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Indian Machine Tool  
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# 5G IN MANUFACTURING



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20 SPECIAL FEATURE  
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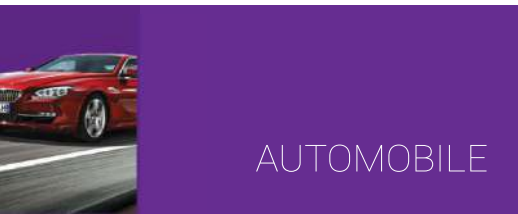
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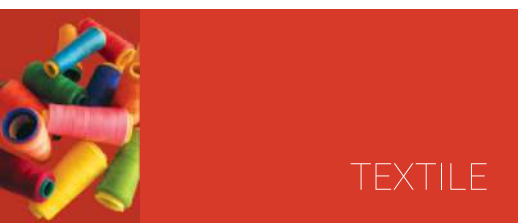
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# IMPRINT

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**LOKUMA**

# A PROMISING YEAR AHEAD



A handwritten signature in blue ink, appearing to read 'Indradev Babu', written over a horizontal line.

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

Dear Readers,

We are at the beginning of what looks to be a promising year. There is a sense of rejuvenation given an apparent realization that the advancement of India's industrial economy will happen in the coming quarters. Positive sentiments are in the air with industries reporting encouraging orders and sales which perhaps indicate that the turbulent times have passed.

As per the IMF report published in October 2020, the Indian economy in 2021 is expected to grow at 8.8 percent, making the country a significant contributor to the growth of the global economy. The spotlight will be on the leaders as to how effectively they optimize resources and strategize their plans to become more agile and resilient. The time has come for the Machine Tool industry to eye a bigger space in sectors that look promising including Defense, Medical Equipment, Electronics, Aerospace, Power, Railways, and so on while continuing to work closely with the automotive sector.

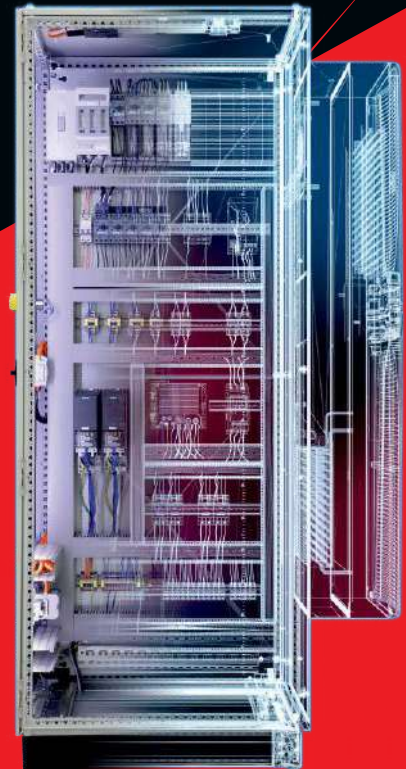
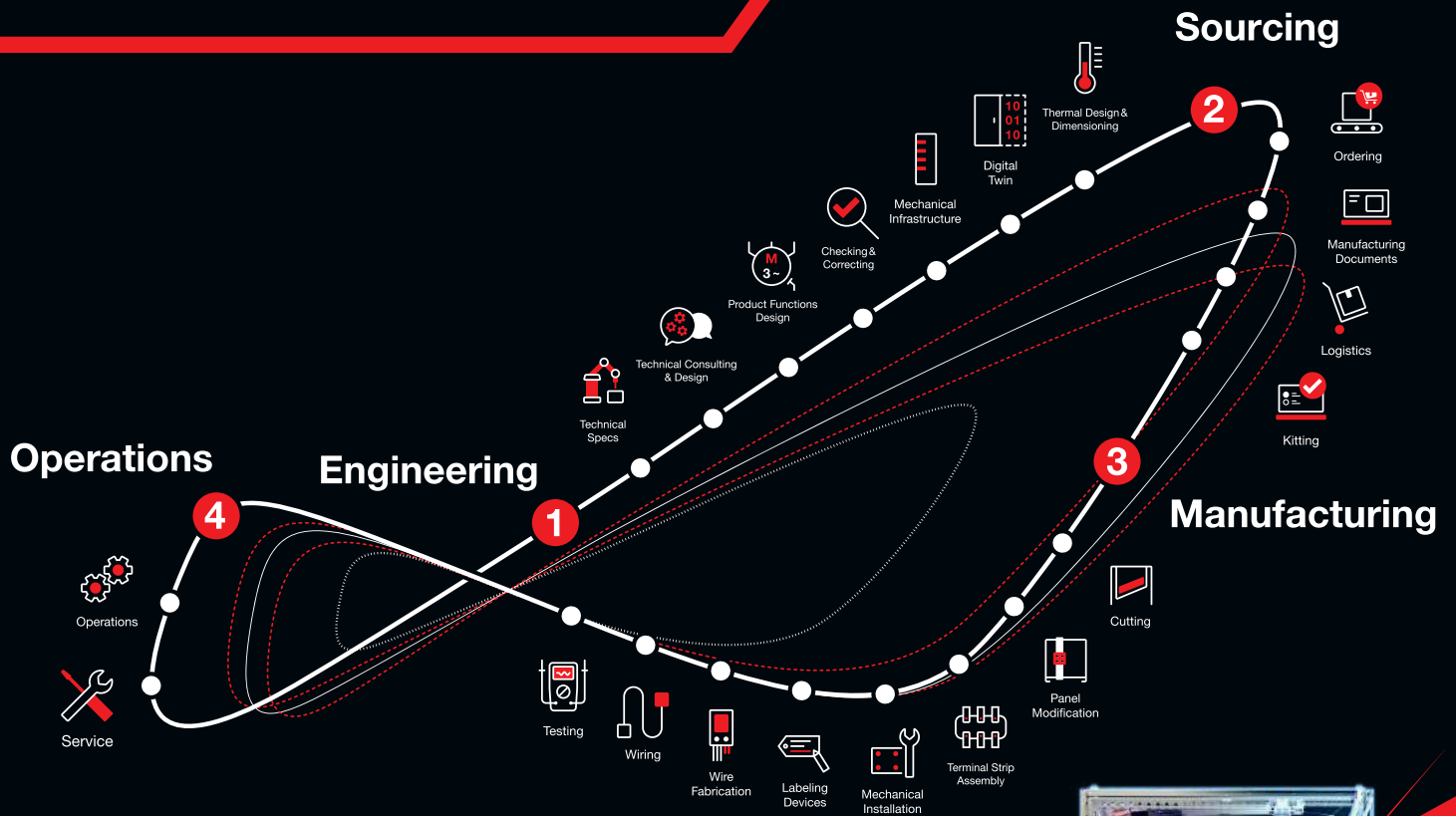
IMTMA is kick-starting the year with IMTEX Connect 2021 on the digital platform from January 21 - 27, 2021. The event will help manufacturing technology providers and machine tool builders to connect and network with user industries from various countries. I am glad to note that there is a high level of optimism despite the formidable barriers created by the Covid-19 pandemic and with many exhibitions in the pipeline, the manufacturing sector can feel confident of a turnaround.

On this optimistic note, I invite all stakeholders to participate in IMTEX Connect 2021 as well as in the physical show that IMTMA will organize in June 2021.

Wishing you all the very best!

*IMTMA is kick-starting the year with IMTEX Connect 2021 on the digital platform from January 21 - 27, 2021. The event will help manufacturing technology providers and machine tool builders to connect and network with user industries from various countries.*

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*Business sentiments have been strengthened with encouraging orders and sales in recent months. Aided by government policies, industries are actively pursuing opportunities in newer segments.*

Dear MMI Readers,

Indian Machine Tool Manufacturers' Association (IMTMA) is glad to publish the January - February edition of its Modern Manufacturing India (MMI) magazine, many thanks to readers for their continued interest and support.

Business sentiments have been strengthened with encouraging orders and sales in recent months. Aided by government policies, industries are actively pursuing opportunities in newer segments.

MMI, with its rigorous research and analysis, endeavors to bring to the readers the latest information from the manufacturing world to their table. This month's edition focuses on factory automation. The opinion piece by IMTMA will help understand the need for automation for garnering favourable returns.

As we continue to share inspirational stories from the industry, we also reach out to you for your feedback and comments to make MMI more insightful and interesting. This will help us understand your requirements and enable us to meet your expectations.

I thank you once again for your interest in the activities of IMTMA. You can download previous issues of MMI from the IMTMA website.

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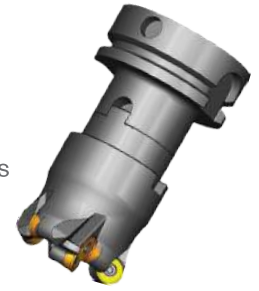
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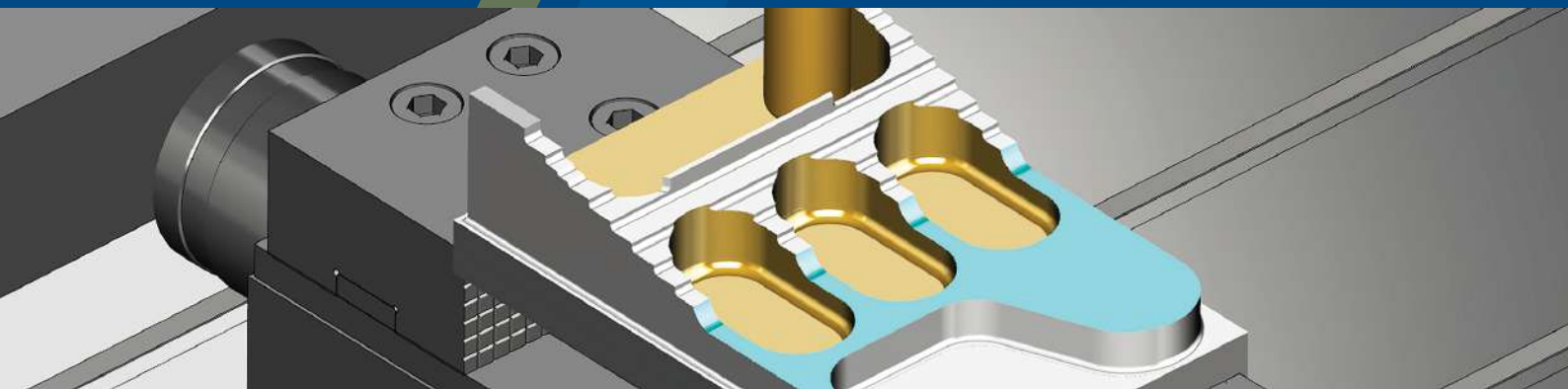
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*Soumi Mitra*

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## FROM CRITICISM TO CELEBRATION

**M**y heart fills with gratitude and pride to be an Indian while writing this piece today. A few months ago, India was mocked by the world for not being able to handle the pandemic and was stated to be in denial of the crisis. Many even predicted catastrophe for India.

Come 2021, India seems to have gotten grip on the virus with cases lowering and the world's largest vaccination program happening here. Till date 1.04 billion people have been vaccinated. Plans are afoot to vaccinate around 300 million people by July 2021.

Alongside vaccinating its own country persons, India has so far facilitated other countries to combat Covid-19 by shipping the Made-in-India vaccines to Bhutan, Maldives, Nepal, Bangladesh, Myanmar, Seychelles, Mauritius, Brazil, and Morocco. Several other countries including South Africa, Saudi Arabia, and the UAE have shown interest in procuring the Indian vaccine, it being cost-effective and safe.

Heaping praises on India, Dr Tedros Adhanom Ghebreyesus, Director General, World Health Organisation, said that India continues to take decisive action and demonstrates its resolve to end the pandemic. In the same vein, Peter Piot, Director, London School of Hygiene & Tropical Medicine, too applauded India, "Without

India there would not be enough vaccines to save the world."

*"While they were saying among themselves it cannot be done, it was done."*

*- Helen Keller*

On one hand India's scientific innovation and vaccine manufacturing capability is earning it accolades globally and, on the other, the young Indian

cricket team has astounded the global sports fraternity with its historic win at Gabba, defeating Australia on its home turf.

As India quite evidently assumes a leadership role globally, making the world look up to us, the Indian industry is also regaining its lost confidence. MMI, in this issue, has captured this optimistic sentiment of industry veterans who are jubilant at the country's victory in the medical sphere, which can open door to limitless opportunities for them.

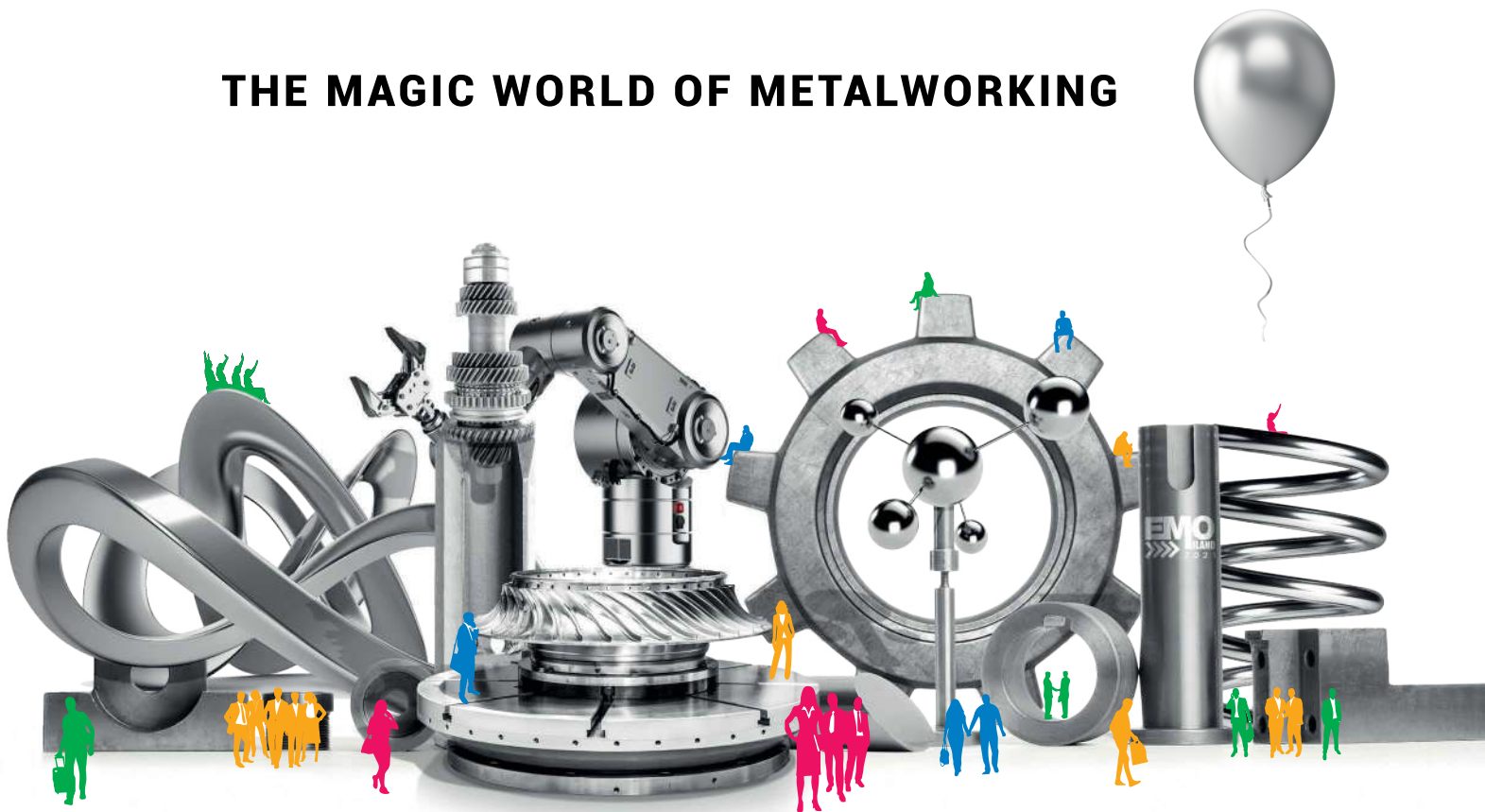
Do read the same and other articles curated thoughtfully just for you, our readers. As always, we look forward to your suggestions that can help us serve you better with industry news and knowledge.

The vaccination news has made this year a happy one for all of us. Wishes for it to turn better for one and all. Stay positive.

