. However, before implementing work from home policies, there are some steps shops should take to prepare.

Source: mmsonline.com

Preparing for remote work

The first thing shops need to consider is whether their ERP system is cloud-based or a client-server system. "If it is web-based, then they're already set up to be able to access it from any device, including if they have to work from home," Van Metre says. All they need is a browser. Shops using client-server-based ERP programs will need a secure way to access the program remotely. They should set up a virtual private network (VPN) for any employees who will be working from home and ensure it can handle everyone who needs to use it.

"If they can install the software anywhere without incurring more cost, then they could install their ERP system on a home computer or on a laptop but only access it and use it once they're connected into their local network," he suggests. It's worth noting that many ERP systems will only let users log in from a single location at one time, so to access it from home, users would have to ensure they've closed out their sessions and logged out at work before they can open and use it on a home computer or laptop. "They could do some kind of remote desktop application where they're still actually using their work computer, but they're just driving it from a keyboard and mouse at their house," he adds. "I think that comes down to just their preference of how they want to do it." Either way, he says it's important for shops to set these processes up and test them in advance. Employees should also ensure that their internet access is robust enough to handle their needs.

Facilitating communication

Next, Van Metre says shops need to set up tools to facilitate communication between employees. ProShop has an integrated internal messaging system that enables users to communicate with one another directly within the system, making it easy to send links to jobs and update information. "It really becomes the backbone of all communication in our customers compared to email," he says. Shops using ERP systems that don't have internal messaging systems can use email or other third-party messaging systems like Slack, Google Chat or Microsoft Teams. Instant messaging systems have the advantage of enabling communication in real time, without having to wait for emails to sync and download. "Having those more instant communication tools would be a really good fallback if you are working from home," he says, and adds that implementing something like this is a good practice regardless of whether people are working from home or not.

Ensuring security

Shops should also take measures to keep their information secure while using ERP systems remotely, which Van Metre notes is partially

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the responsibility of software companies and partially the responsibility of manufacturers' IT infrastructure. According to him, "A lot of the minimum requirements for security are being driven by some of the new standards that are cybersecurity standards that are coming into play this year."

An example of one of the new standards is Cybersecurity Maturity Model Certification (CMMC). Some of this covers basic measures like minimum password complexity, two-factor authentication and password keys. "We're just releasing a system now where clients if they want to, have to have a physical key in order to log in from the browser, so that's super secure and no one could possibly log in to the system without a physical key," he notes. IT departments should also ensure that companies have firewalls and proper network settings. IP whitelists, which won't let a user log into the system unless the IP address of the computer they're using is approved, are another option for security. He also adds that "It's also not a great idea to be accessing your computers or your office system on open networks like coffee shops, without using some kind of VPN system at least, or at all."

Determining a workflow

"The next major thing to consider that I think would so quickly come to light is the actual workflow of how people know when they have something they have to work on," Van Metre says. "And in a system like ProShop, it's always very obvious." Its system of internal messaging, notifications and dashboards help make workflow seamless. Regardless of whether or not an ERP system includes these features, it is important for shops to think through how their workflows will look when employees are working remotely.

Many shops may discover that much of their employees' work can be done from home.

First, estimators or salespeople can receive RFQs and initiate the quoting process from home. They can communicate with whoever is needed during the quoting process, send out quotes and enter purchase orders into the ERP system remotely. At this point, ProShop triggers automatic notifications to departments like scheduling, accounting, project management and engineering. They can do their due diligence and automatically send order confirmations to the customer at home. "Then as soon as those orders are created, the people like scheduling and CNC programmers can immediately be notified about it," he says. CNC programmers could theoretically program from home, although they'd need a copy of the shop's CAM system and a suitable computer. Programmers can remotely specify everything they'll need for the job, including workholding, fixtures and cutting tools, which when entered into ProShop, triggers a notification to purchasing (if it's not already in inventory). Then the procurement department can work from home to purchase anything that's needed. ProShop has a purchasing dashboard with icons that show the status of the orders, so everyone can stay informed.

The first point in the workflow that requires an employee in the shop is receiving shipments. When all of the materials are in the shop, an employee preps the job, sets it up and runs it. Then it goes through first article inspection, which the quality manager can monitor remotely via the inspectors' work queues in ProShop. Once the part passes first article inspection, the shop can start running the part. "Obviously you need people for that, unless you have robots, which is increasingly the case," he says.

When the parts are done, shops must prepare them for shipping. ProShop enables users to generate the paperwork for this remotely. For some jobs, this can be a complex process. "In a lot of aerospace, medical or defense shops, the paperwork document package is just as important as the parts themselves," Van Metre notes. "So, preparing that package is something that usually is very intensive and requires someone to be on site to do that work. In ProShop, that can be completely done from any location." This requires the shop to configure the system up front based on the client's needs. Once it's set up, users can scan in the required documents or attach them from emails from their vendors, and the system will automatically prepare the document package in the right format with the necessary certifications (raw material certifications, first article reports, certifications of conformance, etc.).

Minimizing contact on the shopfloor

In addition to facilitating remote work, shops can use their ERP systems to minimize contact within the shop. ERP systems can help shops go paperless, eliminating physical job travelers. "In a paperless system like ProShop, the only thing that is traveling with the parts is a physical job tag that basically has the customer and the order number on it, and that's about it," Van Metre says.

Some of ProShop's users have already been using their ERP systems to open up their companies to remote employees, even beyond the coronavirus outbreak. "We do have some customers that have more distributed office workers. They're not all necessarily in the same location, which could open up a bigger pool of employees," he shares.

Shops should also take measures to keep their information secure while using ERP systems remotely, which is the responsibility of software companies and partially the responsibility of manufacturers' IT infrastructure.

REACHING FOR THE SKY

Chizel, India's B2B Cloud Manufacturing Platform, has had a quintessential journey of a successful startup. Sparked by the passion to create a positive difference in the Indian manufacturing industry and equipped with the foresight to temper with ideas along the way, the company is now top of its game, raring to accomplish more.

Source: Chizel

It was in 2014 that Chizel came into being as a B2C 3D printing design company, building a mass customization platform for lifestyle products. In this initial stint, the company outsourced all its manufacturing requirements to vendors across India, only to gradually realize that the supply chain to manufacture parts on-demand is quite broken and fragmented in the country. It was this realization that planted the seed of the present-day Chizel.

"In 2017, we pivoted our direction towards solving the long-standing manufacturing supply chain problem in India, which is a much bigger market that we presently cater to," shares Yash Rane, Founder & CEO, Chizel.

Finding solution to problem

The team noticed that the majority of the OEMs/ enterprises adhered to traditional practices to procure custom parts, wherein they spent several days (sometimes weeks) to get quotes from suppliers. The entire process was being communicated on calls/emails which was a less effective and time-consuming affair. "So, through our Cloud-enabled platform, we decided to bring hundreds of manufacturing materials, processes and post-processing techniques under one single roof. Apart from this, we also enable clients to source custom parts by uploading their design on our website (www.chizel.io) and listing their manufacturing requirements," Rane adds.

Chizel utilizes its proprietary smart engine to identify optimum cost and turnaround times and reflects it on the platform within a few minutes. On the back-end, the platform has partnered with qualified machine shops across India. Based on parameters such as complexity, quality expectations, TAT, etc. the company identifies the right sourcing partner who can manufacture the part.

"Hereafter, the customer can opt to place an order directly from our platform. Once the order is placed, we take end-to-end responsibility till the dispatch of the part. This way,

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the manufacturing partner gets the order delivered within its cost and timelines, and without having to involve in manual bidding, quoting, and juggling around with multiple suppliers. It provides our customers flexibility of manufacturing anything and everything without having to worry about the supply chain risks," he further adds.

Different business lines

Chizel has two business lines: Chizel MaaS (Manufacturing-as-a-Service) and Chizel Procure. Both verticals leverage the core ideas of 'Technology' and 'Network' that the company is building.

With Chizel MaaS, a buyer gets a one-stop shop solution for manufacturing custom parts by leveraging the company's qualified network of machine shops across India. "Using our proprietary bidding algorithms combined with a wide network of under-utilized machines, we get the best sourcing costs to manufacture parts and pass on the benefits to our customers. On the other hand, suppliers connected to this platform get regular business enquiries relevant to their key strengths and capabilities," shares Rane.

With Chizel Procure, the company aims to help buyers and sellers to digitalize their entire supply chain. A buyer can onboard a supplier, send them confidential data securely, render quotes, compare them and award businesses all through one single dashboard. On the other hand, a seller can manage all the orders at a one-stop platform and further manage accounts and payments efficiently.

