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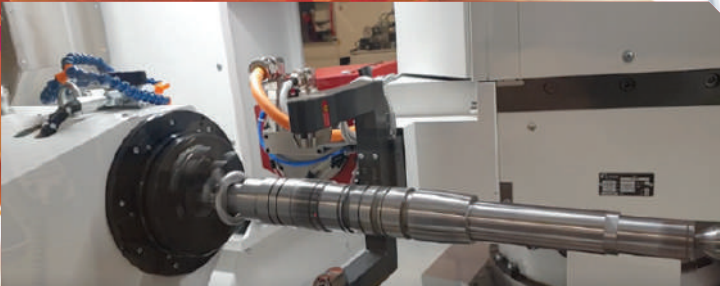


IN ALIGNMENT WITH CHANGING TIMES



VIEWPOINT
In alignment with Changing Times

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LASER MEASURING TECHNOLOGY
A Matter of Precision



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PRAVIN SARAF
President, Operations
Endurance Technologies Ltd

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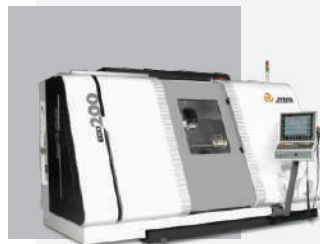
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IMPRINT

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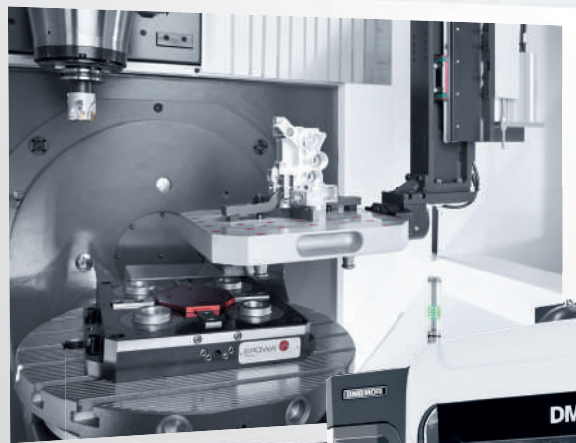
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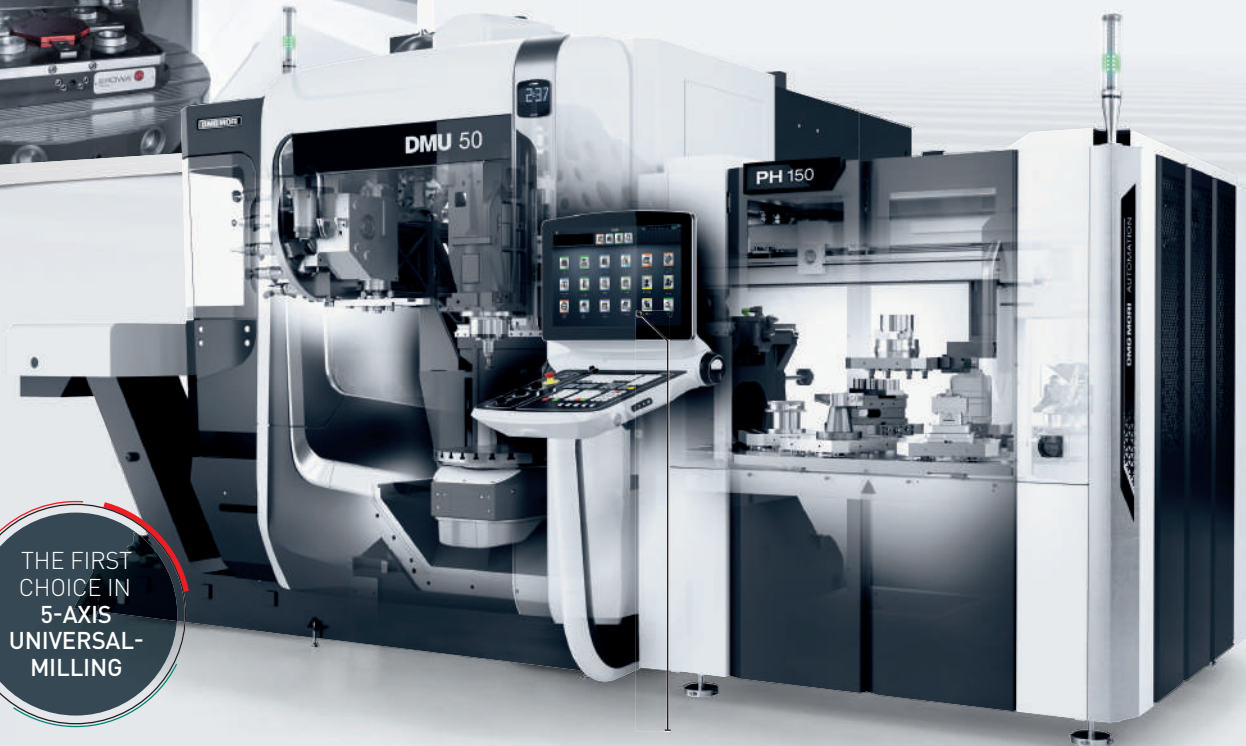
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REBUILDING THE MANUFACTURING INDUSTRY