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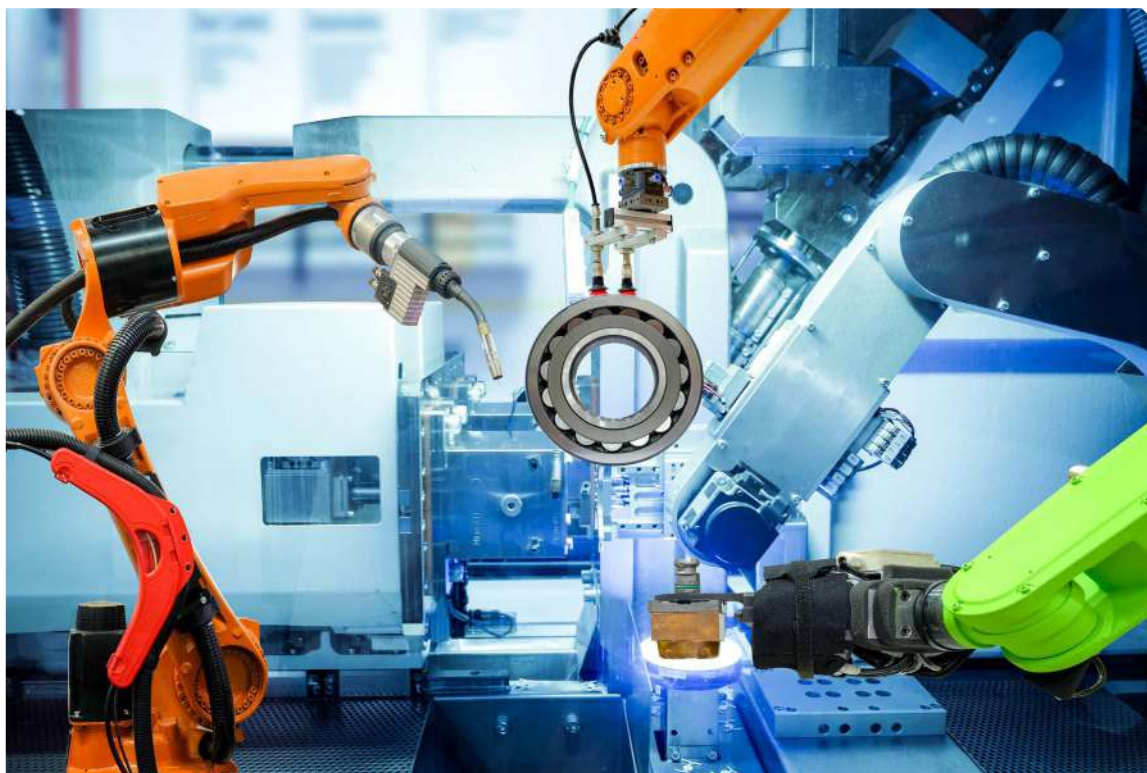
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# AUTOMATION IN NEW AGE MANUFACTURING

Experts in the field are stressing on the need for automated operations to meet volume requirements and unpredictable, heightened customer demands, and also to bring in accurate estimation of cost and quality output.



Source: Magic Wand Media

**F**actories have been manufacturing complex machine parts for many years now. Of late, they have been shifting to automation substantially as well as in phases to increase production and meet market requirements. Automation is a process which primarily involves people, process and technology. It brings predictability in terms of cost and quality output.

## Getting equipped for future

In the times to come, leadership will play a key role in industries undertaking transformative ini-

tiatives for ushering automation in the whole manufacturing ecosystem. This includes supply chain, finance, inventory, customer and vendor management, service and support system, etc. The management also needs to hone the human resource skills in terms of creating awareness, training and reskilling the industry workforce and driving the team for automation.

The process entails bringing automation in the entire manufacturing value chain that includes both internal and external stakeholders. Real-time monitoring and management

of all activities brings in transparency and accountability, and enhances quality and reliability of product delivery. As this happens, organizations can compete with global players.

Industries need to deploy appropriate software and hardware solutions and integrate them seamlessly in the process. This can happen through appropriate selection of hardware and software tools, and their implementation across the organization. Furthermore, training and reskilling of manpower is highly essential to make automation successful and reap the benefits.

## Challenge for smaller organizations

SMEs often find it cumbersome to automate the whole factory and are largely clueless as to when to consider switching to automation. Unfortunately, there are no straight answers to this but it is universally agreed that processes should be made efficient for yielding desired results and stay relevant in a competitive world.

Indradev Babu, President, Indian Machine Tool Manufacturers' Association (IMTMA) says that time and again it has been observed that in a production environment, manufacturing process is quite repetitive. The manual approach and methods slow down the production. Where there are identical parts to be assembled, the entire assembly pro-

cess needs to be automated for enhancing production and achieving quality, consistency and reliability. Automated operations are specifically needed to meet volume requirements and unpredictable, heightened customer demands.

V Anbu, Director General & CEO, IMTMA, says that factories automate an existing process when it makes sense for them to do so financially. Smart and need based automation can address consistency in terms of output, robustness of processes, as well as increase quality and productivity. It can help SMEs to bring out larger volumes at significantly lower cost where-in it would benefit the original equipment manufacturers.

### Awareness can resolve

Automation, although crucial

for SMEs, does not get implemented by them owing to various reasons. Lack of knowledge is among the prime ones. Hence, creating awareness is probably the first step towards making them adopt it. Japan, for instance realized that a combination of human skills and appropriate automation can be cost-effective, easy to maintain and creates a competitive scenario. Indian SMEs need to be enlightened of the payback results (return on investment), the simplicity in operation it brings, besides the design, flexibility and proper maintenance. It is thus meaningful to use appropriate automation which will help industrial units to manufacture quality parts consistently and reliably which will help them survive in a competitive world.

**Indian SMEs need to be enlightened of the payback, the simplicity in operation automation brings, besides the design, flexibility and proper maintenance.**



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# A VISION FOR TOMORROW

The recently released report on India's supply chain by Arthur D. Little and the Confederation of India Industry (CII) details the improvements needed to make the country's supply chain competitive, provides a glimpse of learnings from around the world, presents imperatives for the Indian supply chain, and sets aspirations to achieve Vision 2030.



Source: Arthur D. Little

**I**ndia's supply chain and logistics sector is one of the largest globally, with a logistics industry of \$215 billion, growing at a CAGR of 10.5 percent. However, despite its size and criticality to

economic growth, India's supply chain faces several barriers to growth – an unbalanced logistics modal mix, high indirect costs, fragmented infrastructure and networks, and limited technology adoption.

The Covid-19 pandemic has accentuated supply chain weaknesses, with nearly 75 percent of companies worldwide experiencing disruptions. Worse still, most companies have reported lack of any contingency

Source: Arthur D. Little

plan to deal with a problem of this magnitude.

### Seeking a breakthrough

A new report by Arthur D. Little and the Confederation of India Industry (CII) highlights the need for immediate attention to the sector, given the high logistics cost of 14 percent of GDP in India compared to 8-10 percent of GDP in the US and Europe. Titled 'Reimagining India's Supply Chain: A Bold Vision for 2030', the report brings to light these issues and sets a bold Vision 2030 and roadmap for ensuring global competitiveness of India's supply chain. The report was recently released by Pawan Kumar Agarwal, Special Secretary (Logistics), Government of India, at the CII National Packaging Conference. The report details the improvements needed to make India's supply chain competitive. It provides a glimpse of learnings from around the world, presents five imperatives for the Indian supply chain, and sets aspirations to achieve Vision 2030. It also brings to light the vulnerabilities that the supply chain network is exposed to if transformative actions are not taken.

### Experts' take

According to Barnik Chitran Maitra, Lead Author of the report and Managing Partner of Arthur D. Little India and South Asia, the supply chain industry in India needs to be reimagined and efforts need to be made to move towards creating an optimized and digitized logistics ecosystem, a delayed distribution system and a green, resilient, and flexible supply chain. "The reimagined supply chain will help realize the Hon'ble Prime Minister's Atmanirbhar Bharat vision and supplement Make-in-India and Start-up India strongly, catering to the global supply chain," he adds.

India can benefit from the experience of mature economies, which have used emerging technologies such as artificial intelligence, blockchain, and the Internet of Things (IoT) to enhance supply chain operations and resilience.

Thomas Kuruvilla, Global Board Member and Managing Partner of Arthur D. Little Middle East, says, "To manage the supply and demand shocks in the supply chain, India needs to find new ways of doing businesses and bring innovation into their planning and operations. The report discusses at length international learnings that Indian supply chain leaders could take inspiration from."

Harinarayanan S, Supply Chain Expert and Facilitator of the CII-Supply Network & Procurement Forum, & Co-author of the report, states, "A national supply chain taskforce with five working groups will focus on the crucial dimensions of supply chain operations across the sectors of relevance. These groups will meet monthly under the leadership of CII and Arthur D. Little to realize the aspirations set in the Vision 2030 report."

### Key findings of the report

Logistics cost in India stands at 14 percent of GDP, compared to the global average of approximately 8 percent, creating a competitiveness gap of \$180 billion for India, which could increase to \$500 billion by 2030.

Supply chains are transforming globally by adopting Industry 4.0 trends including agile networks, disruptive technologies, end-to-end visibility, and risk mitigation vs. risk management.

India can benefit from the experience of mature economies, which have used emerging technologies such as artificial intelligence, blockchain, and the Internet of Things (IoT) to enhance supply chain operations and resilience.

To make India's supply chain competitive, efficient, and resilient, Vision 2030 aims to pare logistics cost to 7-8 percent of GDP, optimize the logistics modal mix, digitalize 90 percent of supply chain operations, develop omni-channels, move towards green supply chains, and enhance skill development.

India ranked 44<sup>th</sup> in the World Bank Logistics Performance Index, last released in 2018, far behind the US at 14 and China at 26. Other South-Asian countries, such as Thailand and Vietnam, also have high logistics costs. These countries' costs reach 14 and 16-17 percent of GDP, respectively. However, they fare slightly better than India on the logistics performance index, with Thailand at 32 and Vietnam at 39.

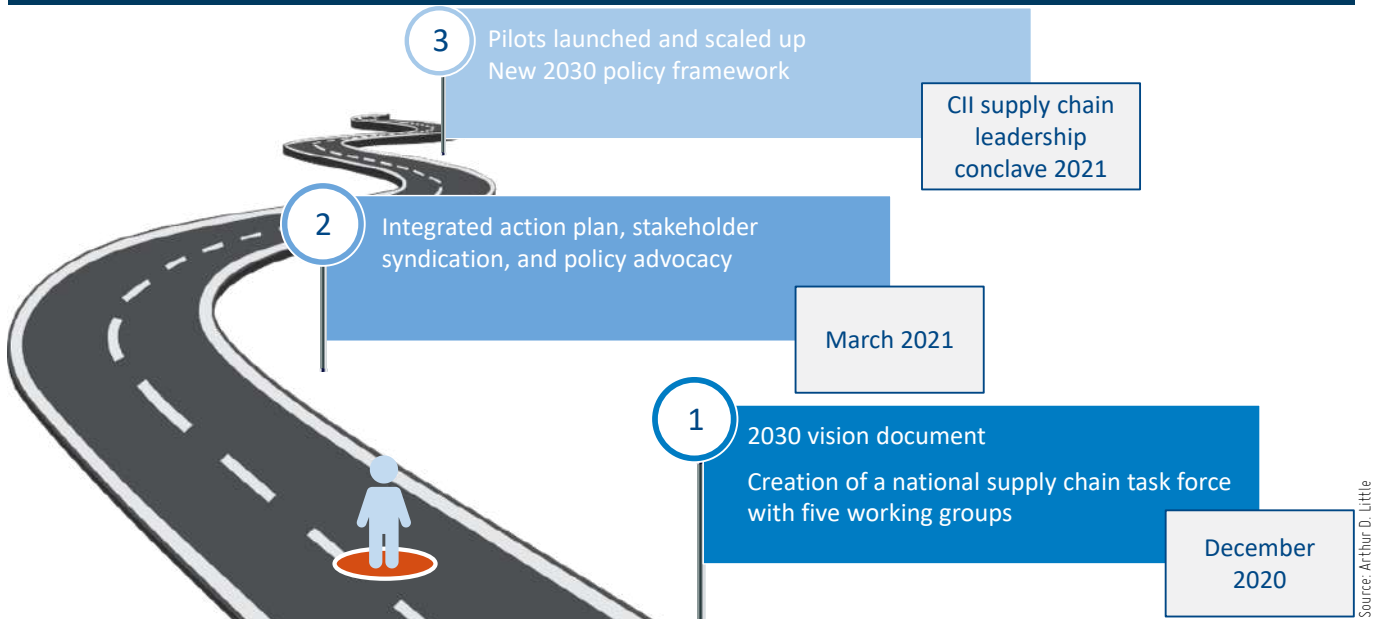
### Hurdles in the way

Any improvement of India's performance depends on how we overcome barriers to competitiveness that impede the supply chain's operation and growth. A few are as follows:

**An unbalanced logistics modal mix** – Transportation represents approximately 40 percent of logistics costs, which amount to 6 percent of GDP. Transportation by road makes up the lion's share of this cost, at about 64 percent, followed by rail at 30 percent and waterway and air transport at 5 and 1 percent, respectively. This heavy dependence on the road networks, combined with poor transportation infrastructure, makes transportation costs balloon.

Logistics cost in India stands at 14 percent of GDP, compared to the global average of approximately 8 percent.

## Proposed supply chain roadmap to achieve Vision 2030



According to the Indian Council of Food and Agriculture, 30 percent of agricultural produce goes to waste every year due to lack of cold chain infrastructure.

**High indirect or 'hidden' costs** – Indirect logistics costs in India are four times the average of those in developed countries. The main reasons are excessive layers in distribution channels and inventory mismanagement. Inadequate demand forecasting due to lack of technology adoption leads to inventory mismanagement.

**Poor-quality infrastructure** – India has one of the largest road and rail networks, globally, which totals 5.5 million kilometers and 1.2 lakh kilometers, respectively. Yet national highways account for less than 2.7 percent of the total network, putting the national highway network under severe strain, which carries about 40 percent of the road traffic.

On the other hand, the average speed of freight trains in India is 24-25 kmph, compared to 38-40 kmph for those in the US and China.

Furthermore, India has a shortage of warehousing space. According to the Indian Council of Food and Agriculture, 30 percent of agricultural produce goes to waste every year due to lack of cold chain infrastructure.

**Limited adoption of the latest technology** – The slow adoption of supply chain technology, such as artificial intelligence, blockchain and the IoT, remains a major shortcoming. Organizations globally have adopted the latest technologies to ensure full visibility and real-time information on processes in the supply chain. Lack of digitization, inventory mismanagement and inaccurate demand predictions in the absence of technology contribute in large part to the competitiveness gap between India and its global peers.

**Uneven channel mix for domestic retail and FMCG sales** – India's retail market is dominated by unorganized retail such as kirana stores, which amounts to a massive 90 percent of total retail, comprising nearly 12 million kirana stores. Digital/e-commerce platforms account for a minuscule 2 percent of sales, and organized retail just 8 percent.

### Five aspirations for Vision 2030


**Optimize the logistics and warehousing network** – Reduce logistics cost to 7-8 percent of GDP; optimize the logistics modal mix

with roads constituting 25-30 percent, railways comprising 50-55 percent, and waterways accounting for 20-25 percent; reduce indirect costs to 20-25 percent; expand cold chain storage infrastructure.

**Hasten adoption of cutting-edge technology** – Digitize more than 90 percent of the supply chain network; implement technologies such as artificial intelligence, blockchain, and the IoT.

**Restructure the supply chain** – Build omni-channels and simplify supply chain network; ensure visibility; and collaborative planning.

**Enhance skill development and talent management** – Senior management in organizations to become more comfortable with digital transformation, data analytics, and AI; develop cross-functional teams to facilitate supply chain decision-making.

**Move towards a green supply chain** – Move towards greener modes of transportation to reduce carbon footprint by 50 percent; use electric vehicles for deliveries, targeting a 50 percent electric fleet; optimize transportation routes; use biodegradable or recyclable materials for packaging and deliveries. 

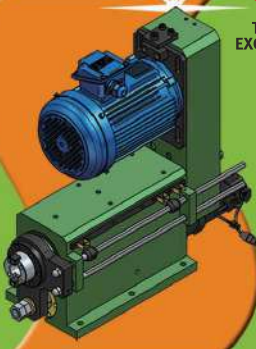


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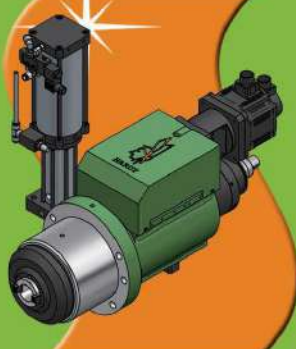
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Servo Type Drilling / Tapping Spindle Head Unit



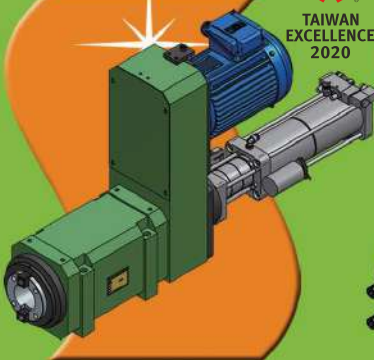
Built-in Motor Drilling/Tapping Spindle with ATC and Center Coolant



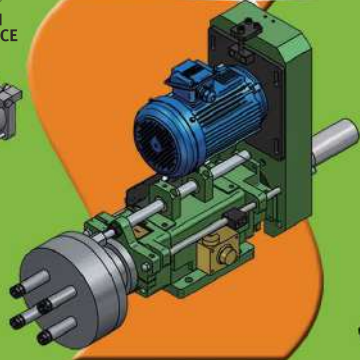
Built-in Motor Facing Head Unit - Flange Type



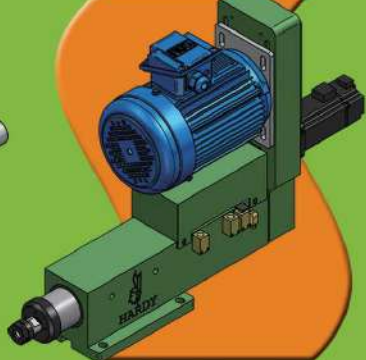
Built-in Motor Spindle Unit



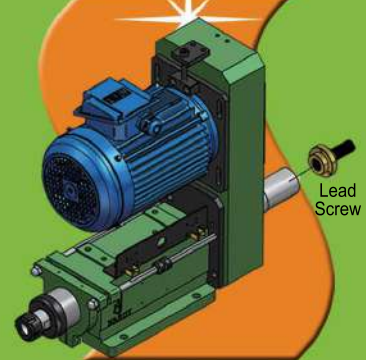
Boring & Milling Head Unit / with Auto Tool Unclamping



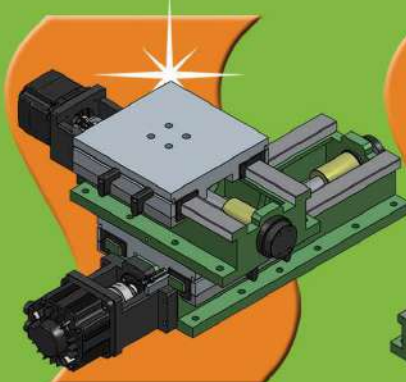
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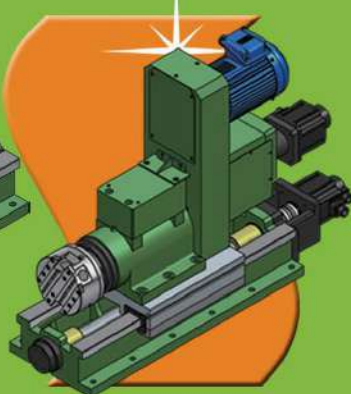
Servo Type Drilling / Tapping Spindle Head



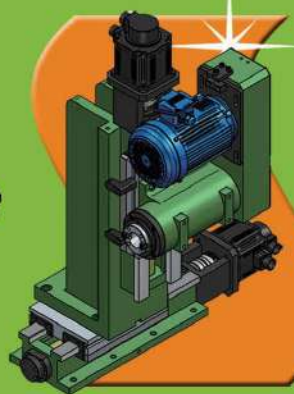
Tapping Spindle Head



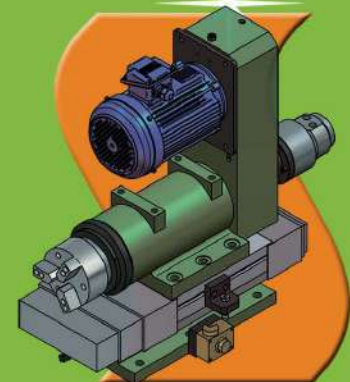
XY Servo Hardness Slide Unit



Servo Facing Head + Servo Ball Screw Slide Unit



XYZ Servo Slide Table + Milling Head



3-Jaw Chuck Spindle + Slide Unit



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# OPTIMIZING DURING A LULL

Following is the advice that can come handy in improving machine shops during downtime and uncovering ways to become more profitable....