"Every step is digitally tracked and accessible to both buyers and sellers, bringing in transparency in the supply chain," he adds.

Source: Chizel

"Through our Cloud-enabled platform, we bring hundreds of manufacturing materials, processes and post-processing techniques under one single roof. We also enable clients to source custom parts by uploading their design on our website (www.chizel.io) and listing their manufacturing requirements."

Yash Rane
Founder & CEO
Chizel

Source: Chizel

(L-R): Ravi Ranjan, Co-founder & COO, Chizel; Yash Rane, Founder & CEO, Chizel; and Devang Saini, Co-founder & CTO, Chizel

Birds of feather

Entrepreneurs are usually wary of whom they choose as team members as they possess the capability to make or break their business. As of Chizel, the three founding members have a common academic background of IIT Roorkee. However, this was one of the many reasons they instantly took to each other. Another being the will to develop a venture of their own.

Yash Rane is the Founder and CEO of the company. He is a Mechanical Engineer and started his professional career in the automotive industry as a Purchase Manager, which made him understand the need of manufacturing parts on-demand. Coming from a techno-commercial background, he is heading Sales and Marketing for Chizel.

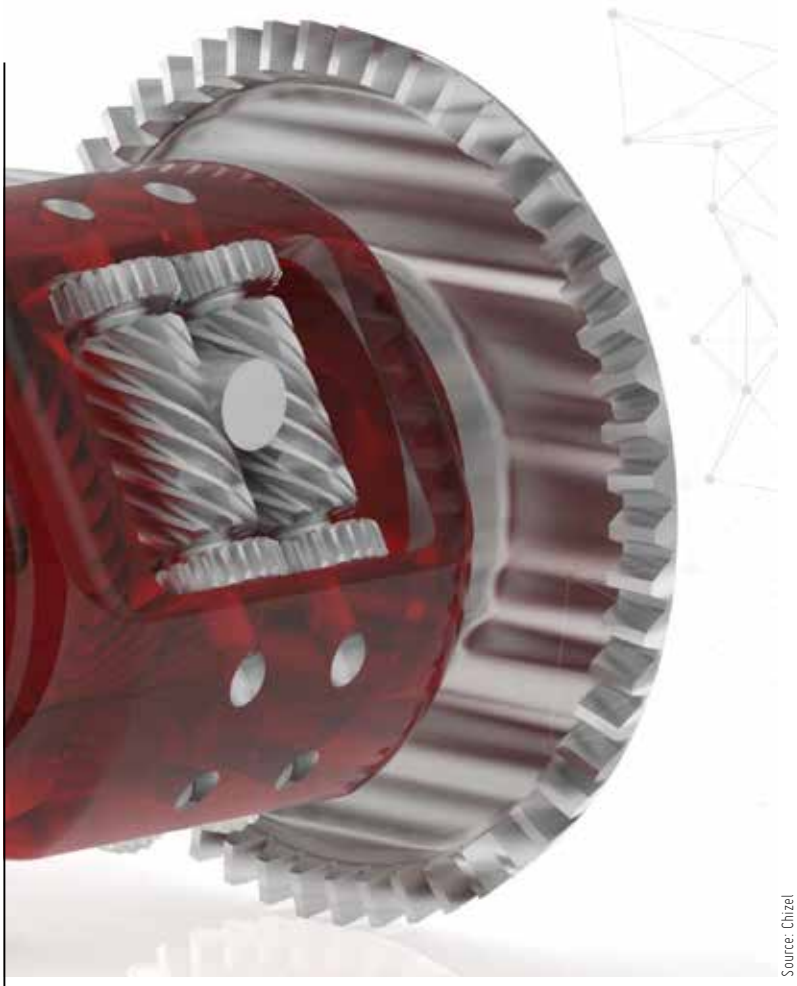
Ravi Ranjan is the Co-founder and COO of Chizel. A Mechanical Engineer, he has 12 months of experience in the Oil & Gas Sector as Maintenance Engineer. Working on production, supply chain and engineering, he manages day-to-day operations and finances of the startup.

Devang Saini, Co-founder and CTO is a Civil Engineer but found his passion in Cloud Product development. With two years of arduous entrepreneurial background, he is the mind behind Chizel's unique software products and offerings.

With Chizel MaaS, a buyer gets a one-stop shop solution for manufacturing custom parts by leveraging the company's qualified network of machine shops across India.

Teething issues

Talking about the financial backup that the startup relies upon and its strategy to cope with typical startup troubles, Rane states, "Chizel was a bootstrapped company for the first 12 months. From the beginning, we had chalked out a strategy for revenue and profitability that helped us grow and sustain the business. In 2018-19, we raised a pre-seed funding



Source: Chizel

The Indian manufacturing ecosystem, especially for MSMEs, is highly unorganized and inefficient. This is where Chizel's platform steps in, attempting to support and empower manufacturing shops, bringing in efficiency using the power of Cloud and technology.

of $300K from institutional and Angel investors. This amount enabled us to hire the right team members, those with in-depth knowledge and expertise in manufacturing and new-age technologies, and also to scale up operations in a big way. We are in the process of raising another $1 million in the next 3-4 months."

The startup does not have much competition within India as there are only a handful of companies who are into on-demand manufacturing. "For us, innovation has always been a bigger concern compared to competition. We are not trying to compete with existing manufacturing giants, but trying to create our own reputation and niche," he adds. "The whole concept of on-demand manufacturing is fairly new in our country. Over the years, we noted that the manufacturing ecosystem, especially for MSMEs, is highly unorganized and inefficient. This is where Chizel's cloud platform steps in, attempting to support as well as empower numerous manufacturing shops of India, bringing efficiency using the power of Cloud and technology," he adds.

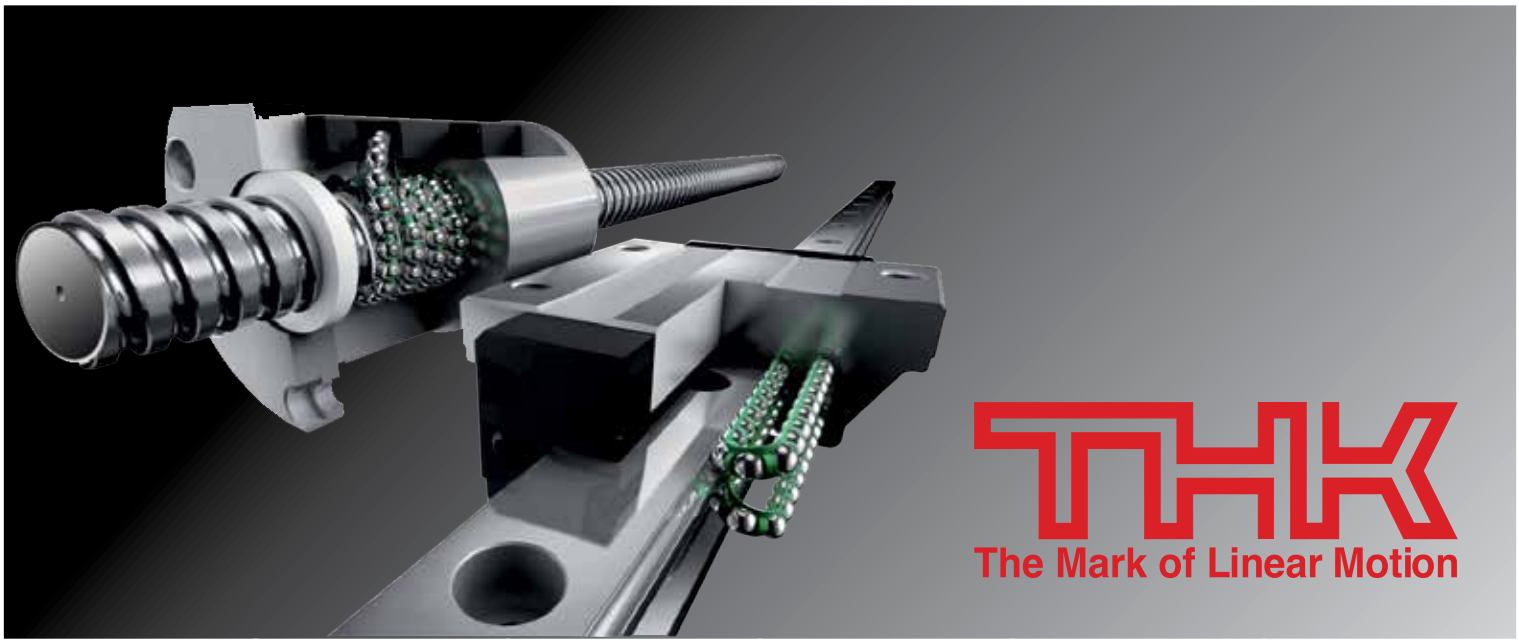
The team's first priority, according to Rane, was to make technology as its front face. However, in its initial stage, it became clear to them that in terms of sourcing and ordering manufacturing parts, customers usually prefer talking to people over call rather than doing everything via a tech-platform. "It was a challenge in itself to convince people that our platform offers end-to-end solution as it brings increased orders in a given timeframe, and enhances efficiency and revenue for manufacturing shop owners," he shares.