Source: AMT — the Association For Manufacturing Technology

Investing in new technology, like this touch probe, is one way to improve your operation

**M**any organizations in the manufacturing sector have had to hit the pause button during the Covid-19 pandemic. If you are dealing with a temporary downturn or lull, Gisbert Ledvon, Director of Business Development — Machine Tool, Heidenhain Corporation, offers some advice for how to use your time productively. Ledvon mentions the 'OPTIMIZE' acronym for improving business operations:

**Optimize** operations throughout your company and supply chain.

**Purchase** locally, even if it means seeking out new suppliers.

**Train** your staff — teach your programmers and CAM operators more about the CNC control.

**Invest** in new technology — the

cost of borrowing is at an historic low and government incentives are available (including tax credits).

**Monitor** your efficiency — how much time is the CNC really making chips?

**Innovate** — get out of your comfort zone and explore new markets.

**Zoom** — the new method of conference calls is here to stay, so use it to stay in front of customers.

**Execute** on new information and data gathered.

Ledvon explains how these principles work to improve operations for all kinds of organizations.

## **Optimize**

"First, don't focus on the negatives during these challenging times. There is a light at the end

of the tunnel," Ledvon says. He encourages companies to stay in touch with customers and suppliers and use the time to optimize their operations.

## **Purchase Locally**

Acu-Rite, which produces read-out systems, precision glass scales and CNC controls, is part of the Heidenhain family. In 2018, Acu-Rite shifted some production from New York state to Schaumburg, Illinois. With all the job shops in the area, Acu-Rite chose to connect with one of them to source brackets and other mechanical components to support the retrofit of knee mills. "Because of the depth of local resources in northern Illinois and Wisconsin, we can save a lot on

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shipping costs compared to buying brackets from overseas.” Using local suppliers can lower shipping costs, eliminate shipping delays and allow collaboration, improving the supply chain. For a more detailed look, he advises companies to perform a total cost of ownership analysis, which includes using this online estimating tool.

### **Train**

Even good programmers benefit from training. In one case, a programmer was proud of the program he wrote for a drilling cycle because he couldn't find that function on the controller. In reality, all he had to do was use the CNC control's right arrow key to move the menu over to open up the drilling cycles and many others.

Ledvon explains, “It's like our smartphone. They're very powerful, but we are only aware of a fraction of their capabilities.”

Another example he cites is programmers and operators who are unaware of the software function that lets them use a touch probe to inspect a part and generate a report before removing the part from its fixture. This can reduce rework, especially for the first few parts in a lot or if the part will be difficult to re-fixture.

### **Invest**

Now is a good time to explore new technology. Users can start with simple automation, such as a pallet changer, a load/unload robot for cells dedicated to longer part runs or a cobot to support workers.

### **Monitor**

“Large companies are looking for more data acquisition from their machine tools. Understanding efficiency within and between locations first starts with better monitoring of your cutting machines,” Ledvon says.

Heidenhain offers StateMonitor software to help companies monitor machine status. It automatically conducts analytics and generates data points. It can send out messages to operators, programmers or maintenance personnel. New functions include the ability to monitor specific sensors on the CNC, such as for a coolant tank, spindle or ballscrews.

“We had one customer connect 70 machines to their internal network. Through the StateMonitor, they quickly identified bottlenecks,” he says. “For example, they learned that even though the machine was available to run the part, machine operators were still waiting for the programs to be delivered, so they focused on other tasks and the machine went unused for an even longer period of time.”

Using the StateMonitor, the company in this example also learned operators were overriding speeds and feeds on the machine tool – not to gain time, but to slow it down because they were uneasy with instructions from the programmer.

“This company addressed their operators' fear factor through more training,” he says.

### **Innovate**

In challenging times, companies need to move outside of their comfort zone and look at new industries and opportunities.

“Who could have known that we would need to shift our manufacturing capabilities to masks, ventilators, protective equipment or pill dies? We can make anything if we just put our mind to it, so what can we make new or better? The crisis will cause new industries to be born and old manufacturers to realign themselves,” states Ledvon.

### **Zoom**

Customers in some states could


not travel because of quarantine requirements, yet they had made investments in millions of dollars of CNC machines. Heidenhain developed a hybrid solution of virtual training to visually communicate with customers using Cisco's Webex (of course, Zoom or Microsoft Teams accomplish the same objective).

The hybrid part comes from creating a control simulator that has the actual keyboard and screen from a Heidenhain TNC 640 control, but with a video camera embedded in the screen.

“Training starts with two hours of our instructors working with them on the simulator, then the operators and programmers move to the real machine for another couple of hours, and then they reconnect with the instructors in the afternoon. Our instructors have a head-mounted camera so students can follow their movement as they are working inside the machine and see the strokes on the keyboard.”

### **Execute**

With information gathered from monitoring and programmers/operators equipped with new skills, companies need their executives to live up to the 'execute' part of their name. Data really opens people's eyes, and the before and after situation when we install a StateMonitor follows a familiar pattern. People think they're running at 70 percent efficiency. The spindle may be spinning, but the data shows they're only cutting 40 percent of the time. More importantly, the data identifies the bottlenecks they need to remove, and that gives management the confidence to execute changes.”

The entire world is moving through uncharted territory, but it is moving forward. You may uncover ways to become more profitable, explore new lines of revenue and become your own light at the end of the tunnel. 

**If you find yourself with more time on your hands than usual, use it as an opportunity to employ the OPTIMIZE strategy.**

# THE TOUGH GETS GOING

Experts in the field offer their perspective on the global economy after the recent US Presidential elections outcome and Covid-19 vaccine and share their plans of investments and product expansion this year.



**Mayur Kulkarni**  
Sales & Application Manager  
DC SWISS SA

## Covid-19 Taught Us to Adapt

The Manufacturing industry is facing an economic slowdown since 2018 which continued in 2019 as well. The US-China trade war also created concerns for many businesses. With higher expectations from 2020, most of the industry segments were gearing up for a better year but the unexpected pandemic conditions created a much tougher situation.

However, year 2021 has brought some good news along with it. As different Covid-19 vaccines are now available and many countries have already started the vaccination program, we all can hope an end to this unprecedented situation. On a positive note, the pandemic has taught us to do the same tasks with different methods and strategies that seemed impossible or impractical before. Companies will now have to focus on sustainability along with the growth strategies. Viable business models and adaptation of the latest technologies

will be the path leading us to a better tomorrow.

## A Time Well-Utilized

DC Swiss utilized this time of the pandemic to review, redesign and develop existing as well as new products. With some research, reformation, and testing, we could achieve up to 20 percent higher tool life on some of our existing product lines, which were already market leaders in their respective segments. We also took the opportunity to launch a latest thread milling catalogue and are in the process to launch the next thread cutting tools catalogue soon. We are now available 24x7 for our customers.



**GD Patil**  
Managing Director  
EMAG India Pvt Ltd

## 2021 Likely to be Stable

The Global economy went into a spin in 2020 with the Covid-19 pandemic severely affecting supply chains in almost every gamut of the industry. The year 2021 in a way also started with the second strain of virus especially in Europe

and a suspected strain in Asia and the US. However, roll out of vaccines in phases to a great extent will reduce the impact of pandemic on the businesses globally. We are on the mature phase of the learning curve and hence the knee jerk impacts will be minimal.

The change of leadership in the US is bound to bring in an element of stability because domestic consumption is likely to get the boost and that will be a great relief for the rest of the world as the US still is the biggest consumer today. Employment is likely to increase and that will again have a cascading effect on the consumption. So overall, 2021 is likely to be more stable than the volatile 2020.

## All Geared Up

EMAG is a technology company and despite the difficulties we had in 2020, we went ahead with strategic acquisitions to enhance our offering to the customers. We keep investing in newer technologies and systems to provide the best to our customers in terms of productivity, flexibility, and automated manufacturing solutions. We pioneer in the part production for the EV segment which is seeing a sustained surge in manufacturing. Hence, EMAG will stay on its strength of being the pioneer in breakthrough manufacturing solutions for the auto as well as non-auto customers around the world.

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**Uwe Eppinger**  
Owner & Managing Director  
Eppinger Tooling Asia Pvt Ltd

### **Towards Sustained Growth**

The recent years have seen isolated trends towards de-globalization based on the belief that international cooperation linked to international sourcing would reduce a nation's wealth. GNP statistics, however, are proving the contrary: international cooperation is helping to increase wealth on a global scale, provided that such international trade is made within a framework of open access to international markets and without discrimination of non-domestic competitors. The Trump administration targeted perceived imbalances of the 'Terms of Trade', particularly with the People Republic of China, but also with, among others, European economies by raising tariffs on the import of certain categories of goods. The trade war which could have been observed during the last years, with the installation of trade barriers, tariffs and counter tariffs appears to have an impact on investments in two ways: investments are reduced as confidence into future growth of the global economy has been negatively affected. Second, investments are re-directed towards on-shore production potentially sacrificing the advantages of

importing from more competitive markets. The Corona crisis has reinforced this development caused by the start of the global trade war. Consumers as well as investors are confronted with an unknown level of uncertainty, finally leading to a significant drop of the investment level. The recent US Presidential election as well as the hopes linked to the Corona vaccine will help to reinstate consumer and investor confidence. There is a good chance that the global economy will find its way back to a path of sustained growth.

### **Higher Automation & Robotization**

Like in most manufacturing companies, 2020 was marked by a reduced level of investment within the Eppinger group of companies. Focus has been set on investments into the streamlining of operations to manage higher fluctuations in demand in an increasingly uncertain business environment. On the shop floor, this translated into higher automation and higher robotization. The biggest portion of investment was placed into new product development with a focus of making existing products 'smarter' through the combination of highest mechanical precision with electronics. These new solutions allow for higher degrees of automation, longer periods of 'lights out production' and for a safer and more stable production process. Along these lines, a new product range, consisting of highly precise yet affordable, 'plug-and-produce', IoT-ready rotary tables for state-of-the-art machine tool applications were developed and will be launched during 2021.



**Ramakant Reddy**  
Managing Director  
LMT Tools India Pvt Ltd

### **India Benefits from the New US Government**

The US election results in favour of Joe Biden can offer India more relaxed visa norms, more liberal trade policy, and may be lower crude oil prices. India enjoys a trade surplus with the US and will likely to continue that way. The country is the first largest source for FDI into India and with the new President, the FDI is also likely to increase. The new President will be less obtrusive than the Trump Government. Under the new government, India's trade can recover from the dip of the last few years.

### **Product Range Expansion**

As we look forward to a recovering economy in the coming months, and with the present increase in the Automotive sector, LMT Tools will introduce some more innovations in the market. We are expanding our product range in Gear Cutting with the addition of GearSkiving tool, Thread Rolling range gets stronger with the addition of Tangential Knurling System EVOLine, and our Milling and Threading product range gets expanded with the addition of new high feed milling cutters CARBFeed and new end mill CARBLoop.



**Palaniappan Muthusekhar**  
Managing Director  
NORD Drivesystems Pvt Ltd

### **Surge in Order Bookings**

The global economy is certainly recovering at a better pace than expected post the Covid-19 lockdown. We are witnessing a surge in order bookings from China, the US, Germany, and many other European countries and India. There has been a considerable improvement in the last two months. This clearly reflects that the economy is moving in the right direction. Commenting on the US Presidential Elections, changes happen in countries and leadership positions, but the basic needs of people remain the same. The change in the Government will impact the global economy positively. It is to flourish in the coming months with the rebooting of businesses.

### **Localization is the Key**

Nord India's first goal is to get to the pre-covid level business of ₹200 crore and grow from there. We have identified gaps during this period and taken a few takeaways and learnings which we will be working upon and will later make further plans. Also, our Localization, which we started about 8 years ago, will be enhanced on the lines of Atmanirbhar India. We will focus more on Electronic products and Industry 4.0 applications. We have ready products for the Automation sector and see immense potential there.



**HA Udaya**  
Managing Director & CEO  
U-TECH Group

### **Positive Changes are Underway**

The fallout of the pandemic has been extensive - a total dip in the economy, the Transport sector coming to a grinding halt, many SMEs winding up and several other industries coming to a standstill. More importantly, China and Chinese products took a beating globally.

The pandemic which took the world by storm seems to be coming under control and is managed much better now. The Governments and Central Banks are likely to pull back the stimulus provided. Corporates are likely to restructure to align with the new environment and how these are going to affect the economy is to be seen. Production - Linked Incentive (PLI) scheme started with electronics and then extended to few other sectors aimed at making India a global supply chain partner and reduce over-reliance on products from China - is bound to lift manufacturing and we already see some major changes.

All this coincided with the election in the US. The new Biden administration will probably work with other allies and perhaps halt the assertive foreign policy of President Xi in more organized manner as opposed to Trump's histrionics. This

change is expected to have a definitive impact on manufacturing supply chains weakening the China dependence and resulting in gain for several countries including India. Under the Democratic Presidency, US is likely to be more predictable, though President Joe Biden is silent on trade tariffs.

### **Investing in R&D**

Our investment plans are ready in terms of R&D, new product lines, large volume production and backward integration. Many investors are ready to invest. Many banks are ready to advance loans especially as we are an SME so there are various possibilities. But we are waiting and will pursue wait and watch policy on investments.

We manufacture chip handling and coolant handling products which is the most neglected business segment in manufacturing. There is no innovation and major changes in this segment for quite some time now. We would like to invest in R&D aiming at some major changes and innovations - to give definite benefits to the user. The PLI scheme for electronic manufacturing has boosted the manufacture of hand phones and other electronic devices. It has opened up new opportunities in the Machine Tool business and is likely to bring in some new business for us in terms of some new product lines. We will be moving from small batch production to large volume production. Hence, that will call for some major investments in plant and machinery. And as the volumes increase, it may open new investment opportunities / requirements to reduce dependence on some process outsourcing that we do now.



**Vitthal Pol**  
Managing Director  
VP Industries

### **The World Awaits Policy Changes**

The US elections have brought in more positive sentiments to the global markets, which will indeed help in boosting the global economy recovery. The key sectors to watch for enhanced business cooperation will be Energy and the Green Economy, Defence and Manufacturing, as well as Pharmaceuticals and Healthcare. Positive pandemic-related developments – on cases and vaccination – are helping clear the decks for a faster pace of economic normalization.

### **Unfazed in Crisis**

With over 25 years of expertise, the VP Group of companies has been in the manufacturing of Round Tools, Indexable Tools, Jigs and Fixtures, and machining of Precision Components. Despite the Covid-19 pandemic, we have pushed ourselves to sense opportunities in the current market conditions. We have started a new round tool manufacturing set-up in Bangalore under the brand name of 'VP Tools'. We had already entered the Aerospace Manufacturing sector under the brand name of VP Aero Solutions, Belgaum, where we manufacture round tools and jigs and fixtures. Recently, we have suc-

cessfully added another new vertical 'Component Machining for Aerospace'. We have got the AS9100 D (Aerospace certification) from Bureau Veritas India (BVQI) for the design and manufacturing of solid carbide round tools, jigs and fixtures and component machining for the Aerospace. We are the first company to get certified for jigs and fixtures.

In VP Industries, Kolhapur, we have added new HMC machines to cater to the growing demand of our existing customers. In terms of product expansion, we have added new products like indexable tools and special tools under the brand name of 'VP Tools', machining of aluminium, Inconel, titanium parts for the Aerospace sector.



**B Brajesh Kumar**  
Managing Director  
Walter Tools India Pvt Ltd

### **Digitalization Brings Opportunities**

We are expecting the global demand to accelerate and tread on the path of quick revival due to Covid vaccine rollout. The vaccine news is positive for the economic outlook over the next few months and would have a material impact on our longer-term wellbeing, thus adding impact on the progress, stability, and sustainability to the sys-

tem. The aggregate economy will be able to get back to normal in due course of time. In addition, changes within the economy will take some sectors to new heights, acting quickly—but not instantly—to get the economy going. Overall, the world economy is showing positive signs of revival.

Crisis also offers opportunities – for example, the rapid acceleration of digitalization and the way we work being more agile. The adoption of digitalized way of working has opened new avenues to touch base with our customers and cater to their requirements. We, at Walter, continue to deliver our brand promise of Engineering Komeptenz through our various digital platforms.

The organization that is lean, and is ready to take on the challenges faster surely has an edge in meeting customer demands. The advancing digitalization brings new challenges and, at the same time, additional opportunities. These changes will help us advance our position further and emerge as a stronger company in 2021.

### **Well-equipped for Challenging Times**

The pandemic has taught us many new ways to cater to the industry requirements. We plan to invest in our resources, enhance their skills and adopt new ways of working. Walter is well-recognized in the market for its technological innovations like Tiger-tec®, DC170, Anti-vibrating boring bars, and the extensive range of high-quality precision and machining tools from the Walter, Walter Titex and Walter Prototype competence brands. The Walter competence brand comprises carbide indexable inserts and PCD tooling systems for milling, turning, grooving and holmaking;

Walter Titex is a byword for solid carbide and HSS-E drilling and reaming tools; and Walter Prototyp manufactures solid carbide and HSS-E threading tools and milling tools. Furthermore, with the Walter Multiply service competence brand, we offer our customers a comprehensive service package for digital solutions, tool management, production process planning and training.



**Keshav Khurana**  
Executive Director  
Wohlhaupter India Pvt Ltd

### **Markets are Upbeat**

The US election and the Covid-19 vaccine have come one after the other, and the vaccine announcement has given a further boost to the global economy. Markets are upbeat, and we are witnessing a bull run in every major stock market, thus clearly showing that economies are on the growth track. Caution still needs to be taken in terms of social distancing as vaccinating billions of people is not an easy task and will take some time. A lockdown again could be a severe blow to industries that witnessed growth. Six months down the line we will know the exact impact of how the new US administration will improve global relations, the mass scale vaccine results, and the Covid-19 situation. As of now, we all hope for a much better 2021 with the economic contraction further reducing and moving towards growth.

### **Investment in Advanced Products**

Allied Machine & Engineering – parent company of Wohlhaupter India – will be expanding its holmaking and finishing solutions with additional innovations in drilling, boring, reaming, threading and special tooling. As we continue to invest in the most state-of-the-art equipment and technical training, we will continue to produce and provide world-class products and services to the metal cutting industry. Recently, we invested in building our own coating facility to improve quality control and better lead times for our customers; this is owned and operated by Allied Machine. Furthermore, we recently launched a revolutionary high-penetration drilling system known as the T-A Pro – a product line that combines material-specific insert geometries, a redesigned drill body and a proprietary coolant-through system to allow penetration rates that run at speeds nearly 30 percent faster than other high-performance drills on the market.



**Sunil Raibagi**  
Managing Director ASIA  
Vice President Business  
Development & Strategy  
Zimmer Group

### **Developing Economies to Grow**

The arrival of vaccines and the fresh economic stimulus promised by the US President

Joe Biden will give the global economy a chance to put the pandemic behind in the Robotic and Automation sector where we work. According to the World Bank report, aggregate GDP in emerging markets and developing economies, including China, is expected to grow by 5 percent in 2021, after it saw a decline of 2.6 percent in 2020. China's economy is expected to expand by 7.9 percent this year following 2 percent growth last year. Excluding China, the emerging markets and developing economies are forecast to grow by 3.4 percent in 2021 after a contraction of 5 percent in 2020. Among low-income economies, activity is projected to increase by 3.3 percent in 2021, after a decline of 0.9 percent in 2020. There will be investments by the governments in many sectors to recover.

### **New Products for Robots**

Our industry's focus is more on the Automotive, Medical, Semiconductors and Electronics industries. We have developed several new products for robots, especially for collaborative robots in the last two years. We are offering total packages, including smart communication modules and software. We have developed remote support and predictive maintenance possibilities due to travel restrictions. We have developed comfort app that can work with robots like UR, Yaskawa, and Denso. Our electric grippers also can be mounted on service robots or robots mounted on AGV and communicate digitally. Apart from products and product capabilities, we are also investing in remote training, simulation, and service supports.



## RETOOLING FOR THE 'WFH' ERA

**T**he year that went by was a tortuous one to say the least. We experienced a curve ball thrown at us that changed our lives and livelihoods. Now that 2021 has arrived, we find that many of those challenges are here to stay and are now the emerging value givers and productivity enhancers. One such significant change has been the phenomenon of work from home (WFH) that brings new additional challenges to the marketing and servicing of capital equipment, the hardcore brick-and-mortar equipment, and machine tools.

To adapt ourselves to the changing scene, most of us quickly reacted, got our act together, adjusted ourselves to virtual meetings, pitching power points and using mobile phones and tablets to make sales pitches and support customers. Machine tool businesses are yet to adapt and be comfortable with this altered environment. Both organizations and individuals have to rethink and retool their approach to make it conducive to the WFH era. It is not about the strategy, which may still be the same, but understanding and equipping with newer available tools that are already in use in several digital enterprises that have moved away from their brick-and-mortar avatars.

To be a relevant successful business, we must keep adding value for the customer. In our business, the goals are Output, Productivity, Total Quality, Cost of Ownership, and overall Customer Experience. We, as capital equipment manufacturers, need to understand customer experience, know how to measure it, and use this as the most significant input in restructuring our companies for consistently delivering a great customer experience.

An interesting tool used by successful businesses that continue to do well in their digitized avatar is customer journey mapping. A customer journey map is the realistic story of your customer's experience across the various touchpoints as he interacts with you while he learns about you and your offerings, compares you with his alternate choices, buys from you, and uses your products and services. The outcomes from the journey map must:

- Measure and govern customer experience across touchpoints;
- Align internal departments and communications across them;
- Create internal visibility and accountability;
- Strategize and activate offerings in tune with customer experience.

**“** We, as capital equipment manufacturers, need to understand customer experience, know how to measure it, and use this as the most significant input in restructuring our companies for consistently delivering a great customer experience. **”**

**TK Ramesh**  
**Managing Director**  
**Micromatic Machine Tools Pvt Ltd**

The views expressed by the author are personal and he can be contacted at [rameshtkr@gmail.com](mailto:rameshtkr@gmail.com)

# 5G IN MANUFACTURING

If lightning-fast downloads and streaming video are the only capabilities that come to mind when thinking about 5G, it might be time to think again, and to think more deeply.



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**W**ireless capability that is as fast and reliable as hard-wired connections is desirable for obvious reasons. However, advantages extend beyond flexibility and convenience. At the 5G Industry Campus Europe, an expansive space for research and collaboration in Aachen, Germany, applications are redefining the role of robotics, in part by making full-power industrial arms as safe as their 'collaborative' cousins. Other research, such as using workpiece- and tool-holder-mounted sensors for automatic, in-process corrections for

vibration and cutting-edge wear, applies 5G on the level of tool meeting metal.

Created by Swedish telecommunications firm Ericsson and the Fraunhofer Institute for Production Technology (Fraunhofer IPT), a German research institute, the campus is also a 5G proving ground on a broader scale. In addition to an expansive outdoor network, coverage extends throughout more than 20,000 sq ft of indoor space, including Fraunhofer IPT's own mock CNC machine shop. This coverage is split into multiple

networks, but only for testing purposes. Conceivably, 5G could enable every robot, machine tool or virtually any other asset at even the largest factories to exchange data securely, reliably and in near-real time on a single network without any degradation in performance.

To whatever extent CNC machine shops embrace 5G, these early applications demonstrate undeniable potential for potentially dramatic shop-floor transformation. "You may be able to find other ways of accomplishing the same ends for individual use cases,"



Source: Magic Wand Media

says Andreas Thuelig, 5G Program Manager for Europe, Ericsson. “But if you take the view of the complete shop floor with all its devices, all its tasks and all its needs, there is no other way to bring this all together in one network with a guaranteed grade of service.”

### What is 5G?

5G stands for fifth generation; that is, the latest wireless technology standard for cellular networks defined by a telecommunications industry consortium. 5G devices are defined largely by their use of higher-frequency

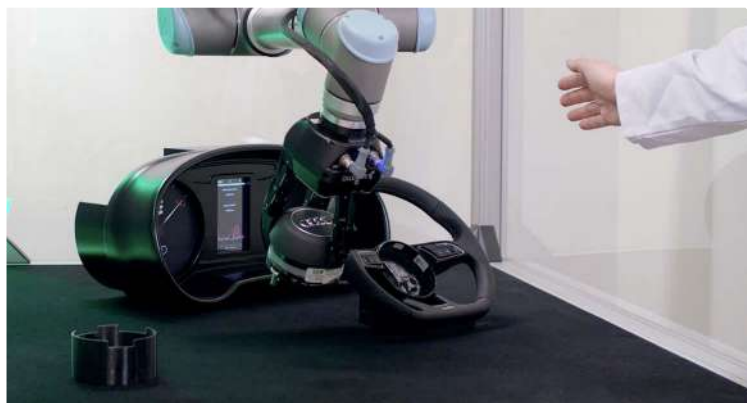
radio waves. Higher frequencies enable transmitting larger data packets on each wave (bandwidth is higher); reducing the time required to transmit data packets back and forth between two points (latency is lower); and limiting the risk of disconnections or disruptions in the data stream (connection reliability can exceed 99.9 percent). Higher bandwidth, lower latency and greater reliability make eliminating wires and cables more practical, whether facility-wide or on the level of the individual workstation.

Not all 5G networks are created equal. For example, near-instant video streaming is an example of enhanced mobile broadband, or eMBB. Many of the various ‘smart’ meters and monitors that constitute the ‘Internet of Things’ use massive machine-type communication (mMTC) networks. The projects discussed in this article (as well as mission- or safety-critical applications like remote control of surgical equipment or, perhaps one day, self-driving cars) are more demanding. Only ultra-reliable low-latency communications (URLLC) networks will do. For example, research with German automaker Audi involves nomadic robot assembly cells – essentially, robots on wheels – that can be moved about as-needed to assist workers with

assembly tasks. In one demonstration, a mobile robot installing an airbag into a steering wheel is not collaborative, but a fully industrial model that could cause damage, injury or worse if left unchecked. The system doing the checking is a light curtain on the open side of the cell that stops all motion when breached. This application demonstrates 5G’s potential for industry standard protocols such as PROFINET and PROFISAFE, which are extremely demanding in terms of a communication channel’s reliability and upper-bound latency, Thuelig says. “Interruptions in the assembly process should only be caused by real safety incidents to protect workers, not by late arrival of data packets or even lost data packets on your communication channel,” he explains.

Other applications at the European campus involve material-handling automated guided vehicles (AGVs) designed to mingle freely with human traffic. Reliable, real-time connections to LIDAR (light detection and ranging) sensors at intersections, and with one another, provide these systems with a level of ‘intelligence’ that enables them to move and react faster in various ‘safe crossing’ tests. Just as notable is the fact that an entire fleet of these AGVs can run alongside other 5G applications in the same factory, all on the same network. This is

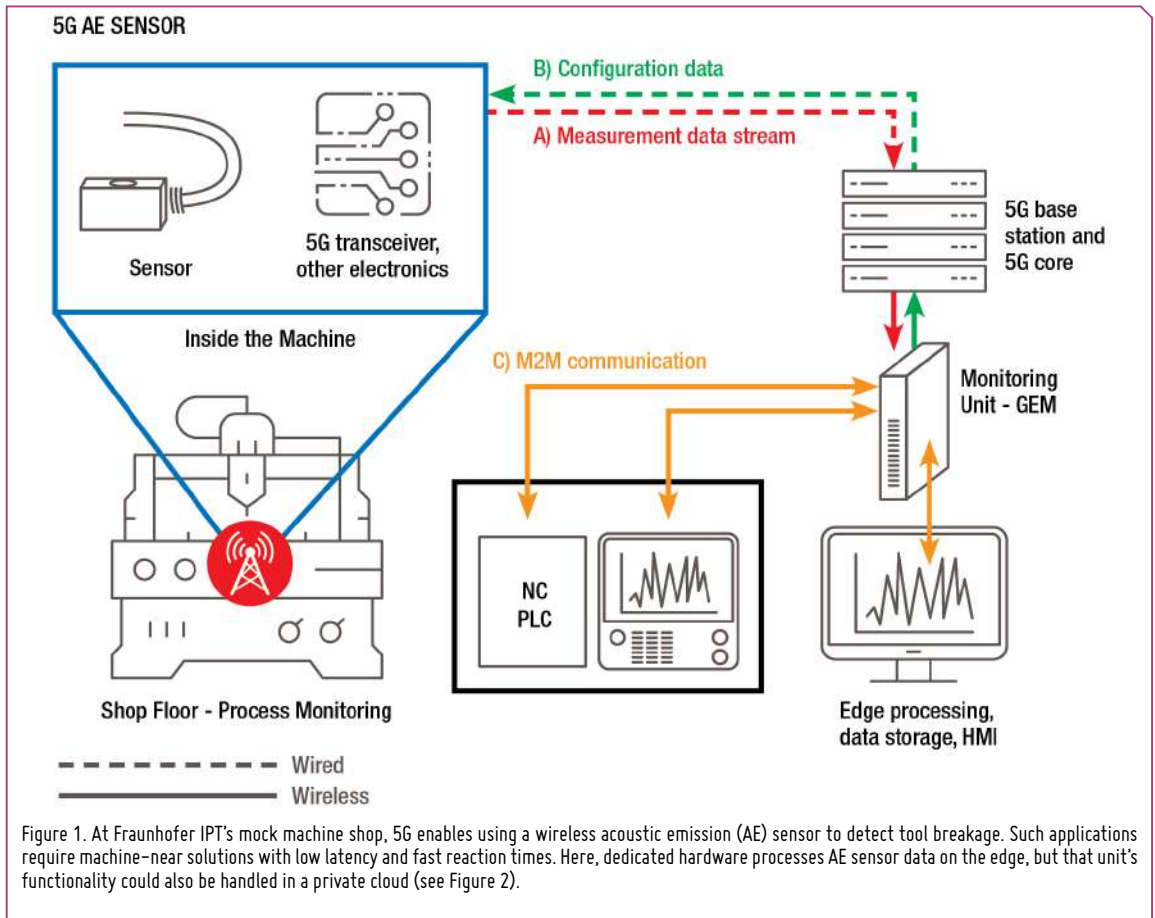
**Many 5G sensors reliably exchanging data on the same network, with no degradation in performance, could enable a manufacturer to create a true digital twin**



Source: Audi

Along with a fleet of material-handling AGVs, Audi’s steering wheel assembly application demonstrates the power of 5G for transforming the role of robotics.

With a private 5G URLLC network and the right software, toolholder-mounted sensors could potentially enable CNCs to react as the spindle turns.



Source: MMS

feasible thanks to two more key advantages of 5G: raw capability to support more devices, and dividing the network into subsections with bandwidth dedicated to specific applications.

### Into the workzone

A common task in CNC machining is calculating and entering offsets: parameter adjustments made to ensure the machine tool CNC accounts for the length of the toolholder, runout and tool wear when determining the location of the cutting edge relative to the rest of the workzone. Even if the task can be automated, advancing tool wear inevitably creeps into machining results before it can be detected and corrected with a new offset. However, Fraunhofer and Ericsson have proven that this need not be the case. With a private 5G URLLC network and

the right software, toolholder-mounted sensors could potentially enable CNCs to react as the spindle turns.

Specifically, the researchers used 5G-enabled acoustic emission (AE) sensors to measure the frequency of sound waves (generated by material deformation) that radiate up through the holder from the cutting zone. Constant analysis of the stream of data enables detecting spikes in the reading that indicate tool breakage and feeding the data back to the CNC. Researchers note that such capability can be particularly useful with small drills and milling tools.

AE sensor data might even be used to track tool wear and correct process parameters prior to the break. However, constantly correlating the current condition of a specific cutting tool with a specific 'fingerprint' in the AE spectrum is reportedly a diffi-

cult task – one possibly suited for machine learning – because the fingerprint is very application-specific. The geometry of the cutting edge, the workpiece material and process parameters all affect the sensor reading. "We have used it in a simple drilling process so far, but we focused on the sensor development, and do not have extensive trials and data collection yet," said the Fraunhofer Institute's Niels König via email. "This is part of the next steps."

Whatever the result of further research, opportunities for 5G AE sensors in CNC machining include more than monitoring for tool breakage and wear. According to the researchers, material-contact detection could provide an alternative means of spindle collision control. AE sensors might also provide a new option for detecting inho-

mogeneities in workpiece material based on changes in cutting conditions. Yet another potential application is 'gap control': the practice of slowing the tool on approach to compensate for any 'gaps' between real-world cutting conditions and the ideal conditions that process planning assumes.

Another Fraunhofer project involved mounting 5G sensors directly onto the workpiece. In this case, researchers used accelerometers to monitor chatter (a self-inducing form of machining vibration) during five-axis milling operations on bladed disks (blisks) for turbines. The idea was to home in faster on the best parameters for a process that can take longer than 20 hours per workpiece and account for half of a blisk's production cost. 5G delivered, showing potential to reduce average blisk rework rates from 25 to 15 percent. "You cannot get this data from the machine or control system," Thuelig says. "You have to have sensors on the workpiece."

### Connecting the dots

5G sensors need not be limited to AE sensors and accelerometers. For example, three-degree-of-freedom cutting-force sensors

could help prevent tool deflection. Position sensors could prevent workpiece clamping errors, while thermal sensors could help prevent overheating of machine elements. Strain sensors could alert to force levels that could cause spindle deformation. Sensors on machine tools and other equipment could facilitate condition monitoring and predictive maintenance. Adding sensors could provide robot arms with new capability to interpret and react to the surrounding environment by leveraging cloud- or edge-based artificial intelligence (AI).