The startup has come far from those days and has served over 500 clients since its inception. As of now, its major customers are SMEs in diverse sectors like automation, medical devices, special purpose machines, electronic and electrical components, automotive, etc. "In fact, our on-demand Cloud manufacturing platform has been designed keeping the needs of the Indian market in mind, and is best suited for them. We have also served a few bigger companies including Volvo, Capgemini, Funskool, and Mahindra," informs Rane.

Plans ahead

Chizel is now a focused B2B platform and has acquired customers from an array of industries like automotive, heavy engineering, and SPM. "We are continuously expanding our verticals and industry sectors and are growing at a rate of 100 percent quarter-on-quarter. We have recently started developing exports business of manufactured parts as well. In the last 12 months, we have catered to over 200 customers pan-India and have manufactured over 20,000 parts in metal and plastic with technologies like machining, sheet metal, and 3D Printing," shares Rane.

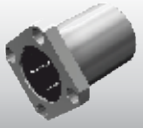
"Going ahead, we want to reach out to 4M small-scale machine shops across India, impacting their business with technology and on-demand manufacturing, and in the process, democratize and redefine manufacturing in multiple sectors," he adds summing up.




LM Guide


Ballscrew


Cross Roller Ring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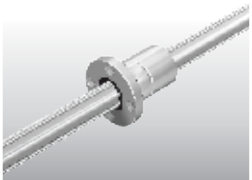
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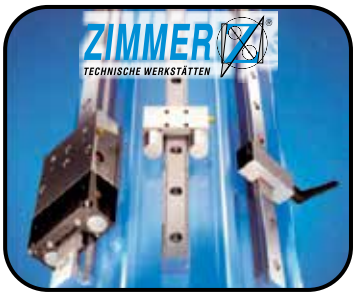

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IMTEX FORMING 2020 & TOOLTECH 2020: A CELEBRATION OF INNOVATION

Indian Machine Tool Manufacturers' Association's (IMTMA) premier exhibition for South and South East Asia, IMTEX FORMING & Tooltech has been serving as a one-stop experience, bringing together metal forming professionals from far and wide. Raising its bar in its 2020 edition, the event turned out to be an even grander affair and covered all aspects of forming technologies. A snapshot of the show...

Source: Magic Wand Media

Industry veterans inaugurating IMTEX FORMING 2020 & Tooltech 2020 with the traditional lamp lighting ceremony.

The latest edition of IMTMA's flagship show for the Indian metal forming industry was a scaled-up event that kept to its tradition of convening quality visitors from a variety of manufacturing and ancillary industries including key decision and policy makers keen to source the newest technologies and manufacturing solutions for their product lines.

Held from January 23 – 28, 2020 at the Bangalore International Exhibition Centre (BIEC), Bengaluru, the show covered 33,000 sq mt and featured more than 500 exhibitors from over 22 countries including India. The sixth edition of the show came across as a festival of innovations in metal forming including high-speed laser cutting, sheet metal working, welding and joining, presses, metrology, and CAD/CAM.

Leaders unite

The event was inaugurated with the traditional lamp lighting ceremony by the Guests of Honour Ram Venkataramani, Immediate Past President, Automotive Component Manufacturers Association of India (ACMA) and Kamal Bali, President & Managing Director, VOLVO Group India.

Other dignitaries present were Indradev Babu, President, IMTMA; Ravi Raghavan, Vice President, IMTMA; Jamshyd N Godrej, Chairman, Exhibitions, IMTMA; V Anbu, Director General & CEO, IMTMA, along with industry titans, renowned industrial experts and academicians.

With eminent industry representatives present together, the occasion was an expression of solidarity and made for the perfect setting to deliberate on the challenging times the manufacturing industry on the whole is going through.

The turbulence in the auto sector, caused by the disruptions

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Source: Magic Wand Media

"Forming needs a lot of attention, development, R&D and IMTEX is a medium that can help in promoting this kind of ideas. The quality of exhibits presented here are excellent and almost half the exhibits are from foreign participants across 26 countries. We have about 40,000 visitors for IMTEX FORMING 2020, which may probably exceed."

Jamshyd N Godrej
Chairman - Exhibitions
IMTMA

Source: Magic Wand Media

"To be a global leader we need to emphasize on digitization, rapid urbanization, collaboration, sustainability etc. A big paradigm shift is necessary for the Indian manufacturers to win over the global competition. New forming technologies displayed here will definitely add to the knowledge of our aggressive manufacturers."

Kamal Bali
President & Managing Director
VOLVO Group India

Source: Magic Wand Media

"Since most of the automotive component manufacturers are MSMEs, handholding is required for them to adopt the latest technologies like Automated Shopfloor, Application of Robotics and IoT. The exhibition brings awareness on the latest non-polluting technologies, and a chance for people to directly interact with the vendors and gather more knowledge."

Ram Venkataramani
Immediate Past President
Automotive Component Manufacturers Association of India (ACMA)

and changing emission norms, has impacted the machine tool industry too. However, equipped with experience, expertise and far-sightedness, the industry captains could see positive times following soon.

Offering his take on the situation, Venkataramani noted, "We, the automotive industry, being the major consumer of the latest machinery, are passing through a slowdown condition, which has a downsizing effect on the machine tools industry. This phase, however, is a temporary one and we have to gear up to face the global competition soon. Against this backdrop, IMTEX FORMING is expected to bring exposure on the latest forming technologies that will help our members explore ways for weight reduction, to develop composites and reduce or eliminate the use of metals."

He further added, "Since most of the automotive component manufacturers are MSMEs, handholding is required for them to adopt the latest technologies like Automated Shopfloor, Application of Robotics and IoT. The exhibition is expected to bring more awareness on the latest non-polluting technologies. Here, our people can witness them and directly interact with the vendors to gather more knowledge on the emerging technologies."

Equipped with experience, expertise and far-sightedness, the industry captains gathered could see positive times following soon.

Source: Magic Wand Media

(Second from left): CS Shiva Shankaraiah, Managing Director, Trishul Machine Tools Pvt Ltd

Exhibitions uplift the industry

Attesting to the fact that exhibitions such as IMTEX FORMING can help reverse the situation,

Bali stated, "To be a global leader we need to emphasize on digitization, rapid urbanization, collaboration, sustainability etc. Sustainability has three components: people, profitability and environment friendliness. We need to focus on these. Opportunities will definitely increase but we may have to shift from where we stand today.

Source: Magic Wand Media

"We consider IMTEX FORMING as one of the most important exhibitions for machine tools in Asia, and definitely the best in India. It is a very good base for us to meet major customers from diverse industry segments to explore respective machine tool type."

Kabir Bhogilal
CXO – Corporate Strategy
Batliboi Ltd

Source: Magic Wand Media

"IMTEX FORMING is a medium which is highly useful for customer engagement and face to face interaction. It helps us enhance our brand value, take our public relations to the next level, attract new customers and strengthen the loyalty of existing customers."

Tushar Pawar
National Head
AMPCO METAL India Pvt Ltd

Source: Magic Wand Media

"Shows such as IMTEX FORMING provide the right approach to search one's right match, be it partner or machine. It is one of the largest shows in India when it comes to sheet metal industries. As a pioneer in metal finishing, it is the best platform for us."

Dr Arvind Patel
Founder & CEO
Valgro India Ltd

In Academic Institutions, MIT, Art Design and Technology University, Pune, received the first prize; NMAN Institute of Technology (Centre for Welding Technologies), Udupi, won the second prize; and the third prize went to Dr VD Karad NIT World of Peace University, Pune.

A big paradigm shift is necessary for the Indian manufacturers to win over the global competition. New forming technologies being displayed here will definitely add to the knowledge of our aggressive manufacturers who want to be in the global arena in the coming days."