The underlying infrastructure for all these applications would be essentially the same as previous-generation technology (in fact, 5G is designed to coexist with 4G/LTE). In Ericsson's Radio Dot System, data flows from shop-floor sensors to small, puck-like antennas on the ceiling (the 'dots') and then onward (via fiber optic cable) to the base station and broader shop network. In the case of the toolholder-mounted AE sensors, data returns to the workstation where it was collected for edge processing on the Genior Modular (GEM) monitoring system from Marposh Monitoring Solutions.

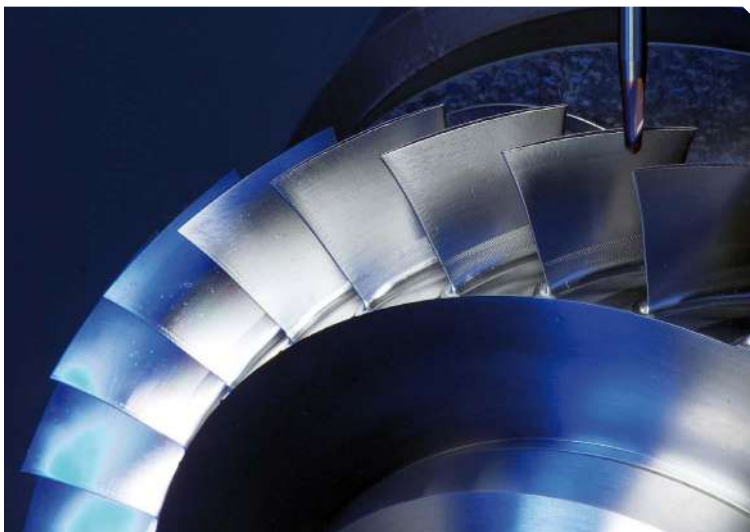
This system is wired directly to the machine tool via fieldbus connections. It also links to a separate PC that provides the human machine interface for tracking the process and storing the data for later analysis. However, documentation from Fraunhofer notes that scaling the system would likely be easier with a virtualized version of GEM monitoring system - that is, only the software component - based in a private factory cloud, with hardware 'gateways' providing the direct connection to the machine tools.

Other cloud applications could be dedicated to anything from equipment health metrics to guidance information for a fleet of AGVs. It is on this macro scale that 5G becomes useful not only for production automation, but also for production logistics. For example, Thuelig points out that many 5G sensors reliably exchanging data on the same network, with no degradation in performance, could enable a manufacturer to create a true digital twin of its process (that is, the virtual changes along with the reality) to empower shop managers and management systems. "Which machine is at risk of running idle because of spare parts?" he asks hypothetically. "Which assembly station is at risk to be contested? What's going to happen next, in hours, days or weeks?"

### Toward shop readiness

Part of the hurdle to making 5G practical for real-time machining process monitoring is hardware-related, Thuelig says. The AE sensors and accelerometers at Fraunhofer IPT were configured for the institute's research. Each sensor, in turn, is wired to a router equipped with a 5G modem. However, research is ongoing into the development of multi-sensor platforms that

**There is no match for 5G's speed, flexibility or reliability, all of which will help spread new applications beyond tradeshops and laboratories.**



Source: Ericsson

Blisks for energy and aerospace industry turbines are time-consuming and prone to rework, making them ideal candidates for near-real-time vibration compensation.

**5G standards continue to advance. The latest update, which includes critical functionality for URLLC networks was just unveiled earlier this year.**

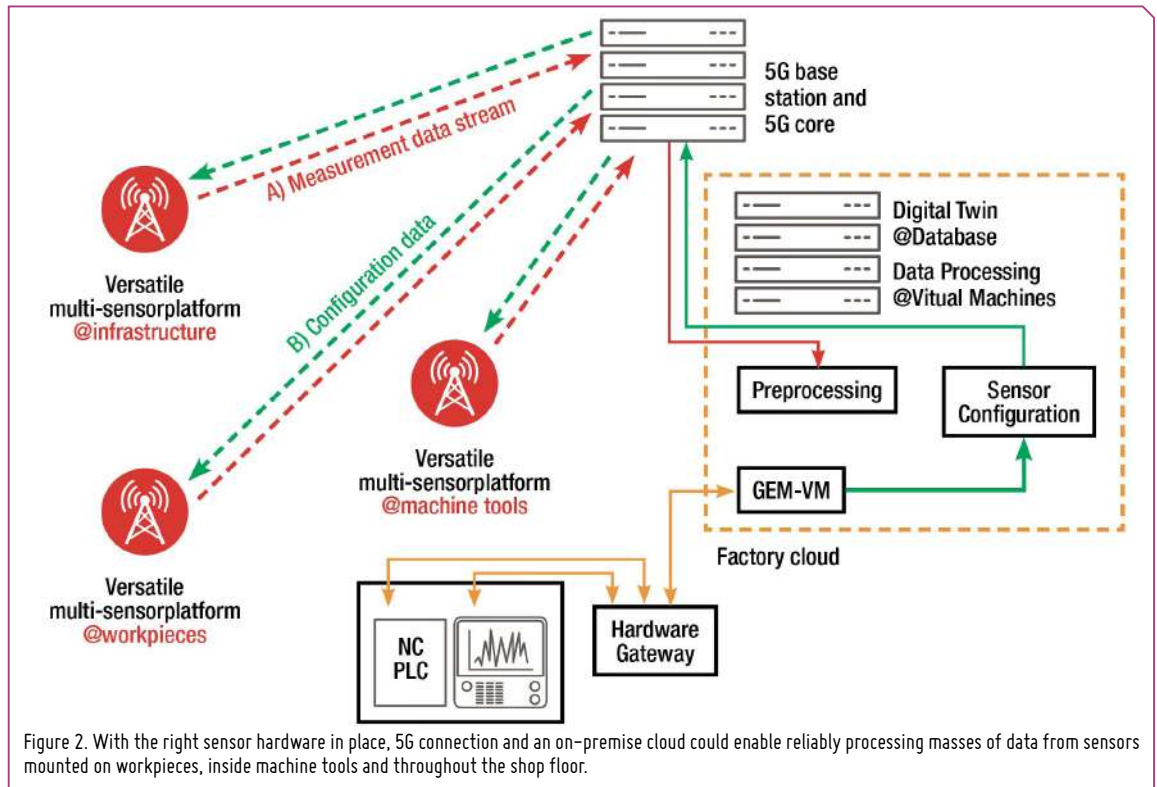


Figure 2. With the right sensor hardware in place, 5G connection and an on-premise cloud could enable reliably processing masses of data from sensors mounted on workpieces, inside machine tools and throughout the shop floor.

Source: MMS

will integrate accelerometers, gyroscopes, microphones, temperature and humidity sensors, as well as all the necessary electronics, into a single compact device. This presents miniaturization challenges that Ericsson's device-making partners are working hard to solve, he says. Meanwhile, 5G standards continue to advance. The latest update, which includes critical functionality for URLLC net-

works, was just unveiled earlier this year. Also advancing are the dense networks of cable infrastructure required to support the public 5G networks that could be used to coordinate with other businesses and business units. Predictions about the future can be breathless, but the potential of 5G for manufacturing cannot be ignored. Other applications being explored include using computerized glasses or headsets to

facilitate training supplemented with augmented reality. These connected devices could also be employed to diagnose sensor-equipped components inside equipment, or to make offsite facility tours (or even something more involved, like a Gemba walk) practical. Machine tools might even be tended by mobile robot arms that move from machine to machine by themselves. In fact, machine tool builders are already working on this. For example, Makino's 2019 EMO booth featured the iAssist, an AGV with a wireless collaborative robot on top, automatically moving tools and workpieces as needed among presetting and machining equipment in a mock cell. Such applications do not necessarily require 5G - in fact, this demo debuted at EMO 2017. However, there is no match for 5G's speed, flexibility or reliability, all of which can help spread this and other new applications beyond tradeshow and laboratories.



Reliable, near-instantaneous data exchange could make augmented and virtual reality more practical for more manufacturers.

Source: Ericsson

## GROWING THROUGH CONNECTIONS

Moving with the market's changing dynamics and responding to the need to connect and collaborate in today's manufacturing industry, IMTMA is launching 'IMTEX Connect', the first-ever digital exhibition on machine tool and manufacturing technologies, under the aegis of the IMTEX show from January 21-27, 2021.



Source: IMTMA

**I**MTEX Connect 2021 will connect manufacturing technology providers and machine tool builders with user industries from various countries. The show will be a precursor to IMTEX 2021 & Tooltech 2021 to be held at Bangalore International Exhibition Centre (BIEC) in June 2021.

The virtual event will have over 90 exhibitors showcasing their cutting-edge offerings that they have either innovated or refined during the pandemic lockdown. As is the tradition, along with it being an ideal conduit to reach the right audience, the organizers ensure that the event offers

a conducive platform for knowledge sharing. Hence, industry experts are invited to conduct technical sessions. There will be 11 such sessions which are absolutely free for the participants.

### Leaders speak

Speaking about the potential of IMTEX Connect, Indradev Babu, President, IMTMA said, "IMTEX Connect will be a medium for user industries to digitally explore the technologies that would be on display at IMTEX 2021."

Concurring with Babu's views, V Anbu, Director General & CEO, IMTMA-BIEC, said, "IMTEX Connect will also be an opportunity

for machine tool builders to focus on champion sectors such as Automotive, Aerospace and Defence, Electric & Electronics, Railways, Medical, etc. that hold immense possibilities to drive growth in manufacturing."

### Showcasing strengths

Following are a few exhibitor companies that have candidly shared the challenges they faced during the pandemic lockdown, the fallouts of its restrictions, how they view IMTEX Connect in the face of the unprecedented situation and the innovative products and solutions they are showcasing.

POONAM PEDNEKAR  
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## ASI DataMyte India Pvt Ltd

Source: ASI DataMyte India Pvt Ltd



**Harsh Garg, Country Manager  
ASI DataMyte India Pvt Ltd**

DataMyte provides software, hardware, and services across multiple industry verticals. As a pioneer with over 50 years of experience, the company implements Integrated Quality Management Solutions that allow for a smart and connected factory.

Harsh Garg, Country Manager, ASI DataMyte India, thinks of IMTEX as the most prominent B2B show in manufacturing. "This show has always helped companies to get information on the latest technologies to be at par with global trends, providing them with a relevant medium to interact with potential clients. With Covid-19 and restricted travel, IMTEX's 'Connect 2021' is a welcome and suitable solution to still enable these important interactions as well as set an example for other shows. The vaccine has just arrived and we look forward to some normalcy but in the meantime, we will all rally behind these innovative, interactive platforms."

At the virtual event, the company is showcasing its strengths in IIOT-enabled REVOLUTION

Portable Data Collection Measurement Automation; Digital Clipboard: Digital Checklist capability; Escalate; APQP; Measurement Data Collection & Analysis; Residual Torque Measurement; Gap & Flush Measurement; Seal Gap Measurement; and Door Velocity Measurement.



Source: ASI DataMyte India Pvt Ltd

## Blaser Swisslube India Pvt Ltd

Source: Blaser Swisslube India Pvt Ltd



**Punit Gupta  
Managing Director, West Asia  
Blaser Swisslube India Pvt Ltd**

Blaser Swisslube develops and produces high-quality cutting and grinding fluids that find applications in all Manufacturing industries.

Punit Gupta, Managing Director, West Asia, Blaser Swisslube India Pvt Ltd, refers to massive changes brought in by Covid-19, "The pace of change has gone up significantly. The pandemic has made industry captains reflect on three critical points: Productivity improvement drive in manufacturing; Environment health and safety; and Investment in technologies and right partnerships. It has created a new normal wherein every industry is getting pushed at a higher pace towards these new goals. New ways of interactions are emerging with digital connections all across the globe. IMTEX has always been an ideal platform for connecting the industry. Now, the expectations are from IMTEX Connect to help accelerate this change towards the new normal. We are excited to explore new technologies through connecting with our customers."

"At the event, we are to showcase our Liquid Tool solution that has a lot to offer. Our innovative and unique technologies, like the Blasocut bio concept, make our coolants as one of the safest products to use in the world for people and the environment," he adds.

## Dormer Pramet

Source: Dormer Pramet Tools India Pvt Ltd



**Gautam Ahuja, Managing  
Director, Dormer Pramet Tools  
India Pvt Ltd**

Dormer Pramet is a global manufacturer and supplier of tools for the Metal Cutting industry. Its comprehensive product program encompasses both rotary and indexable drilling, milling, threading and turning tools for use in a wide variety of production environments.

Gautam Ahuja, Managing Director, Dormer Pramet India, says: "Virtual exhibitions have grown in popularity over the last 12 months, with an increased interest due to the global pandemic. We have been present at several around the world now and have found them to be a great way to interact with a large audience. "We are pleased to see the renowned IMTEX exhibition has followed this trend and look forward to welcoming many guests from across India, as well as around the world, to our digital booth. IMTEX Connect will be an excellent platform for people to see for the first time the new products we will be launching in 2021. Also, they can find out more about our recently announced acquisition of Miranda Tools, which will enhance our production capabilities of high-speed steel tooling. We see great value in the Indian Manufacturing industry and this investment strengthens our commitment even further, while providing customers with greater choice. This is an exciting time for our activities in the country and IMTEX Connect 2021 arrives at the ideal time to bring more awareness of the opportunities now available."

industry and this investment strengthens our commitment even further, while providing customers with greater choice. This is an exciting time for our activities in the country and IMTEX Connect 2021 arrives at the ideal time to bring more awareness of the opportunities now available."

## Ecoclean Machines Pvt Ltd



**Manoj Velhal, AGM - Sales,  
Ecoclean Machines Pvt Ltd**

Ecoclean India, a subsidiary of the SBS Ecoclean Group, manufactures machines for industrial parts cleaning and surface treatment applications.

Pointing out to the unprecedented disruption caused by the pandemic, Manoj Velhal, AGM – Sales, Ecoclean Machines, says, “Digital self-service and remote business interactions are likely to be the new way of doing business. With physical events set to remain on hold for some time yet, the virtual trade shows have taken the centre stage for businesses like us.”

Since IMTEX has been and continues to be a flagship event for machine tool manufacturers in India and around the world, we look forward to IMTEX Connect 2021 to connect with potential customers from diverse industry segments and create

new opportunities," he adds. When it comes to a digital event, the possibility to reach the audience is limitless. He adds further, "We are sure IMTEX Connect will turn out to be just the right platform for presenting our innovative, best-in-class and efficient solutions. Our booth is designed to illustrate the brand 'Ecoclean' and present our state-of-the-art 'water-based' as well as 'solvent-based' product lines with a special focus on locally manufactured machines 'Minio 85C' and 'Universal 81W'."



Source: Ecoclean Machines Pvt Ltd

## FIBRO India Precision Products Pvt Ltd



**Vivek Nanivadekar, Executive  
Director, FIBRO India Precision  
Products Pvt Ltd**

Vivek Nanivadekar, Executive Director, FIBRO India Precision Products, notes that despite the Government relaxing the lockdown restrictions cautiously and in phases, the industry started functioning to its 80 percent capacity only in October 2020. “Almost all the industrial sectors started flooding with the orders including engineering capital goods. It was assumed that the boom was due to the festival season and would die down by December 2020. A more severe second of pandemic in January 2021 was also predicted. But the right steps taken by the Government at the right time, seems to have put the situation under control.”

“The timing of IMTEX Connect is just right. We are quite hopeful about the response from potential customers. Apart from the direct business, we will get to understand sentiments and expectations of the visitors which would certainly

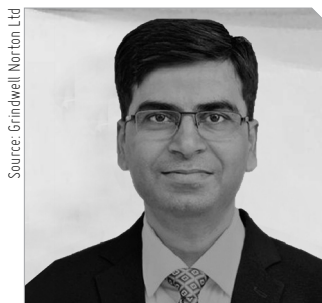
help us plan for the next financial year,” he adds.

The company is displaying two new products/technologies at this event. New 'Made in India' Aerial Cam unit range up to 300mm sliding width from its 'Standard Parts' vertical for metal forming dies and newly designed Rotary Table FIBROTOR VR.NC for the Automation industry.



Source: FIBRO India Precision Products Pvt Ltd

## Grindwell Norton Ltd



**Abhay Jain, Head - Marketing  
and Retail Sales, Grindwell  
Norton Ltd**

Norton Abrasives has been offering bespoke abrasive solutions to its customers for over eight decades. At IMTEX Connect 2021, it is showcasing a wide range of breakthrough product technologies along with digital tools like 4SIGHT, Vibration Monitoring and Analysis Services as well as Grinding Optimization instruments.

Abhay Jain, Head – Marketing and Retail Sales, Grindwell Norton, is of the belief that every crisis is an opportunity. “With almost a V-shaped recovery, the economy has bounced back and the Engineering industry is almost on fire. IMTEX Connect is thus timely. Through IMTEX Connect, exhibitors will get a chance to showcase their newly developed capabilities while customers will get benefited using new solutions. This platform should also enable a large set of customers coming and visiting virtually which otherwise would not be possible due to time or travel constraint,” he adds.



Source: Grindwell Norton Ltd

## Hindustan Export and Import Corporation Pvt Ltd



**Kabir Grover, Director,  
Hindustan Export and Import  
Corporation Pvt Ltd**

Kabir Grover, Director, Hindustan Export and Import Corporation, states, "Covid-19 has changed the landscape of businesses worldwide. IMTEX Connect is an opportunity to provide the much-needed impetus to the Machine Tool industry. The virtual event will be bringing these cutting-edge technological developments to the forefront, and customers will be able to view all on a single platform."

The company is displaying products and technologies from all its principals - Yamazaki Mazak, Citizen Machinery, Okamoto Grinding M/c, Behringer Band and Circular cutting saws, Ver-net Behringer - Structural Steel and TLT Technology and Fro-mag keysetting and profiling machines.