Seconding him Babu noted, "The machine tool industry is a global industry. And for the Indian manufacturers to compete in the global competition, their exposure to the latest forming technologies is highly essential. The last IMTEX FORMING witnessed a record number of attendees. The current edition of the show is slated to be even better."

Acknowledging entrepreneurship

Shiva Shankaraiah, Managing Director, Trishul Machine Tools Pvt Ltd, was honoured with the highly-regarded IMTMA Premier Outstanding Entrepreneur Award. The award has been instituted in memory of Vinod Doshi, Chairman of Premier Ltd, an outstanding industrialist and one of the founding fathers of IMTMA. While reflecting on his journey and its milestones, he noted, "Looking back, I feel things could have been better. To be globally successful, two things need to be overcome: Fear of failure and the typical middle-class mentality. Traditional machine tools manufacturing countries are failing to be globally cost competitive today. Thus, we have enormous global opportunity. I believe the decade belongs to us."

Co-located shows and programs

Running parallel with IMTEX FORMING 2020 & Tooltech 2020 was a one-day International Seminar on Forming Technology that brought together renowned experts from eminent national and international companies and research institutes to share their expertise and reflect on the latest developments in metal forming technologies. Another concurrent was i2 Academia Pavilion that aimed to bridge gaps between the two entities and offer an opportunity to academic institutions to showcase their R&D capabilities to the industry fraternity. MIT, Art Design and Technology University, Pune, received the first prize; NMAN Institute of Technology (Centre for Welding Technologies), Udupi, won the second prize; and the third prize went to Dr VD Karad NIT World of Peace University, Pune. CONNECT and Reverse Buyer Seller Meet (RBSM) were other initiatives that helped facilitate network and forge connections.

Gearing up for IMTEX 2021

After this successful edition of IMTEX FORMING, IMTMA will be organizing its flagship IMTEX 2021 at BIEC, Bengaluru from January 21 - 27, 2021. The 50 years old machine tool

Source: Magic Wand Media

"IMTEX is the best platform to introduce the latest technologies. Specially after the show has been split into Metal Cutting and Metal Forming, the customer experience has vastly improved. All praises to the IMTMA functionaries to aggressively raise awareness regarding the show."

Niraj Seth
President
Amada (India) Pvt Ltd

Source: Magic Wand Media

"IMTEX has been a pivotal exhibition platform in India for all machine tool manufacturers. Each edition of the show further strengthens the Ecoclean brand in India, creating new opportunities for us to bring our state-of-the-art cleaning technologies to the Indian market and extend our network.."

Manoj Velhal
AGM – Sales
Ecoclean Machines Pvt Ltd

Source: Magic Wand Media

"The show helps in promoting our new technologies, studying customer demands and analyzing our market strategy. There were fresh orders from new customers at the show who are likely to do more business with us in the future. It has given us a good chunk of revenue and helped us immensely."

Satheesh Kumar
Technical Director
Meera Laser Solutions

exhibition, IMTEX, will now be a more comprehensive and extrapolated show covering an exciting assemblage of new-age technologies under one roof by remodeling itself to a new paradigm as the 'International Machine Tool and Manufacturing Technology Exhibition'.

In IMTEX 2019, new pavilions were introduced to cover Additive Manufacturing under the banner 'Additive Manufacturing Expo' and Industry 4.0 under the banner 'Factory of the Future'. In IMTEX 2021, these two pavilions will converge under the banner 'Digital Manufacturing'.

IMTEX 2021 will showcase a wide range of metal cutting machine tools. The manufacturing segment will feature a broad spectrum of technologies ranging from Digital Manufacturing to Cloud, Additive Manufacturing, Digital Factory, Industry 4.0 etc.

The concurrent exhibition, Tooltech will continue and showcase the world of Parts, Accessories and Systems for machine tools and manufacturing technology. As one of the leading global machine tool and manufacturing technology shows, IMTEX 2021 will attract leading industry think-tank and industry influencers.

IMTEX 2021 will feature a broad spectrum of technologies ranging from Digital Manufacturing to Cloud, Additive Manufacturing, Digital Factory, Industry 4.0 etc.

Source: Magic Wand Media

"We had invited end users acquainted with the latest technologies for enabling their manufacturing activities to Industry 4.0 level with smart machines. As hoped, we had quality footfalls. IMTMA ensured to bring to us engineering consultants, machinery manufacturers and system integrators."

Ajey Phatak
Head, Marketing
Beckhoff Automation Pvt Ltd

Source: Magic Wand Media

"Year on year, IMTEX FORMING has found huge success, making us look forward to this show as our prime brand promotion platform. The diversity of footfalls and the presence of industries in huge numbers across sectors is what makes IMTEX stand out from other similar shows."

Vishwanath Ammanagi
Managing Director – Sales
Güthle Pressenspannen

HOPE AMIDST SLOWDOWN

IMTEX FORMING 2020 & Tooltech 2020 was witness to the Indian industry showing signs of revival with its players coming back in action and procuring new machines...

Source: Magic Wand Media

Despite the current market scene, the exhibitors at the show received a fairly great response from quality visitors who also placed a significant number of orders with them.

Held against the backdrop of a prolonged slowdown, the latest edition of IMTEX FORMING & Tooltech reported the exhibitors receiving an unexpected response from the visitors. They had quality visitors placing a significant number of orders with them.

ITL Industries Ltd of Indore had its circular saw machines for cutting pipes and solids for live demos. One was CNC Solid Cutting Machine for mass production in forging industry and the others were hydraulically operated machines for pipe cutting. MI Quraishi, DGM (Marketing), ITL, said, "Considering the market scenario, the response was good. I am glad to note that despite the market slowdown, people were keen to explore new machines."

Sudhir Udyavar, Asst. General Manager – Sales & Service, Mechelonic Engineers Pvt Ltd, held the same view. "There were lesser footfalls this time, which was expected. However, we received a great number of serious enquiries which we look forward to convert into business. We are hopeful that in the next few months, the industry will get back to track." The Bangalore-based company is into resistance welding machines used in the Automobile industry as well as in different government-owned factories like Nuclear Fuel Complex (NFC).

Chennai-based Airtronic Engineers showed its metrological solutions especially for the automotive and aerospace industries. V Prasanna from the company reported receiving good response. He said, "We presented machines from three countries - Italy, Switzerland and the UK. We also showed a shaft measuring machine.

More testifying

Nikul Engineering Pvt Ltd from Pune demonstrated safety products. Darryl Drego, Director, Nikul Engineering, noted, "We had a very good response this edition. At least 50 customers per day selected our products."

The company's products include safety guards for power presses and grinders. These safeguard the operators' eyes. "We also provide an LED downline so that the operator can see the job clearly. For the grinders, the customers can easily fix the guard, but for the press-guards, we need to install the product," he added.

Another company into Metrology Solutions, Noida's Hexagon Metrology (India) Pvt Ltd received a whopping 100 responses each day of the event. "IMTEX FORMING is usually not too crowded for us. This year, however, our stall positively teemed with visitors," said Lalitha Mani, Senior Manager, Marketing, Hexagon Metrology.

Ahmedabad-based Bhavya Machine Tools showcased Fibre Laser Cutting Machine Tools imported from China, with a notable speciality of zero vibration. Melo Hopefield, Company Sales Manager, explained, "This IMTEX, we had customers who were into sheet metal. We have already sold two machines."

Atul Kumbhar, Service Manager, Prima Power from Pune, informed, "We are an Italian Group. The machines that we showcased at the event were a combination machine of punch and shearing that can perform different kinds of operations - punching, tapping, forming, louring etc. It finds its applications in panel industry, switchgear industry etc. Another machine that we displayed was an electrically operated press brake. Both the machines received great response at the show. We generated a considerable number of enquiries that we await to be converted into orders."

TECHNOLOGY @ work

IMTEX 2021

International Machine Tool & Manufacturing Technology Exhibition

Concurrent shows

Tooltech 2021

International Exhibition of Cutting Tools, Tooling Systems, Machine Tool Accessories, Metrology & CAD / CAM

DIGITAL MANUFACTURING

International Exhibition on Industry 4.0 & Additive Manufacturing

21 - 27 January 2021, Bengaluru

Organiser

Indian Machine Tool Manufacturers' Association

Venue

BIEC Bangalore International Exhibition Centre

ufi Approved International Event

www.imtex.in

SETTING THINGS IN MOTION

Motion Meeting 2020, presented by Fritz Studer AG, a member of the UNITED GRINDING Group, took place on February 07, 2020 in Thun, Switzerland. With 'The Art of Grinding' as its motto, the company befittingly offered a glimpse to its last year's success and innovations that amount to genius strokes of art.