Source: Hindustan Export and Import Corporation

Source: Hindustan Export and Import Corporation

## ifm electronic India Pvt Ltd



**Shreyansh Gunde, Marketing  
Department, ifm electronic India**

Shreyansh Gunde, Marketing Department, ifm electronic India, says "IMTEX Connect 2021 is a welcome affair that must be grabbed and make the most of. We expect the same from the 7-day virtual event that we used to experience during the physical one."

"IMTMA has played a highly crucial role in bringing all the manufacturers, suppliers, customers under one roof to facilitate knowledge sharing, to meet and greet with the existing customers, and to explore demands of the new customers. With IMTEX Connect 2021, we would like to see the same energy and footfall," he adds.

For IMTEX Connect 2021, ifm will be displaying: IO-Link Technology; Condition Monitoring Systems; Process Sensors - Flow, Pressure, Temperature, Level; Position Sensors - Inductive, Capacitive, Magnetic, Cylinder, etc.; and Vision Sensors - 1D / 2D code readers, Object recognition.

Source: ifm electronic India

## ISGEC Heavy Engineering Ltd



**Yogesh Saxena, Senior Vice  
President - Sales & Marketing,  
ISGEC Heavy Engineering Ltd**

ISGEC Heavy Engineering Ltd is a multi-product, multi-location public company that has been providing engineering solutions to customers across 91 countries for the past 85 years.

Yogesh Saxena, Senior Vice President - Sales & Marketing, ISGEC Heavy Engineering Ltd, states, "In view of the current scenario and the increased demand in the Automotive Sector, we expect a 'V' type recovery and IMTEX Connect is the right move to meet with customers online when mobility is limited due to the pandemic." The company will be displaying its 630T Servo Mechanical Presses that finds considerable demand in Europe.



Source: ISGEC Heavy Engineering Ltd

Source: ISGEC Heavy Engineering Ltd

## Meiban Engineering Technologies Pvt Ltd



**AV Srinivasan, CEO, Meiban  
Engineering Technologies**

According to AV Srinivasan, CEO, Meiban Engineering Technologies, the business sentiment is picking up and the business scenario is also changing. "Customers are extremely careful about CAPEX and want quick solutions and delivery. IMTEX Connect 2021 will help give a better picture of the customer demand. Due to the pandemic, many of our customers have become tech-savvy and are interested in going digital," he adds.

The company is displaying its Series of Muratec Twin Spindle Turning / Turn-Mill Center with Automation, which includes various popular models like MW100, MW120, MW40, MW200, MD120, and newer series like MW35, MW120EX.



Source: Meiban Engineering Technologies Pvt Ltd

Source: Meiban Engineering Technologies Pvt Ltd

## MTAB Engineers Pvt Ltd

Source: MTAB Engineers Pvt Ltd



**Anand Ramadurai, CEO,  
MTAB Engineers Pvt Ltd**

activities. The Healthcare industry has a growing need for good quality components to meet the patient demand: surgical instruments, medical and dental implants," he shares.

For Anand Ramadurai, CEO, MTAB Engineers, 2021 looks more promising with investment coming in Electronics, Aerospace and Defense sectors.

"As the buying sentiment is improving and there is a strong need to reposition the marketing initiatives to develop the network, display the manufacturing capability and advancements to improve the business prospects. In this context, IMTEX Connect 2021, the first time as a digital platform, is a great opportunity for the Machine Tool industry to start their marketing initiatives," he adds.

MTAB's focus at IMTEX Connect 2021 is automation and CNC machines that will promote and support important areas of innovation and growth. "We are presenting a range of robots to serve multiple industries: Engineering, Food, Pharma, Electronics, etc., to safely perform repetitive



Source: MTAB Engineers Pvt Ltd

## NISSIN Manufacturing Co. Ltd

NISSIN Manufacturing Co. Ltd manufactures industrial machinery and parts. The company manufactures and distributes machine tools, automotive parts, small engine parts, precision die cast parts, and sewing machine parts. Mari Dohi, Assistant Manager, NISSIN Manufacturing Co. Ltd, shares the company's purpose in participating in IMTEX Connect 2021. "We plan to expand our business network all over India for which we consider the event as an ideal platform to connect with the right people," he adds.

The company has the spotlight on its Honing machine F25G-M2DR at the event.



Source: NISSIN Manufacturing Co. Ltd

## PG Engineers

Source: PG Engineers



**Manish Gupta, CEO,  
PG Engineers**

PG Engineers is the manufacturer of collets for driveline, collets for engine valves, DIN collets, W Series collets, C Series collets, Bar Feeder collets etc. Manish Gupta, CEO, PG Engineers, says, "With business slowly bouncing back to normalcy post lockdown, IMTEX Connect 2021 provides a platform to several industries and companies to connect in the form of a virtual exhibition. The opportunity opens up several avenues for growing businesses in terms of networking and gives them a chance to represent their companies. Since the event is user-friendly, we expect it to receive significant response from the industry." The company will be focusing on its Collets Work holders/tool holders at the virtual event.



Source: PG Engineers

## Renishaw India

Source: Renishaw India



**Samina Khalid,  
Marketing Communications  
Manager, Renishaw India**

Samina Khalid, Marketing Communications Manager, Renishaw India, feels that the launch of IMTEX Connect at the time where there is restriction in mobility is a right strategy as it will have a positive impact on businesses, "This will allow more employees within a company to access new resources. People who earlier could not make it to an event will now be able to attend virtually, in real time, without the need to travel. The event will also act as a catalyst in stimulating lead generation especially during the pandemic."

"At IMTEX Connect 2021, Renishaw will demonstrate how integrating smart factory process control can transform a machine shop's production capabilities, improving speed, ease-of-use and flexibility," she shares.

Renishaw will demonstrate intelligent process control for larger parts, by exhibiting the Equator™ 500. The new, larger system enables the accurate gauging of larger parts due to a working volume of 500 mm in diameter and up to 400 mm in height, increasing the flexibility and range of applications for the Equator system. Accurate between 5°C and 50°C at any rate of temperature change, the system can achieve scanning speeds above 200 mm/s.



Source: Renishaw India

## SAPTECHNICAL & Marketing Consultants



Source: SAPTECHNICAL & Marketing Consultants  
**Apoorva Prasad, Partner, SAPTECHNICAL & Marketing Consultants**

Apoorva Prasad, Partner, SAPTECHNICAL & Marketing Consultants, reflects on the eight months that have been difficult for our industry and hopes that the businesses slowly and gradually move towards better times. "There is definitely caution and deliberation in making capital investments," she adds.

IMTEX has been a very important platform for SAPTECHNICAL and, hence, the company has never missed a single IMTEX. "IMTEX Connect is going to be a completely new experience for both the exhibitors and visitors. It being a virtual event, we are really hoping for a great response and reach. This is definitely a positive step to show that the industry is moving back to normalcy and will boost the much-needed confidence in the market," Prasad adds.

Some of the company's highlights at the event include:

**Takisawa Machine Tool Co. Ltd, Japan:** CNC Lathes / with Y axis, CNC twin Spindle Lathes with Gantry, Multi-Tasking machines, Oval Turning machines; **Doosan Machine Tools, South**

**Korea:** CNC Lathes, Horizontal and Vertical Machining Centers, Double Column Machining Centers, Boring Machines, etc.;

**Fanuc, Japan:** Robodrill (High-Speed VMCs) & Robocut (Wirecut EDMs); **Mitsui Seki Kogyo Co. Ltd., Japan:** High-precision, high-accuracy, 5-axis CNC Machining Centers for Aerospace Industry, Thread Grinders and Jig Boring Machines; **Engis Corporation, USA:** Bore Finishing and Honing Machines

## TOYODA Micromatic Machinery India Pvt Ltd



Source: TOYODA Micromatic Machinery India Pvt Ltd  
**SK Yadav, Managing Director, TOYODA Micromatic Machinery India Pvt Ltd**

SK Yadav, Managing Director, TOYODA Micromatic Machinery India, thinks of IMTEX Connect 2021 as an ace show of machine tools in India. "The show has the potential of being a torch bearer for the Manufacturing industry in the new normal. Going forward, the idea of 'Connect and Collaborate' will be the key for all the stakeholders. As a learning organization, we continue to collaborate with our business partners in their journey and provide competitive solutions," he adds. The company will be exhibiting its 'Made in India' High Precision CNC Cylindrical Grinding Machine, model:GL4E. "This product is an outcome of 'Japanese standards' combining with competitive Indian manufacturing," he shares.

Going with the latest trends in gear machining, it will also be displaying its GEAR Skiving Center. This product is designed and manufactured with Process Integration as the main theme.



Source: TOYODA Micromatic Machinery India Pvt Ltd

## SLTL Group (Sahajanand Laser Technology Ltd)

The SLTL Group undertakes manufacturing of solutions in the fields of Laser Systems, Medical, Diamond & Jewellery, RF & Microwave, and Renewable Energy Machine Tools. Maulik Patel, Executive Director, SLTL Group, deems IMTEX to be one of the prominent trade exhibitions for metal forming and tooling. "We take part in the expo every year and receive a great response every time. We export to more than 30 countries and, through IMTEX, we get opportunities to expand our reach," he says.

"Covid-19 has been a wake-up call for the industry to adopt Industry 4.0 and make manufacturing operations as digital and contactless as possible. We at SLTL also started experience.SLTL.com, creating a digital doorway to our manufacturing facility in this period of social distancing. During such times when physical expos are not happening and social distancing is required, IMTEX Connect 2021 will help bridge this gap digitally and open up a medium to virtually collaborate with target audience across geographies," he adds.

SLTL is displaying its innovative Robotic Fiber Laser Cutting System, 'FIBO CUT'. "The machine can process complex shapes and geometries. It can cut 360 degrees and even non-standard materials and angles, resulting into a Laser System flexible enough to operate on various sizes and shapes for automobile sheet metal components," he adds.



Source: SLTL Group



Source: SLTL Group  
**Maulik Patel, Executive Director, SLTL Group**

## SolidCAM Software India Pvt Ltd



**Arunkumar CV, VP-Sales,  
SolidCAM Software India**

According to Arunkumar CV, VP-Sales, SolidCAM Software India, the role of IMTEX Connect 21 is extremely crucial for not only SolidCAM as a software company for machining solutions, but for the entire metal cutting supply chain, since this is a big opportunity for everyone to re-innovate and become relevant in changing times. "IMTEX Connect is just the right platform that puts the supply chain on the global arena to play to their strengths and expand the reach," he adds.

The company will be showcasing its recently released version SolidCAM 2021 at the event, which is considered as the game changer that offers the possibility to program extremely Complex Swiss Type machines, Multitasking machines and 5 Axes Milling Machines in a highly user-friendly environment.



Source: SolidCAM Software India Pvt Ltd

## THK India Pvt Ltd



**Krishnamurthy, Regional Sales  
Manager, THK India**

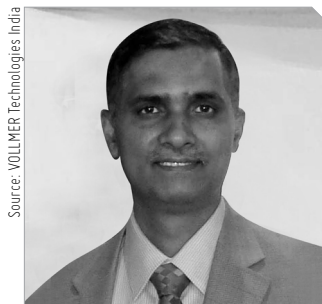
Krishnamurthy, Regional Sales Manager, THK India, states, "India is a country with over 500 million internet users. Hence, virtual events like IMTEX Connect are the next big thing, taking the digital transformation to the next level. In the current pandemic situation, the event is a great platform to explore new technology advancements and connect with industry experts."

The company is introducing its roller LM guides, model HRX and Ball screws model BSM at the virtual fair. The HRX LM guides are high-rigidity roller guides with increased load ratings. They are also available as interchangeable rail and blocks. The BSM ball screw is a full ball complement high-speed performance ball screw.



Source: THK India

## VOLLMER Technologies India



**Ravindra SD, Managing  
Director, VOLLMER**

Ravindra SD, Managing Director, VOLLMER Technologies India, shares, "With the business climate returning to normalcy, we have also seen the demand for capital goods is also on the rise. After a long gap of lockdowns and restricted movements, IMTEX Connect is offering us an opportunity to connect with customers, both existing and potential. The virtual show will help in strengthening the business sentiment of the industry." At the event, VOLLMER will display the product range in processing of rotary shank type tools, both in Grinding and Eroding. The popular VGrind series of machines for tool grinding, VHybrid machine for Grinding and Eroding and VPulse is the Wire EDM for PCD rotary shank type tools. The Circular Saw Blade Grinders for metal cutting application will also be exhibited.



Source: VOLLMER Technologies India

## Warrier Electronics

Rohit Warrier, Founder & CEO, Warrier Electronics, says, "IMTEX is the premiere trade fair which the industry eagerly



**Rohit Warrier, Founder & CEO,  
Warrier Electronics**

looks forward to every January. Since a physical show is not feasible, but IMTEX Connect 2021, a virtual trade show platform has the potential to easily fill the void. It will be the game changer. Now irrespective of where one is, they can attend the show as per their convenience. Even from the exhibitor point of view, now, businesses can reach prospects in all geographical demographics at a fraction of a price otherwise required to reach all corners. It is a win-win. As a trade enabler, shows such as IMTEX Connect 2021 will surely enable to drive growth."

The company is displaying automatic fire detection and suppression systems for CNC and EDM machines. "Our systems are not limited to protect CNC machines but can widely be used to protect other critical equipment such as Electrical panels, Data server racks, Mining equipment, Mobility vehicles, Wind turbines, UAVs etc. from fire," he informs.



Source: Warrier Electronics

# EMBRACING CHANGE

At the recently held National Productivity Summit organized by Indian Machine Tool Manufacturers' Association (IMTMA), Dr Gregory Watson, Chairman, Business Excellence Solutions, delivered his keynote talk on Managing Breakthrough Change for Productivity and Profit. Past President and Honorary Member of both International Academy for Quality and American Society for Quality, he is the only westerner to have received the W. Edwards Deming Medal from the Union of Japanese Scientists. Highlights from his presentation...



**Dr Gregory Watson, Chairman, Business Excellence Solutions**

## What Creates Industry Disruption?

Clayton M Christensen said the reason why it is so difficult for existing firms to capitalize on disruptive innovations is that their processes and business model make them good at their existing business activity and make them bad at competing for the disruption. In other words, they have been tuned for the old way of working, which is what they are used to. That is where they have reinforced their good ideas about themselves. But they feel incompetent about embracing new technologies. Following are the causes of disruption in productive systems:

- Interruptions in the flow of materials, parts, or assemblies.
- Poor communications of plans or production requirements - you have probably experienced that when you do not know what the customer wants, you do not know what the materials are that you are processing.
- Issues in production machinery or systems software and it is not operating the way we think it should or giving us the results that we need to get.
- Shifts in customer demand or economic conditions that can have some external effect on us.

**T**he five topics in point are: The idea of Disruptive Change and Breakthrough Technology, Current Breakthrough Technologies to Consider, a case

study about Digitalization of Injection Moulding, Lessons Learnt from other Historical Endeavors, and Recommendations for Embracing Technology Shifts.

Source: Team MMI

- Lack of production status monitoring and timely reporting – we do not have it and we do not know what is happening in the production system because we do not have the up-to-date inventory of what is happening, so we do not see the data flows.
- Ineffective adaptation of new technologies or systems – we know what we would like to do but we do not know how to implement it because we do not have the experience in using those tools, methods, or systems.
- Natural environmental occurrences or acts of nature that can create change in the systems.

### Are Breakthrough Technologies Emerging?

There are some advanced technologies such as Artificial Intelligence, Machine Learning, Big Data, and Deep Learning that combine to upset the control systems by enhancing adaptive management of dynamic shifts in supply, demand, and technology requirements and are proving more affordable to SMEs. Many of these technologies are being brought to the field in terms of applications within the Indian SME industry.

3D metal printing and injection moulding technologies allow rapid prototyping and increased microstructural control of metallic composition. Internal wireless networks permit increased connectivity of factory wide sensors to improve the end-to-end production control and enhance communications with both suppliers and customers. Digital sensors are becoming more accurate, inexpensive, and readily integrated into current production equipment.



Source: Business Excellence Solutions

“There are some advanced technologies such as Artificial Intelligence, Machine Learning, Big Data, and Deep Learning that combine to upset the control systems by enhancing adaptive management of dynamic shifts in supply, demand, and technology requirements and are proving more affordable to SMEs.”

**Dr Gregory Watson**  
Chairman  
Business Excellence Solutions

### Applicable Breakthrough Technologies

To control information and streamline flows we can make investments in Information Communications Technology (ICT). This is using internet-based search engines and recommendation systems to increase our understanding of customer needs. Increasing the bandwidth and processing power of the digital communication links enhances the computer response systems for automated ordering systems or for tracking products in the logistics cycle chain. We can also have investments in production operating systems (POS).

### Technology Paths for SME Manufacturers

We should start small, think big, but begin with a designed end in mind. Begin by placing select digital sensors to monitor pro-

duction quality at critical control points. For example, RFID to determine the location of critical components, time stamps of barcodes to determine where items are advancing in production, motion detection to warn of unsafe situations, vision systems using pattern recognition to check identification or completeness of work, sensors to detect temperature, vibration, or weight of items in production and so on.

We can add wireless network to collect digital signals and route them to an ‘internal data cloud’ for processing as well as add alerting systems or alarms to warn of any out-of-control conditions to alert operators of the need to adjust process performance.

Do not invest if you will not be able to demonstrate the actual operational and financial benefits. This is the critical ingredient. Do not overinvest or invest too early. We do not have that much money in an SME to invest in these sorts of technologies. The good news is after having gone through the Covid-19 pandemic, we have production under control now. Many times, companies will find that they have excess production today. So, investments should not be made extending production capability. We can use that money that we normally use for production equipment in terms of investing in the digital technologies to advance our control over those systems once we ramp up again after coming out of the Covid-19 situation.

### Case Study Hewlett-Packard: Injection Moulding

I would like to share with you a case study that I did at HP. It illustrates how designing a lean technology system with a payback in six months could be done.

Having robots is great but ask yourselves whether you really need them and can you create a system flow so that it flows smoothly.