(L-R): Stephan Stoll, COO, Fritz Studer AG; Sandro Bottazzo, CSO, Fritz Studer AG; Daniel Huber, CTO, Fritz Studer AG; and Jens Bleher, CEO, Fritz Studer AG at the Motion Meeting 2020 event

Source: Fritz Studer AG

More than 60 journalists from all over the world, yet again, made their way to the Bernese Oberland for the Motion Meeting held in acknowledgement of Fritz Studer AG's another very successful year in 2019 after having had a record year in 2018.

Under the motto 'The Art of Grinding', the company presented some of the things that make it one of the leading manufacturers of cylindrical grinding machines. "This claim requires us to overcome limitations and focuses concentration on barely perceptible details which ultimately make the difference, in order to achieve what initially appears impossible. At times like these, there is a special focus on the efficiency and quality of our processes and products," said Jens Bleher, CEO, Fritz Studer AG.

Impressive sales, wide machine portfolio

With the third best annual turnover in the company's history, the cylindrical grinding machine manufacturer managed to increase its market share again, despite difficult market conditions. One reason for its success is the high proportion of new customers, at almost 40 percent.

The company was also able to further increase its turnover with internal cylindrical grinding machines. "In the Asian region, in particular, we maintained high order intake for internal cylindrical grinding machines," said Sandro Bottazzo, CSO, Fritz Studer AG, at the annual press conference. Three machines – S121, S141 and S151 – achieved record incoming orders. The new universal cylindrical grinding machines – S33 and S31 – also got off to a very successful start.

"The launch of new universal machines was both a feat of strength and a highlight," shared Bleher. The company needed less than a year to sell around 100 of the new machines, with customers underscoring their top quality and precision.

Towards customer success

Studer's segments developed very differently in 2019. In the automotive sector, market conditions were much more challenging than in 2018. However, thanks to its broad diversification, the company was

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Source: Fritz Studer AG

Studer easyLoad loading system for external and universal cylindrical grinding machines

Source: Fritz Studer AG

The WeStack and WeSpeed cells from Wenger Automation & Engineering AG. The automation solutions ensure quicker loading and unloading of parts on Studer cylindrical grinding machines

able to offset weaker market segments with stronger ones. For example, the aviation industry was one of the segments that flourished in 2019. "Our company has also been very well positioned in the aerospace customer segment for many years and is a preferred supplier of many component suppliers," explained Bottazzo when reviewing the past year. Studer considers its global customer-focused sales and service organization as a key to success. This is also one of the many reasons why the proportion of its new customers was almost 40 percent last year. Smaller markets, like Great Britain, also achieved a very good order intake in 2019. Finally, the market share also increased in Switzerland, the company's home market.

Exciting times technology-wise

The year 2019 was also very exciting for Studer's system division. Various new projects were started, advanced and completed. For example, it was possible to reduce the cycle time for an application from the medical sector by a whopping 70 percent due to Studer WireDress®. A life cycle solution project was carried out in Biel, in which ceramic components for use in mass spectrometers were form-ground with high precision in several grinding trials with the customer.

"You can expect a new product from Studer in a few months," promises Daniel Huber, CTO, Fritz Studer AG. This is a new hydraulic synchronous tailstock. "The hydraulics of the redesigned synchronous tailstock have been replaced by a servo drive with an electrical clamping function. The repeatability and accuracy of the clamping force have been increased to the exact gram. An even lower contact pressure can now also be selected," he added.

Connecting digitally

Four fundamental priorities for the UNITED GRINDING Group's digitalization strategy have been developed from a wide range of digital projects. "Connectivity, Usability, Monitoring and Productivity are the digital pillars of UNITED GRINDING Digital Solutions™," explained Huber.

In the area of Connectivity, the umati standardized communication interface provides the long-awaited possibility of simply connecting any machine, which is umati-capable, to the Production Monitor and monitoring its operating status. "Digitalization is also finding its way into production. As a user of our own machines, we are the internal customer, and support our developers with practical tests and suggestions for product improvements from the user's point of view," explained Stephan Stoll, COO, Fritz Studer AG.

Investments in the future

Further significant investments were also made at the Steffisburg location in 2019, underlining the commitment of the UNITED GRINDING Group to Switzerland as a workplace. A major project for modernization of the company's cubic production was successfully completed last year. "Technically harmonized milling centers allow automated, high-precision manufacturing of our key components," said Stoll. A further investment was also made in component production and implemented this year. This concerns the complete production of spindle shafts – a key component for the function and precision of the grinding machines. "We also want to maintain and develop our expertise and efficiency here and increase our internal value added. Naturally, we will continue to use the latest production and process technology and a reasonable degree of automation," he added.

Studer considers its global customer-focused sales and service organization as one of its keys to success. This is one reason why the proportion of its new customers was almost 40% last year.

Source: Fritz Studer AG

International Journalists at the company's plant in Thun during Motion Meeting 2020

A ONE OF A KIND EXPERIENCE

Organized by Dassault Systèmes, the 3DEXPERIENCE World 2020 event stood true to its new name and presented the entire set of solutions from the company. Earlier known as SOLIDWORKS World, this year's edition brought together 6,000 designers, engineers, entrepreneurs and business leaders from around the world at Music City Center in Nashville, Tennessee. A glimpse from the event...

Bernard Charlès, Vice Chairman of the Board of Directors & CEO, Dassault Systèmes addressing the huge audience at 3DEXPERIENCE World 2020

Source: Dassault Systèmes

The maiden 3DEXPERIENCE World was built on the 20-year legacy of Dassault Systèmes' SOLIDWORKS World event that was dedicated to the 3D design and engineering community. The event introduced SOLIDWORKS users to new strategies for business innovation through discussions and demonstrations of 3DEXPERIENCE WORKS and the company's portfolio of digital applications on the 3DEXPERIENCE platform for collaborative design to manufacturing.

Evolving manufacturing

Gian Paolo Bassi, Chief Executive Officer, SOLIDWORKS, Dassault Systèmes, opened the show with the theme 'To be human is to dream', and welcomed DELMIA, SIMULIA, and ENOVIA solutions to the event. Bernard Charlès, Vice Chairman of the Board of Directors & CEO, Dassault Systèmes, then shared how Dassault can prepare for future, recalling the transition from 2D to 3D, and about the progress and evolution of technology and setting the stage for the spotlight topic – the 3DEXPERIENCE platform. He put it simply, "We are changing the way we collaborate on projects and the way we manufacture."

Source: Dassault Systèmes

Gian Paolo Bassi, CEO, SOLIDWORKS, Dassault Systèmes elaborating on the 3DEXPERIENCE WORKS solution

Source: Team MMI

Source: Dassault Systèmes


Source: Dassault Systèmes


Source: Dassault Systèmes

In sync, Bassi shared, "On the 3DEXPERIENCE platform, everything and everyone involved in the concept, design, simulate, manufacture, sell, and service processes are connected and integrated in one continuous loop. Of course, our SOLIDWORKS customers can continue to work on the standalone SOLIDWORKS desktop version if they prefer, but our new option will free up time to think, create, and get things done."

Inspiring sessions

The most awaited segment of the event is always the keynote sessions that bring forth success stories of grit and gumption. This edition was graced by the presence and insightful stories of the company's customers, innovators and partners such as Sam Rogers, Additive Design Lead & Jet Suit Pilot, Gravity Industries; Mikael Kajbring, CTO, Awake, makers of the Awake electric surfboard; Mike Schultz, Founder of performance Prosthetic Manufacturer, BioDapt; Matt Carney of the MIT Media Lab Biomechatronics Group; Charles Adler, Co-founder & Former Head of Design, Kickstarter.com, Kickstarter and many more.

Dassault Systèmes and Xometry Partner

Xometry is Dassault Systèmes' first 'prime partner' - a new category of partners providing buying experiences to users of MAKE Marketplace, the latter's on-demand manufacturing service. This new category recognizes qualified service providers having industrial-grade quality certifications, and production capacities to answer demanding needs as well as high satisfaction rates. Engineers can get their designs made faster with instant access to Xometry part manufacturing price quotes without leaving SOLIDWORKS and CATIA design environments.

3DEXPERIENCE Playground

In the 3DEXPERIENCE Playground (previously Partner Pavilion), the spotlight was on Magic Wheelchair, a non-profit organization that builds costumes for kids, and BioDapt that designs and manufactures high-performance lower limb prosthetic components used for action sports and other similar activities.

3D printing

Several announcements were made by significant players in the 3D printing sector such as Stratasys launching its J826 printer which is based on PolyJet technology and offers all the capabilities of the J8 series including Pantone-validated colors and a range of materials such as VeroUltraClear that allows to prototype for glass, clear polymers, or transparent packaging.

RIZE and Sindoh announced a strong partnership to expand opportunities for safe and sustainable 3D printing. The companies revealed that the first step in their collaboration would be to integrate the RIZIUM portfolio of materials, known for their zero emissions, sustainability and durability, into the desktop 2X and the industrial 7X printers from Sindoh.

Save the Date for next edition 3DExperience World 2021 February 07-10 @ Nashville, Tennessee

Source: Dassault Systèmes


Source: Dassault Systèmes

Source: Dassault Systèmes

FOR A DIGITAL FUTURE

DMG MORI's recent open house event at its factory in Pfronten, Germany, highlighted the company's advances in digitalization as well as automation and additive manufacturing. Here's knowing what unfolded that has ensued so much excitement...

Source: DMG MORI

At DMG MORI's traditional open house held in Pfronten, Southern Germany, from February 11-15, 2020, the global machine tool manufacturer presented its innovations in the field of digitization and automation.

The event showcased the company's prowess in automation through 45 innovative machines and 15 automation solutions demonstrated. The four world premieres included the DMU/DMC 65 H monoBlock universal horizontal machining center, the modular PH Cell pallet system, the Lasertec 400 Shape for laser texturing and the Lasertec 30 Dual SLM for additive manufacturing.

The focus was on end-to-end connectivity as the standard for all machines, the update of all existing CELOS versions, the new customer portal *my*DMG MORI and TULIP as a simple means to digitization.

Knowing the newcomers

DMC 65 H monoBLOCK

The DMC 65 H monoBLOCK combines the flexibility and ergonomics of a 5-axis vertical machining center with the productivity and process reliability of a horizontal machining center. Optimal chip evacuation makes the machine particularly suitable for reliable machining of aerospace structural components.

Those working in the mould and die sector witnessed the possibility of machining deep holes up to 550 mm, while con-

Source: Magic Wand Media

Source: Magic Wand Media

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Source: Magic Wand Media

Dr Masahiko Mori, President, DMG MORI addressing the international media at the Open House

Source: Magic Wand Media

(L–R): Christian Thones, Chairman of the Executive Board, DMG MORI AKTIENGESELLSCHAFT and Dr Masahiko Mori, President, DMG MORI taking questions from the audience

tract manufacturers appreciated the flexibility provided by the swivelling rotary table that allows the use of workholding towers as well as full 5-axis machining of components weighing up to 600 kg.

PH Cell pallet system

The PH Cell automated pallet handling system with a footprint of just 10.7 sq mt was demonstrated feeding a DMU 65 monoBLOCK machining center. Pallet loading from the side provides good accessibility to the working area. The system is of modular design and offers a high degree of flexibility.

The basic version can accommodate up to 12 500 x 500 mm pallets, 16 400 x 400 mm pallets or 20 320 x 320 mm pallets over three or four levels. The system can be expanded by a second module, making up to 40 pallet storage spaces available. The second module can be retrofitted without the need for any additional footprint.

Lasertec 400 Shape

The Lasertec 400 Shape expands the DMG MORI machine portfolio for 5-axis laser structuring into the range of large moulds up to 3,350 x 1,350 x 1,000 mm and weighing up to 20 tonne. The newly developed laser head swivels from -100 to +135° and has a rotation range of ±200° making it possible to produce undercuts.

The ergonomic and thermo-symmetrical gantry design ensures precision and outstanding texture quality at three times the speed of other models in the range.

Lasertec 30 Dual SLM

Equipped with two lasers the new Lasertec 30 Dual SLM, for additive manufacturing, expands the DMG MORI portfolio as a significantly more productive manufacturing solution for the powder bed process.

Based on the proven Lasertec SLM series, the new flagship in powder bed processing is equipped with a high-precision optics module that has two lasers, which together can build up one component or several workpieces in parallel. This increases productivity by up to 80 percent.

Two powerful 600 W lasers enable build rates of up to 90 cm^3/h. The software automatically recognizes which scan strategy is the most efficient, thus ensuring the Lasertec 30 Dual SLM always operates optimally and that it can be used flexibly depending on the order situation.

Automation solutions

The 15 automation solutions displayed at the show included the new PH Cell on a DMU 65 monoBLOCK, a DMC 90U duoBLOCK with PH-AGV 50 automated guided vehicle pallet automation system, and a CTX beta 1250 TC with Robo2Go Vision.

The PH-AGV 50 offers flexible automation with free access to the machine and an intelligent safety concept for human-machine collaboration. The Robo2Go Vision is a further development of flexible robot automation and enables direct loading of Euro pallets. Using a new 3D camera, it recognizes workpiece positions without the need for racks or to restack the parts.

Additive manufacturing

Since the demands on the additive manufacturing technology are constantly shifting, DMG MORI has further made developments into its Lasertec 3D hybrid, Lasertec 3D and Lasertec SLM series.

Based on the sturdy monoBLOCK series, it is designed for parts measuring up to 1,250 mm in diameter, 745 mm high and weighing up to two tonne. The rigid machine construction and high dynamics of the machine enable accurate, reliable, cost-effective and complete machining of complex 3D parts.

A key selling point of laser deposition welding is the possibility of changing between two materials quickly under CNC.

Feats in digitalization

Not many have been as successful as DMG MORI in digitally enhancing and expanding its traditional business in machine tools and services.

Here are some of its ground-breaking innovations in the field:

- **CELOS**
- **DMG MORI Connectivity**
- **DMG Mori Messenger**
- ***my*DMG MORI**
- **TULIP**

On an area of over 7,500 sq mt, DMG MORI once again presented cutting-edge production concepts in machining and additive manufacturing.

JOINING FORCES

Bharat Fritz Werner's wholly-owned subsidiary m2nxt Solutions has joined hands with Stratasys India to aid the Indian Manufacturing ecosystem adopt additive/3D printing technology solutions. The former presented its innovations at the recently held Open House event i smart factory 2020 at Bengaluru on March 12 -14, 2020.

Source: Magic Wand Media

(L-R): Jagannath V, Business Head, m2nxt; Praful Shinde, Chief Sales & Marketing Officer, BFW; Ravi Raghavan, Managing Director, BFW; and Sathish Kumar, Deputy General Manager, Stratasys India Pvt Ltd.

m2nxt Solutions, a wholly owned subsidiary of Bharat Fritz Werner Ltd (BFW), India's leading provider of smart manufacturing solutions, has partnered with Stratasys India, a subsidiary of Stratasys Ltd, the 3D printing and additive manufacturing solutions company.

This partnership is aimed to deliver the synergies from combinations of professional 3D printing solutions, smart processes and solutions, additive manufacturing application consultations and customer services to help enterprises prepare for Industry 4.0.

m2nxt Solutions provides comprehensive scalable, modular, brand agnostic solutions for Factory Automation - physical and cyber and process engineering. The IRIS-based Cyber automation solutions include shopfloor data acquisition, data management, analytics leading to industry 4.0 compliant connected manufacturing. The Physical automation solutions include deployment of Robots, Gantries, Cobots, AGVs for efficient shopfloor operation.

Stratasys is a global leader in additive manufacturing/ 3D printing technology and is the manufacturer of FDM® and PolyJet™ 3D printers. The company's technologies are used to create prototypes, manufacturing tools, and production parts for industries, including aerospace, automotive, healthcare, consumer products and education. Stratasys 3D printing ecosystem of solutions and expertise includes 3D printers, materials, software, expert services, and on-demand parts production.

Strong together

At the recently held Open House event i smart factory 2020 in Bengaluru, m2nxt presented its products such as the IRIS Data acquisition, physical automation, AGVs, 3D Printing

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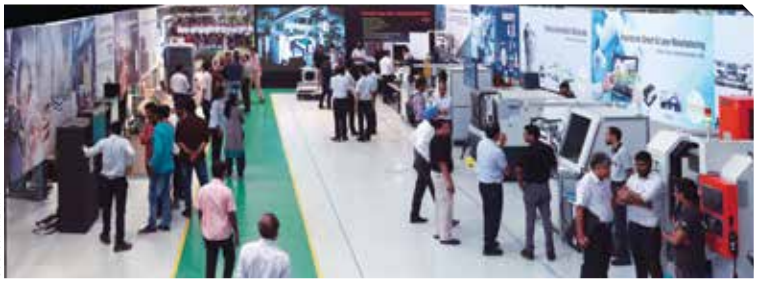

Source: m2nxt

& Process Engineering Solutions. It also displayed products that led to industry 4.0 compliant connected manufacturing.