**The best situation is really knowing your situation. Understand what it takes to drive forward and then invest slowly and surely in what you need to do to drive forward.**

We needed to perform injection moulding of gears with extremely high tolerance for tight tolerance printing systems. This required 22 mould changes per day. The current time for a mould change (at that time) averaged 4 hours for a mould change.

The project team included one industrial engineer that was me, two recent graduates of engineering programs (one mechanical engineer and one electrical engineer) and a moulding shop line leader. The project was implemented in just three months. As per our resource requirements, we were given a dedicated, new automated controlled moulding machine with an investment budget of less than \$100K. And this happened in the 1985-86 timeframe.

For technologies, we had a blended approach that comprised material science, lean production flow, SMED/change-over emphasis, rheology testing, pneumatic clamps, fixed guides, snap-fit heating and cooling lines, pre-heating racks, and a small crane.

The question is where does one start with lean. One of my Senseis in Japan, who is the head of the management institute, advises not to start with 5S, rather start with set-up time reduction that gets rid of waste in the flows. It allows the flows to move without having any waiting time. It frees up the productivity time. We were using material science in terms of how we were moving these parts. Previously these parts were not injection moulded. They were all made from aluminum and so were changing them to polycarbonate with fibreglass and carbon filling. We also had a lean production flow. To make sure we get the flow of the materials and parts to the production line, the rule was mould today what we use tomorrow so it would be

“Incorporating advanced technology to assure ‘managerial bragging rights’ or ‘marketing position’ do not add value and is empty marketing. It does not help in the productive world. We need to make sure that we are getting value addition out of production investments.”

**Dr Gregory Watson  
Chairman  
Business Excellence Solutions**

dimensionally stable. We had to test the rheology or the shrink rate of the plastic to make sure we understood what the shrink rate would be after it came out of the hot mould. We used the pneumatic clamps to hold the moulds in the moulding machine. We had the fixed guides that were put on the machine and on the tools. They would just slide in place. We had snap fit, heating, and cooling lines so they would just snap on. Also, preheating racks to make sure that we put the hot moulds into the machine and did not heat it inside the machine. We also had a positioning crane to move the moulds from the hot rack into the machine.

**Cost Benefit of this System**

So the investment was around \$2,000 per mould that came to \$44,000, the rheology testing equipment for the lab was \$12,000, the injection machine

modifications for one machine was \$8,000, the off-line moulding rack was \$5,000 for heating systems and the off-line manual positioning crane was \$9,500. Hence, it came to around less than \$80,000 at that time. Those prices are less today. The benefits were reduction in part cost by about 6 cents per part. We had 22 different parts and we had 10,000 of those in the first month of production. We are talking of \$13,000 for part cost reduction. We also had reduction in the set-up time. We were charging \$50/hr for production time and that’s \$80,000. Hence, in less than 4 weeks, we got the payback for that machine.

**Lessons Learned from ERP**

Many SMEs have introduced Enterprise Resource Programs (ERP) systems to understand how to manage material flows and synchronize with the order flows. First map your process, understand your measures, know what you need to analyze, and how to analyze the data and determine what reports are necessary. Specify the ‘master data items’ before beginning the software project: what data will you keep in the software, how will it be structured, where will it be stored, and how frequently will you sample it. Assign some operational experts to audit that software process models and val-



Source: Business Excellence Solutions

## Summary of Key Learning Points

1. **Disruptive technology will be coming to your industry, no matter what it is. Either you can be the leader and gain the advantage or you can be a follower and lose advantage.**
2. **Begin the process of digital transformation by starting in small steps and get accustomed to a few simple types of applications. Do not jump in where angels fear to tread!**
3. **Know your process and simplify your process before you attempt to automate your process. Never automate any process that has not had its waste removed and been streamlined; otherwise, you automate the production of waste in a more efficient manner!**

idate against the original process maps and measurement systems. The software system is acting like a digital twin. It is the twin to the real-world system and what we want to do is monitor how the real-world system is working in the software.

We need to integrate these data collection points and may be use barcode scanners to assure the ERP system has a tracking capability for material movement across the production system. And finally produce only those reports that have a legitimate need by management. Give management the information they need. High integrity, good fidelity in terms of the quality of the information and make sure it is frequent enough to capture changes in that system that may affect the quality of the output or reduce the productivity of the output.

### **Lessons from Early Robotics Deployment**

The initial robotic investments were typically 'pick and place' machines. Having robots is great but ask yourselves whether you really need them and can you create a system flow so that it flows smoothly. Hence, \*Make digital automation a strategic investment, not a skunkworks project.  
\*Avoid the inclination to 'automate everything'.

\*Automate the simple processes first where you can get a benefit such as processes that are too repetitive or dangerous or tiresome for humans and those that robots can do very quickly. The key question is are you automating the high precision tasks that workers must repeat frequently that would lead to creation of human errors. So, we are eliminating errors in the system by the way we automate those productive processes. The principle should be let the machines do what human operators consider to be difficult, demeaning or demanding. Advanced technology can extend this to creative world requiring decision-making. Evaluate the reason for each automated device: Does it need to be done? Can it be done more simply? Have the processes been simplified and streamlined before deciding to automate them? Be sure not to automate the production of waste or to embed process inefficiency in robotic production equipment.

### **Critique of Digitization Efforts of SMEs**


Looking at the past there have been some classic mistakes made by SMEs in technology acquisition: \*Failure to design the productive system so that it fits with the operational re-

quirements - Do you really need that robot and its capability? Is it giving you a benefit?

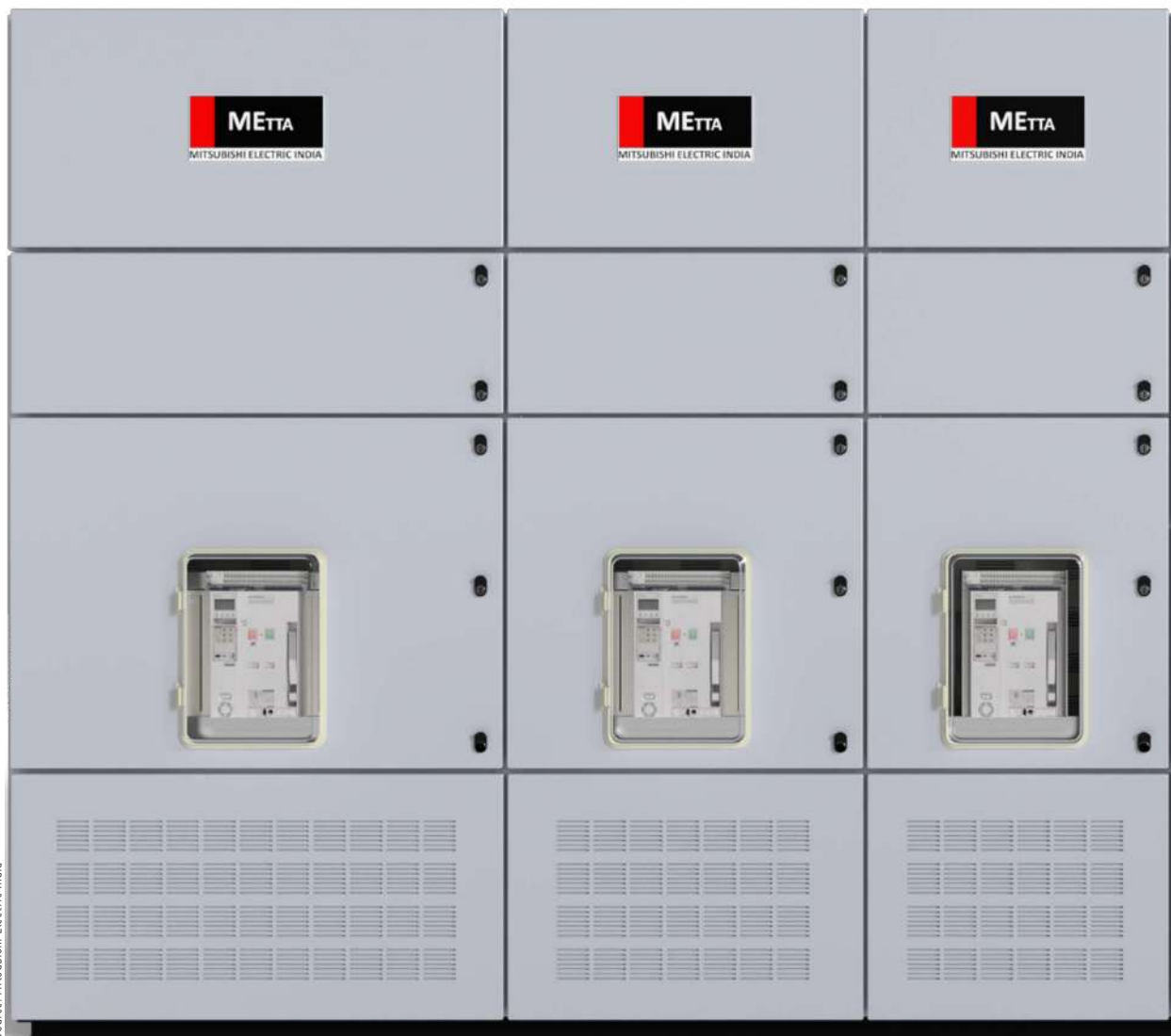
\*Lack of internal engineering support which leads to design and production outsourcing for automated assembly - it may be that you are buying much more than is needed.

\*Purchasing large, specialized machining centers when a less sophisticated system that satisfies the need without encouraging over-production to assure the investment payback. It is critical that we do not put too much money into one piece of equipment. If you look at Toyota, we do not see big machining centers there, what we see dedicated pieces of equipment at the spot doing a particular task.

### **Checklist for Adapting New Technology**

Carefully ration your investments so they support your needs. Know your production processes and keep the application of automation targeted on simplicity of design. Create technology adoption teams that are cross-functional that include non-technological users to assure adaptation of recommended systems as well as pragmatic introduction of these capabilities. Identify the pain points in your production systems where adaptation of technology will give tangible benefits; do not get fooled by the hot application or technology of the day when buying systems. Take the time to really investigate and ensure that is right for your application processes in production. Plan carefully the sequence of technology introduction and pay attention to the needs to have synchronicity in the flow of materials with the flow of the ordering information system. If these flows become discontinuous then failure will result. 

**The principle should be let the machines do what human operators consider to be difficult, demeaning or demanding.**



Source: Mitsubishi Electric India

# IT'S ALL ABOUT POWER

Power switchgear and control gear assemblies are critical for safe power distribution system. A look at Mitsubishi Electric's low-voltage power switchgear and control gear assembly METTA that takes into account present and future power system requirements, and is well-favored in most sectors...

GOPAL JHA  
Senior Manager –  
Marketing  
LV Switchgear &  
Energy Monitoring  
Solutions  
Factory Automation &  
Industrial Division  
Mitsubishi Electric  
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**S**afe and reliable power distribution system is an important aspect of India's growth and development. Power switchgear and control gear assembly ensures protection and safety of installations and personnel against various faults, thereby playing an important role in increasing productivity and energy efficiency.

### Control gear assembly makes automation easy

In a Process industry, these Switchgear assemblies protect power cables and internal sensitive components related to machine and process automation. Smart Panel Solutions available under these assemblies not just help to effectively monitor and control machines, motor starters, and various other processes in-

side an industry, but also facilitate monitoring of energy consumption and its management. The related information can be viewed at various smart platforms. The 'Smart Cities' and 'Make in India' initiative by the Government of India aims to make India a hub of global manufacturing. It is expected to drive demand for switchgears as more factories will come up in the near future.



Various other schemes like Digital India, Integrated Power Development Scheme, Deen Dayal Upadhyaya Gram Jyoti Yojana, and Atal Mission for Rejuvenation and Urban Transformation among others are committed towards the development of modern infrastructure. These collectively have the potential to revamp the existing infrastructure in the country and create demand for quality and reliable electrical equipment including switchgears.

### What is METTA?

METTA is a low-voltage power switchgear and control gear assembly (panel solution for electrical power distribution) that conforms to the latest IEC61439-1&2 standard and is designed

and manufactured utilizing Mitsubishi Electric's state-of-the-art technology, fully taking into account present and future power system requirements.

Some of the salient features offering value to a customer with cost effectiveness include the following:

- Build up to 5000A, 415 V AC Power Control Panel (PCC), and Motor Control Panel (MCC/PMCC/iPMCC);
- Tested short-circuit current (Icw) value up to 100kA for 1 sec;
- Aluminum busbar with special heat dissipation design;
- High levels of internal safety and tested up to Form 4b Type 7;
- Build up to IP 54 degree of external protection;
- No temperature derations up to 55°C;
- Design tested to IEC 61439 - 1&2 with ASTA & ERDA certification;
- Weld-free modular bolted and flat pack enclosures.

Modular construction enables modification in panel shell on-site during or after execution as per site conditions.

### How does METTA work?

#### Improves Energy Efficiency:

With its excellent heat dissipation design, circuit breakers can be used up to rated diversity factors, and hence deratings are not required. This optimizes CAPEX as well as OPEX adding to overall efficiency.

#### Optimizes Motor Performance:

It reduces motor burnouts and channelizes protection and compliance in motor.

#### Enhances Control and Monitoring:

Integrating with Mitsubishi Electric's advanced switchgear and automation products, METTA facilitates monitoring and control of energy consumption, breaker status, diagnostics.

#### Improves Smart Grid Integration:

METTA enables seamless integration with energy management and control systems (EMCS) and distributed control systems (DCS).

#### Maintains the Installation:

Modular construction, safe and smart switchgear products backed by powerful design software ensures continuous power to the installation, helps in planning timely maintenance and prevents unwanted shutdowns and maintenance costs.


#### Reduces Lead Time:

From ordering to delivery, METTA takes very less time. Due to weld-free, fully modular and bolted construction, any modification can be accommodated instantly, reducing overall lead time of panel delivery, significantly.

#### Benefits of METTA power switchgear panel

METTA's design has been verified and tested in accordance with the latest IEC standards with two of the top-level testing agencies. It comes with immense flexibility in construction and transportation, making handling easy for the customer. Its technical specifications are very well suited for the Indian conditions. From standard distribution panels to smart architectures, supporting connectivity to digital platforms, all can be achieved with METTA. It is integrated with Mitsubishi Electric's world-class smart switchgear products that ensures safety of personnel and installation. Its flexibility, modularity, user-friendliness, safety, and reliability realize site-specific modifications easily.

#### Wider demand for METTA

The demand for METTA is from all sectors including airports, high power consuming industries, data centers, residential and commercial buildings, data government utilities, Automobile industry, hotels, and hospitals. 

**METTA is integrated with Mitsubishi Electric's world-class smart switchgear products that ensures safety of personnel and installation. Its flexibility, modularity, user-friendliness, safety, and reliability realize site-specific modifications easily.**

# CONNECTING MATTERS

La Fondation Dassault Systèmes launched an innovative virtual Industry-Academia Connect Program, 'ConnectNext Conference'. An attempt to empower students to be future-ready, the conference showcased exemplary state-of-the-art student projects. Highlights...



**T**o address the talent readiness and employability challenges and help students become 'future-ready', La Fondation Dassault Systèmes recently launched its virtual conference 'ConnectNext Conference,' a committed program to create a vibrant industry-academia ecosystem. It is a unique platform to demonstrate emerging talent from Indian engineering colleges to industries across the country. The conference showcased emerging engineering talent through student projects demonstrating their engineer-

ing knowledge and adoption of upcoming technologies.

### Showcasing young talent

The virtual conference served as a conduit for engineering industries to witness 'future-ready' young talent, which is raring to work on the challenges of the future. It kicked off with a plenary session showcasing exemplary state-of-the-art student projects like 'Pavan Mitra' by Vishwakarma Institute of Technology-Pune; 2-Seater Solar Car 'Dream to Reality' by Nagesh Karajagi, Orchid College

of Engineering and Technology-Solapur; and Multi-Nozzle Pesticide Sprayer for Agriculture by Sanjivani College of Engineering, Kopergaon.

The program aimed to address 'Employability and Talent Readiness' challenges by helping students to be ready for the future equipped with a sound engineering base and a willingness to embrace and get comfortable with the upcoming technologies.

One of the main highlights of the ConnectNext Conference was the virtual playground where 100 innovative projects selected

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## IMPACTFUL STUDENT PROJECTS

### **Pavan Mitra - Harnessing the power of the wind**

A tremendous amount of wind energy is available in the world 24x7. However, a minuscule amount of this energy is utilized for generating power. 'Pavan Mitra' from Vishwakarma Institute of Technology, Pune, is a power generation solution for individual households that uses wind energy. It has a modular design comprising an array of mini wind turbines, which can be fitted as balcony or terrace railings and can be assembled based on the space available. 'Pavan Mitra' involves the design and development of a vertical axis mini wind turbine housed in a block called 'Pavan Brick'. These blocks can be assembled like Lego blocks to create an energy generator tower called 'Pavan Mitra'.



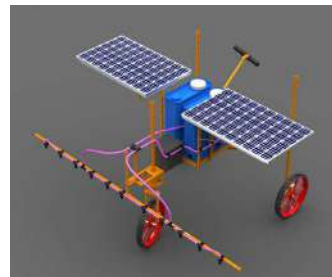
### **Dream to Reality - Two-Seater Solar Car**

The aim of this project by Nagesh Karajagi, Orchid College of Engineering and Technology, Solapur, was to develop a low-budget, high-performance two-seater solar car. The chassis of the vehicle is designed in such a way that it contains a well-triangulated structured format for transmitting stresses induced for one member to the other member so that the stress flows in a manner that addresses safety and ergonomic constraints of passengers. The project is one of its kind as the vehicle runs 100 percent by utilizing solar energy (40% on the road and 60% from the solar panel station charging). The braking, steering, and suspension system is provided for human comfort.