While talking about the partnership, Ravi Raghavan, Managing Director & CEO, BFW, said, "Today's disruptive environment of manufacturing is driven by digitalization, light weighting, usage of alternate materials and alternate processes for creating complex components of various end products. m2nxt has a deep understanding of manufacturing needs and Stratasys is pioneer in material technology and state-of-the-art 3D printing technology - based on FDM and Polyjet. Combination of these two strengths will help Indian Manufacturing ecosystem to explore alternate competitive solutions by deploying the Stratasys 3D machines for applications developed by m2nxt."

"In the era of Industry 4.0, manufacturing with additive opens new doors with limitless possibilities. m2nxt's domain expertise in smart manufacturing combined with Stratasys 3D Printing will enable our customers in creation of products that are first-to-market, fully customized, and dynamic. We are pleased to welcome m2nxt to the Stratasys partner ecosystem," said Rajiv Bajaj, Managing Director, Stratasys India and SEA.

Technically speaking

IRIS Data Acquisition: IRIS is a single integrated solution with a secure, robust and cloud-based infrastructure. It is designed and developed to receive real-time, accurate data from assets in a micro level ensuing monitoring, managing, comparison and improvement of activities and processes as per the requirement of various levels of stakeholders.

Physical Automation: m2nxt Solutions also offers future manufacturing needs of modular scalable and comprehensive solutions like material handling, heavy duty component loading and unloading, pick and place of mass production components, providing data analytics to maximize OEE, productivity, quality and many more.

This partnership is aimed to deliver the synergies from combinations of professional 3D printing solutions, smart processes and solutions, additive manufacturing application consultations and customer services to help enterprises prepare for Industry 4.0.

Bench Scales

A Matter of Trust

METTLER TOLEDO's bench scales provide the required documentation and make it easy for one to be a trusted partner to their customers.

Quality assurance of parts and components is often not enough to prove that one is a trusted partner. Due to increasing government regulations, compliance pressure and customer requirements, the additional demand for full traceability of products is present for most manufacturers of metal or plastic components.

Manufacturer responsibility

Despite extensive tests and process regulations, the quality of single products or lots sometimes has unwanted variations. There are many factors that can influence output, including changing machine tools or process parameters, raw material input or shift changes. If parts are identified as bad or if there is a malfunction, it has to be traced back to its origin as quickly and accurately as possible. Therefore, the responsibility of the manufacturer does not end at the shipping department. The producer of discrete metal and plastic parts has to find ways to ensure flawless traceability to protect customers and brand reputation. When looking for an easy-to-use, efficient and secure solution, weighing instruments can provide exact batch building and customizable labeling functions for distinct identification.

Challenges in traceability

To be traceable, some industries require that every work piece is labeled. If the raw material cost is high or the components are critical to a product's structure or functionality, it makes sense to opt for single-piece labeling or identification. For Tier 3 products that are shipped in bulk quantities and are typically worth only a few cents, this practice is simply too costly. An efficient and practical solution is required.

Weighing to build batches

Efficient piece-counting solutions provide the effective way to build batches and separate charges. Fill packages, kits and shipping boxes and simply weigh them against a preset target number of pieces or weight. With weighing-assisted counting, one can determine the exact amount of parts supplied to customers securely.

Label for easy identification

Once the exact number of parts is defined, one has to supply labels to make their products identifiable internally and for customers. Simply providing product and batch number is not enough. Time of shipment or delivery, manufacturing date or operator identification have to be supplied. Additionally, barcodes, according to industry standards, have to be included to ensure fast handling along the transport chain and to easily recall data in one's own system. With that set up, one is able to efficiently trace back bulk goods quickly and securely. In case one's customer has specific requirements, they can arrange an individually customizable label solution. Counting scales provide data management and labeling solutions to comply with one's labeling needs. There is no way around it; providing documentation of compliance is essential. There is one way to be on the safe side use smart weighing solutions.

Source: Mettler-Toledo India Pvt Ltd

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I/O System

EtherCAT G for Highly Data-intensive Applications

The technology expansion EtherCAT G is not only compatible with the globally established 100 Mbit/s EtherCAT standard, but also provides the same familiar ease of use.

The technology expansion EtherCAT G takes the high EtherCAT performance to the next level by delivering the Gbit Ethernet speeds needed to support highly data-intensive applications. The latest technology expansion is not only compatible with the globally established 100 Mbit/s EtherCAT standard, but also provides the same familiar ease of use. In addition, the new branch controller model for EtherCAT G enables efficient operation of multiple network segments in parallel.

EtherCAT G supports standard Ethernet transmission rates of 1 Gbit/s; its EtherCAT G10 counterpart, already introduced as a proof-of-concept technology study, is even faster with data rates of 10 Gbit/s. The sharp increase in transmission rates beyond the standard 100 Mbit/s provided by EtherCAT significantly increases the possible data throughput. With propagation delay times through devices as a limiting factor on the one hand, but boosted by the newly introduced branch model on the other, EtherCAT G can deliver a two-to-sevenfold performance increase, depending on the application. Hans Beckhoff, the company's Managing Director comments: "EtherCAT G and G10 raise performance to entirely new levels that will enable our customers to build the best, highest-performing machinery in the world! EtherCAT G and G10 are not meant to replace the highly successful EtherCAT standard based on 100 Mbit/s Ethernet. The new performance levels are intended as system-compatible expansions."

Fully compatible enhancement, not a substitute for standard EtherCAT

Exceptional performance and ease of use have always been the hallmarks of EtherCAT. EtherCAT G shares the same characteristics, yet it achieves even higher transmission speeds without changes to the protocol or the EtherCAT master software. Fully compatible with the globally established EtherCAT standard, EtherCAT G provides the same field-proven capabilities, including built-in diagnostics, high-precision synchronisation and, most importantly, unrivalled telegram processing on the fly. It also conforms to the IEEE 802.3 Ethernet standard.

The high performance offered by standard EtherCAT remains more than sufficient for the majority of today's applications. EtherCAT G has been developed specifically in anticipation of extremely large-scale applications and greater use of highly data-intensive equipment, such as machine vision cameras, complex motion control systems and measurement equipment operating with high sampling rates.

Branch controller model enhances variety of supported devices and minimizes propagation delay

EtherCAT and EtherCAT G can be combined within a heterogeneous network. This means that EtherCAT G slaves can operate in a 100 Mbit/s EtherCAT network, and vice versa. In both instances, EtherCAT G equipment falls back to the 100 Mbit/s rate. With the new EtherCAT G branch controller model, though, EtherCAT branches can be set up to enable the parallel operation of 100 Mbit/s segments within a 1 Gbit/s network through a conversion of transmission rates. For instance, the new EK1400 EtherCAT G Coupler can create a branch that steps the data rate down from 1 Gbit/s to 100 Mbit/s, allowing the wide range of standard EtherCAT Terminals available to be used as I/Os on an EtherCAT G network. Based on the branch controller capabilities of the EK1400, the 1 Gbit/s data rate on the EtherCAT G trunk remains unaffected.

Another advantage of the EtherCAT G branch controller system is that it minimizes propagation delays. The new CU14xx branch controller series is designed specifically to interconnect EtherCAT and EtherCAT G segments and enable parallel operation. This setup significantly reduces signal propagation times and, thus, shortens communication and cycle times, because telegrams coming back from a given segment travel straight from the branch controller to the master at the higher transmission rate of 1 Gbit/s, independently of other network segments.

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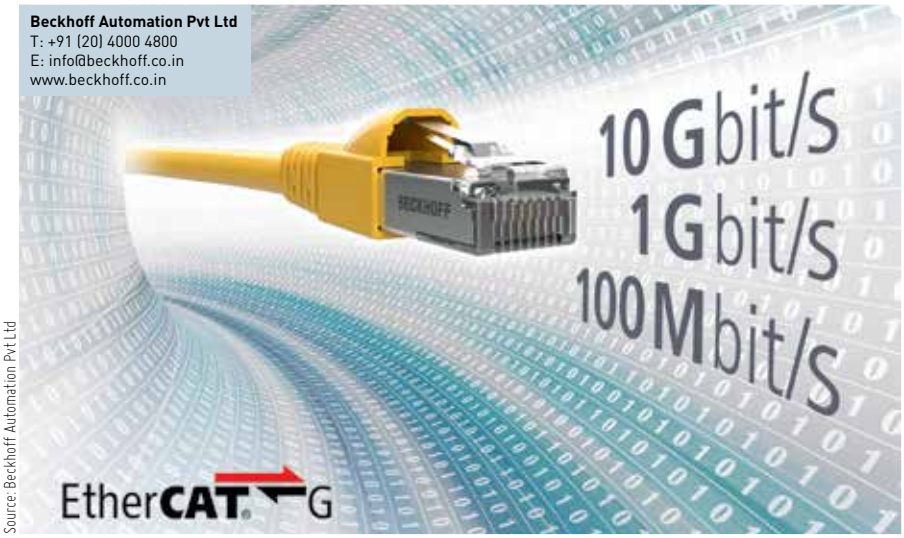

Source: Beckhoff Automation Pvt Ltd

EtherCAT G takes EtherCAT technology to the next performance level while maintaining compatibility with standard EtherCAT and retaining the same simplicity.

Gripping Systems

Smart Hands for Cobots

Schmalz, the market leader in vacuum automation and ergonomic handling systems, has come up with innovative gripping systems to facilitate cobots to perform better.

In order for systems operators to use their lightweight robots in a safe, economical and reliable way, the gripping systems must meet certain requirements. Cobots can weigh between 3 and 25 kilograms, depending on type. "In order to achieve maximum lift capacity, the gripper must be as light as possible," explains Dr Kurt Schmalz, Managing Director, J. Schmalz GmbH. Round shapes and design that complies with ISO TS 15066 – a standard that regulates work between human beings and collaborative industrial robots – reduce potential sources of injury during use. Moreover, it must be possible to quickly and simply integrate the gripping systems and allow for continuous condition monitoring. J. Schmalz GmbH considers these characteristics – communicative, flexible, intuitive in terms of configuration, and available at short notice – during the development phase of its vacuum components for lightweight robots.

One of these components is the electrical vacuum generator ECBPi: an intelligent vacuum pump that works without compressed air and features an integrated interface for connecting grippers and robots. Because the vacuum is generated without compressed air and, accordingly, without the corresponding hoses, the lightweight robot remains mobile, flexible and easy to set up. The CobotPump ECBPi provides the user with important data via IO-Link for comprehensive transparency. This allows for functions such as condition monitoring and predictive maintenance. "This considerably increases the reliability of the system for the user," emphasizes Dr Schmalz.

The 'little brother' – CobotPump ECBPM – has recently been launched. It was designed for use with lightweight robots with less than four kilograms of lift capacity and features a particularly compact, lightweight construction. This vacuum generator is ideal for automated small-parts handling with individual suction pads. It can demonstrate its full strength even in tight spaces. Like the vacuum pump ECBPi, the ECBPM is easy to integrate into existing systems and does not require a separate compressed air supply.

Source: Schmalz India Pvt Ltd

The electrical vacuum generators ECBPi and ECBPM were specially designed for mobile robotics.

Expertise for the right gripper solutions

Schmalz developed the area gripper FXCB/FMCB specifically for handling workpieces with cobots regardless of size and geometry. Thanks to its large contact surface and low impact forces, the gripper fulfills the requirements of ISO TS 15066. Using flexible foam as a gripping surface or equipped with bellows suction cups, the device can safely hold cardboard, boxes and structured components or components with recesses and three-dimensional outer shapes weighing up to eight kilograms. The innovative system is available with or without integrated vacuum generation. Thanks to its communication technology with IO-Link, the FXCB/FMCB is easy to install in any automation environment. Moreover, with the "Schmalz ControlRoom" app, users can access all device data and quickly and easily parameterize the gripping system via smartphone.

The modular system VEE is ideal for creating individual vacuum end effectors. It is comprised of a range of single components that can be combined using configuration software to form an individual gripper. The key is for the user to be able to configure and modify their solution immediately themselves. Schmalz is happy to help customers determine the optimal configuration for their needs, and will even ship pre-assembled units upon request.

Source: Schmalz India Pvt Ltd

The area gripper FXCB/FMCB is ISO TS 15066-compliant. The gripping surface is available with flexible foam or bellows suction cups; the gripper itself is available with or without integrated vacuum generation.

Source: Schmalz India Pvt Ltd

Modular and variable: robot grippers like the vacuum end effector VEE can be configured and adapted based on your application.

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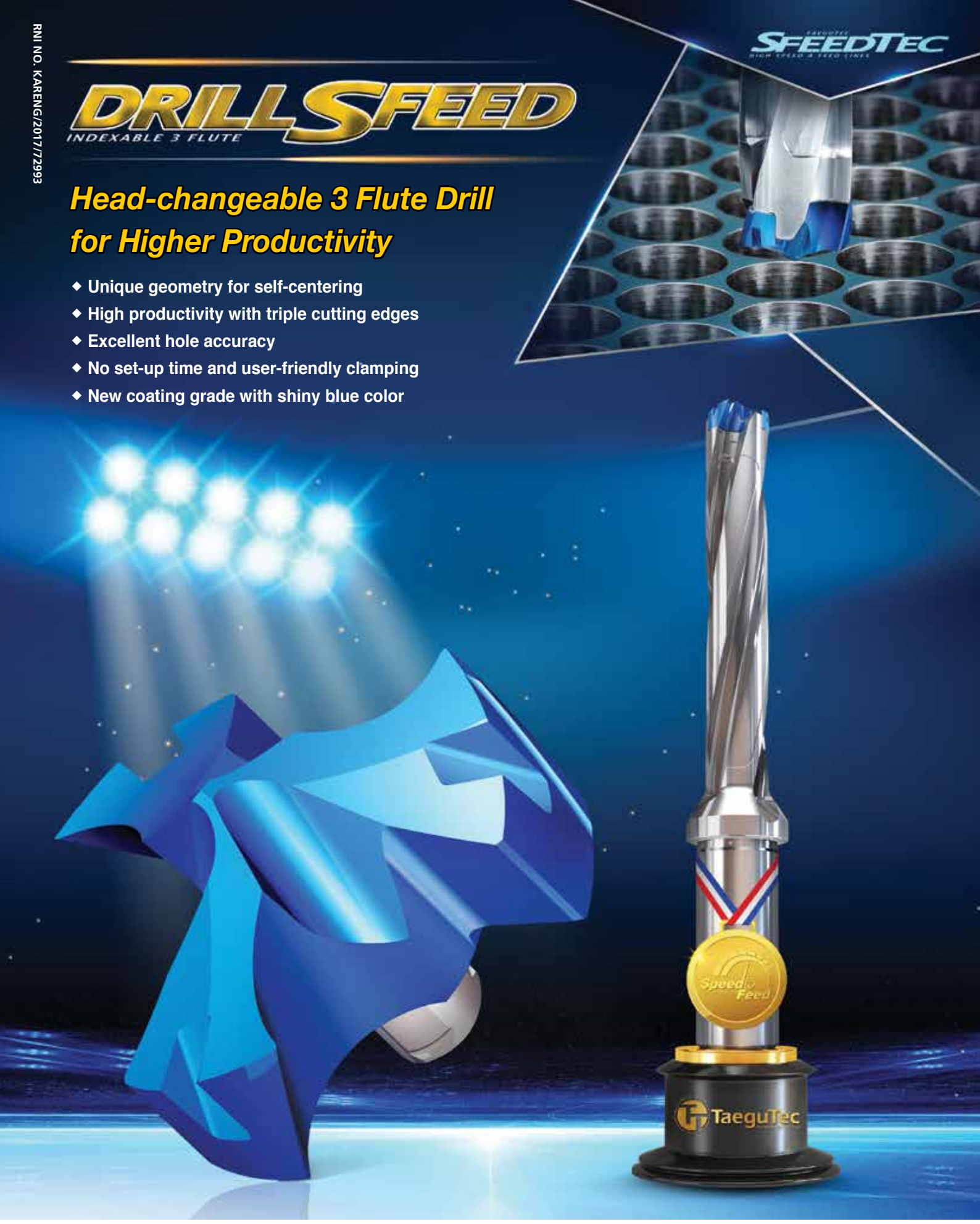

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