### **Multi-Nozzle Pesticide Sprayer**

Pesticide spraying is the most required process in the agriculture sector that makes for 15 percent of India's economy. Hence, there is a dire need for solutions that can make the process less labor-intensive. The team at Sanjivani College of Engineering, Kopergaon, has designed a product, which is capable of spraying pesticide more efficiently using multiple nozzles, with adjustable height for nozzles, and has the ability to run on solar power with an electric driver. Besides, the product can be produced on a rural level by any technician which will improve the rural economy as well.



One of the main highlights of the Con-nectNext Conference was the virtual playground where 100 innovative projects selected by technical experts from the colleges across India were showcased in virtual booths.

by technical experts from the colleges across India were showcased in virtual booths. The industry visitors had an opportunity to witness these projects and also interact with the concerned students over interactive chat sessions.

### **Thought leaders unite**

The plenary session of the conference was addressed by thought leaders from the

industry, academia, government agencies, French embassy and La Fondation Dassault Systèmes including Chief Guest Venkatesh Natarajan, Chief Digital Officer & CIO, Ashok Leyland; Guest of Honor Dr Deepak Kumar Hota, Chairman & MD, BEML; Dr Neeraj Sharma, Secretary, Technology Development Board, Government of India; Prof Subhasis Chaudhuri, Direc-

tor, IIT Mumbai; and Olivier Fudym, Science and Academic Attaché, Western Region. Also present were Sudarshan Mogaale, India CEO, Dassault Systèmes Solutions Lab; Deepak NG, Managing Director, Dassault Systèmes India; and Thibault DE Tersant, Senior Executive Vice President, Dassault Systèmes & Honorary Chairman, La Fondation Dassault Systèmes India. 



Source: IMTMA

## PRODUCTIVITY LEADS TO PROFITABILITY

With the aim to continue its endeavour of supporting the cause of productivity in the Indian manufacturing industry, the Indian Machine Tool Manufacturers' Association (IMTMA) organized its 14<sup>th</sup> edition of the National Productivity Summit (NPS) virtually on December 18 - 19, 2020. Highlights...

**N**otwithstanding the current turbulent times, the Indian Machine Tool Manufacturers' Association (IMTMA) carried on its tradition of organizing its annual National Productivity Summit (NPS) to put the spotlight on some of the finest practices in the Manufacturing industry that have helped achieve improved process performance and enhanced productivity. The virtual event showcased these practices in manufacturing through enriching keynotes and live case study presentations.

### Good times ahead

Addressing over 1,000 professionals who participated virtually from across the country, Indradev Babu, President, IMTMA, in his welcome speech,

noted that focused efforts in improving productivity hold the key for enhancing and sustaining competitiveness in the Manufacturing Industry. He pointed out that India's Manufacturing industry is regaining its momentum in the third quarter of FY 2020-21. Industries have got much-needed boost with the Cabinet approving Production Linked Incentives (PLI) worth ₹1.46 lakh crore for 10 sectors including Automobile and Textiles.

In his keynote address on 'Managing Breakthrough Change for Productivity and Profit', Dr Gregory Watson, Chairman, **Business Excellence Solutions**, said that breakthrough changes in any industry are game-changers and technology

provides the largest disruptive force in the industry today.

Vipin Sondhi, Managing Director & CEO, **Ashok Leyland**, in his keynote address on 'Innovation to drive Productivity in Indian Manufacturing' presented that the Indian Automobile industry is one of the finest examples of developing a Manufacturing industry through Government-led policy interventions and industry-led private investments. He stressed that India has an opportunity to raise its manufacturing competitiveness and become a supplier of choice not only for its large consuming class but also for global markets. This could happen if the Manufacturing industry focused thoroughly on Global Quality, Technology

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Leadership, Concurrent Engineering, Cost Optimization, Agility and Capacity Building.

### Spotlight on innovations

Leading manufacturing companies such as Bharat Heavy Electricals Ltd (BHEL), Brakes India, Dynamatic-Oldland Aerospace, Faiveley Transport Rail Technologies India, Hero MotoCorp, Indo MIM, Mahindra & Mahindra, Tata Hitachi Construction Machinery, TVS Motor Company, Yuken India presented their case studies over the two days of the event.

The summit also featured presentations on productivity improvements in the SME sector. Under this, Adler Mediequip and Khutale Engineering presented their case studies and contested for the IMTMA - ACE Micromatic SME Productivity Championship Award 2020.

**BHEL** was the first to make its presentation on 'Quantum leap in productivity in gas cutting with edge preparation of 1400mm and 10m long pipes'. A rotator-based positioner has been implemented for continuously rotating the pipes to improve productivity, safety and ergonomics.

**Dynamatic-Oldland Aerospace** made its presentation on 300 percent ramp-up of helicopter kits in a short time. The company had to gear up for a spurt in volumes from BELL and increase capacity from 3 helicopter kits per month to 9 kits per month at a short notice.

From the SME sector, **Adler Mediequip** made a presentation on 'Low-cost Automation in Rasp Teeth Punching Process'. The company manufactures medical implants. When an implant is placed in the Femoral hip joint to provide support to the largest load-bearing bone in the thigh, the cavity needs to be filed/rasped to match the shape of the implant. The

### Winners of the Productivity Championship

- **FIRST PRIZE: Indo-MIM Pvt Ltd for presenting - Automation & Robotics, a case study on reducing manual intervention to boost productivity in MIM (Metal Injection Molding) parts.**
- **SECOND PRIZE: TVS Motor Company for presenting - Cobots on the fly inspection; a case study of I4.0 implementation for quality.**
- **THIRD PRIZE: Mahindra Group for presenting Foundry productivity improvement for Crankcase casting through improvements in Core making.**
- **SME PRODUCTIVITY AWARD: Adler Mediequip Pvt Ltd for presenting - Low-Cost Automation in Rasp teeth punching process.**

capacity could thus be raised from 1-1.5 to 3-3.5 Rasps/shift.


**Faiveley Transport Rail Technologies** made a presentation on 'Capacity doubling and significant cost savings by using Value Stream Mapping in Panel Manufacturing'. The company is the sole supplier of E70 brake panels for Indian Railways. To address an increase in demand, it was required to improve its process. After a systematic process of VSM (Value Stream Mapping) and application of MOST (Maynard Operation Sequence testing) techniques, several improvements were done in the bottleneck area.

**Khutale Engineering** made its case study presentation on 'Many Kaizens add up when an SME embarks on a Zero Effect Zero Defect journey'. It is a 'lean' supplier of sheet and tube parts, and assemblies for the White Goods' industry. For an all-around improvement in its operations, it embarked upon Zero Effect and Zero Defect journey in letter and spirit. It did the extensive deployment of 5S, Safe practices/conditions, Poka Yoke, conservation measures and addressed productivity issues by the use of Digital Read Out and improvement in the fixture, among other measures.

'Plating process change leads not just to productivity improvement but is also a step forward in I4.0 implementation' was what **Brakes India** chose

to talk about. The company was facing major quality issues due to black dots on plated parts, leading to rejections and customer complaints. It addressed the problem by changing the Zinc Barrel Plating process from an acidic process to an alkaline one. It could achieve the quality target, improve productivity by 20 percent, avoid significant Capex incurrence, and implemented bar code traceability in line with I4.0. 'Cobots on the fly inspection', a case study on I4.0 implementation for quality was done by **TVS Motor Company**. It was faced with a pressing need to improve the quality appeal, coupled with the capacity rise. The company implemented AI-backed, automated, Cobot-manuevered, digital camera-based 'in-line' 100 percent inspection from Left Hand (LH) and Right Hand (RH) sides of a two-wheeler assembly line. Thus, its capacity increased from 1,000 to 1,800 products/shift with a much better assurance of quality.

### Wrap up

National Productivity Summit 2020 concluded with the IMTMA - ACE Micromatic Productivity Championship Awards 2020 Presentation Ceremony. The award acknowledges outstanding efforts from the short-listed case studies of companies that have excelled in achieving superior performance. 

**NPS 2021 received an overwhelming response from over 1,000 professionals who participated virtually from across the country.**

James Huang, Chairman, TAITRA (3rd from left) and Alex Ko, Chairman, TAMI (2nd from left) along with Taiwan Machine Tool industry representatives at the Global Press Conference.



Source: TAITRA

## TIMTOS 2021 HYBRID – A BLEND OF VIRTUAL AND PHYSICAL

Taipei International Machine Tool Show (TIMTOS 2021) will make its debut in a pioneer format as the world's first hybrid machine tool show post pandemic from March 15-20, 2021. Organized by TAITRA and TAMI this edition of the show will mark its 28<sup>th</sup> year physically at Taipei Nangang Exhibition Center and the World Trade Center Hall 1, as well as virtually provide a 24x7 online experience.

Recently, the show organizers Taiwan External Trade Development Council (TAITRA) and Taiwan Association of Machinery Industry (TAMI) held a global press conference and CEO Panel discussion to give an outline of this Hybrid Exhibition. In his opening remarks, James C F Huang, Chairman, TAITRA, said that the biggest event in the global Machine Tool industry in 2021 will be TIMTOS 2021 Hybrid, which will be hosted physically and virtually simultaneously. Talking of the displays at the show, he said that TIMTOS 2021

will witness a transformed look from the traditional CNC to Smart Manufacturing. He elaborated that presently the focus is on integration and remote collaboration of both software and hardware.

### Show Size and Format

The exhibition is slated to house around 6,000 booths at Taipei Nangang Exhibition Center Hall 1 and Hall 2 and the World Trade Center Hall 1. In the virtual edition of the show, around 1,000 participants are expected to showcase their products. The online for-

mat will replicate the concept of the physical exhibition hall space and will break through the time difference limit to provide a 24-hour exhibition and negotiation experience. In addition, the innovative service of On-site Guide for Online Visitors will be applied in the procurement conferences during the exhibition to accurately match online buyers purchasing requirements.

Alex Ko, Chairman, TAMI, also pointed out that the capability of Taiwan's pandemic prevention is the key to attracting leading manufacturers

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from home and abroad to join TIMTOS. Included this year are not only domestic makers such as Fair Friend, Victor Tai-chung, YCM, Dah Lih, Hiwin, Syntec, and LNC, but also foreign high-profile companies such as DMG MORI, FANUC, MAZAK, TRUMPF and Siemens. The exhibition is an important platform to showcase the achievements of Taiwan's Smart Machinery and Smart Manufacturing.

### **Turning Challenges into Opportunities**

During the CEO Panel discussion, Taiwan industry veterans from the Machine Tool industry shared their thoughts on 'Restructuring for Smart Machine Industry in Post Pandemic Era'. Industry experts such as Jimmy Chu, Chairman, FFG; Eric Y T Chuo, Global Chairman & CEO, HIWIN Group; and Chang Yu-Jeng, Chairman, CFMI, affirmed that the launch of TIMTOS Hybrid will bring a positive significance to the global Machine Tool industry. Especially it can boost confidence in Taiwan Machine Tool industry that suffered in the first half and recovered somehow in the second half of the last year.

### **Fair Friend Enterprise Group (FFG)**

Speaking on the strategy for deployment and future of the Machinery industry, Jimmy Chu, Chairman, FFG, explained that the demand for machinery is still huge and Taiwan's exports are increasing. The biggest buyer of Taiwanese machine tools is China. The US and Turkey are making a comeback, but Europe is still worst hit by the pandemic. The sales of FFG-owned five brands have risen by 37 percent but have suffered in exports. A rise in export is expected as India and South Eastern countries

are bouncing back. The company has suffered most severely in Europe (Germany, Italy, Switzerland, and Hungary) especially because Aerospace and Automobile industries are being affected. The initial signs of global revival with increase in foreign investments and orders from the Automobile industry offer hope in terms of opportunity for the Taiwan Machinery industry. He further elaborated on Industry 4.0 and 5G technologies and shared that in 5G, six countries from the EU and Institute for Information Industry (III) from Taiwan are working together. FFG also benefits from such cooperative relationships and is looking forward to providing its EU partners with 5G and related manufacturing facilities.

### **HIWIN Technologies Corporation**

Eric Y T Chuo, Global Chairman & CEO, HIWIN Group, shed light on the opportunities from EVs and what it means for the industry in Taiwan. He said that to meet the growing requirement, it is important to keep abreast with the latest trends and develop upgraded grinding machines, server technologies, ball bearing components, and other solutions.

### **Chin Fong Machine Industrial (CFMI)**

On innovation and development of Smart Manufacturing, Chang Yu-Jeng, Chairman, CFMI, said "We do believe that a smart system will be able to realize Industry 4.0 on its IoT monitoring system - iForming. It is a smart system to monitor the manufacturing process, helping clients from all over the world in machinery maintenance, production, and quality control."

During the pandemic crisis, the company faced challenges in the supply chain and public transportation. The suppliers were

unable to produce enough spare accessories. Due to the strong resistance in using public transportation post Covid-19 lockdown, the demand for automobiles and bicycles have increased. Since the lockdown forced work-from-home options, the demand for semiconductor and electronic components is also growing.

Overall, the pandemic has shed a new light on the prospects and operations of enterprises, and has changed the way the market and people work or behave. The Machinery sector must, therefore, reconsider how to take advantage of the circumstances.

Yu-Jeng further elaborated that the Automobile segment is one of the largest machinery markets and currently focuses on new energy vehicles. The EV's motor require a lot of steel/steel plates and different kinds of battery (lithium batteries). Keeping this in mind, CFMI has been working to provide the best presses and large manufacturing production lines (sheet metal and other large-scale parts) for automobile factories to manufacture thin steel plates and lithium batteries. With the rise in growing demands of presses or other large-scale machinery tools, the company's three production bases (one is in Taiwan and two of them in China), plans catering not only to Chinese but global markets too.

### **Optimistic Note**

Speaking on hosting the exhibition, Huang emphasized on TAITRA's experience and leveraging of the latest digital technologies to offer the best experience and service by integrating onsite and online services in collaboration with TAMI. The Taiwan industry representatives affirmed that its launch would give the global Machine Tool industry a positive impetus. 

**TIMTOS 2021 Hybrid will witness a transformed look from the traditional CNC to Smart Manufacturing, focusing on integration and remote collaboration of both software and hardware.**

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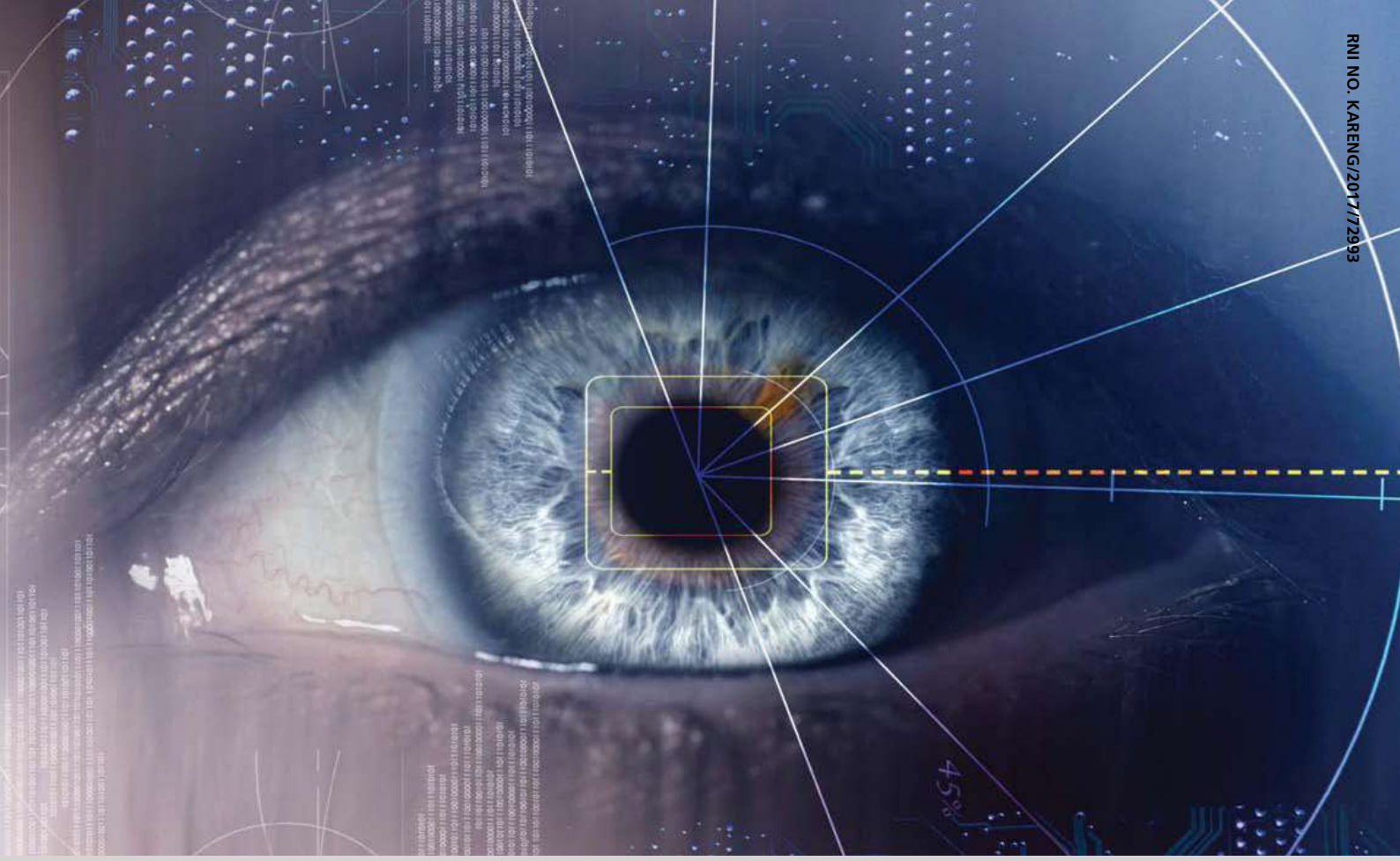
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