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

Dear Readers,

India's Manufacturing industry is regaining its momentum after losing ground during the first and the second quarter of FY 2020-21. The air of uncertainties which engulfed industrial activities are now receding with the easing of restrictions.

India's manufacturing PMI (Purchasing Managers' Index) rose to 56.8 in September 2020 as against 52 in the preceding month of August. It was the fastest pace of growth since 2012, as per data analytics from IHS Markit. The research has also revealed an upturn in sales with a renewed expansion in fresh export orders, perhaps the first positive sign since the outbreak of the disruptive pandemic.

Presently, there is an upsurge in Automotive and Consumer Durables segments. There is a need to explore demand from multiple sectors, maximize production, enhance exports and upgrade indigenous capabilities. The disruptions in global supply chains and trade flows make it imperative for the Manufacturing sector to explore new regions and markets, many of which have hitherto remained untapped.

The pandemic and economic slowdown have perhaps paved way for introspection, innovation and indigenization, which is the essence of Aatmanirbhar Bharat. The focus is shifting towards local manufacturing in Tier 1, Tier 2, and Tier 3 cities for which the Machine Tool industry needs to establish synergies and reskill its workforce. India needs to establish a conducive environment for global manufacturing industries to set up manufacturing facilities, enter into joint ventures with local industrial units and enhance exports. As this happens, the country will become a favorite manufacturing destination.

In sync with the ongoing times, Indian Machine Tool Manufacturers' Association (IMTMA) is connecting with the Manufacturing industry through 'IMTEX Connect 2021', a virtual show, from January 21 - 27, 2021. 'IMTEX Connect' will enable businesses to connect and collaborate with customers and open up new opportunities in a virtual environment. IMTMA will thereafter organize 'IMTEX 2021 & Tooltech 2021' from June 17 - 23, 2021 at Bangalore International Exhibition Centre, Bengaluru

I do hope these initiatives from IMTMA will provide opportunities for the manufacturing fraternity to interact and find new avenues for business growth.

In sync with the ongoing times, IMTMA is connecting with the Manufacturing industry through 'IMTEX Connect 2021', a virtual show, from January 21 - 27, 2021. The show will enable businesses to connect and collaborate with customers and open up new opportunities in a virtual environment.



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

Businesses in India are now regaining their lost pace and perhaps will move towards the pre-Covid-19 days much earlier than expected. The resilience shown by the Manufacturing industry will enable it to soon come back to normalcy.

Dear MMI Readers,

Indian Machine Tool Manufacturers' Association (IMTMA) is glad to bring to you the September - October edition of its Modern Manufacturing India (MMI) magazine. Many thanks for your continued interest in the same.

Businesses in India are now regaining their lost pace and perhaps will move towards the pre-Covid-19 days much earlier than expected. The resilience shown by the Manufacturing industry will enable it to soon come back to normalcy.

Industries have geared up to manage health and livelihood challenges and are working towards expanding their footprints through increased capital utilization, upskilling their workforce and using digital platforms the best possible way wherever possible.

Our MMI editorial team, with its rigorous research and analysis, endeavors to bring to your table up to date information on the developments in the Manufacturing industry. This month's edition focuses on mobility and automotive manufacturing. Read on for a quick peek into an opinion piece by IMTMA on how the Manufacturing industry is geared up for recovery and growth.

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

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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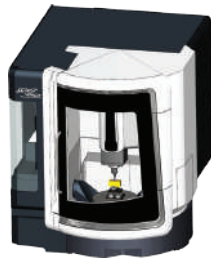
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Number of Machine Tools

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Weekly Machining Hours

80

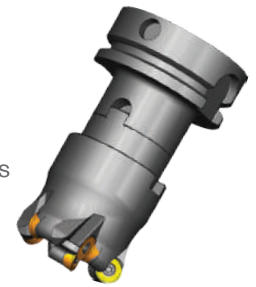
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Soumi Mitra

SOUMI MITRA
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REFOCUSSING ON WHAT REALLY MATTERS

A couple days ago, I received a call from a global HR consultation firm offering services for tailoring video resume to suit the job market requirements in the pandemic era. The executive chuntered on about the 'new normal' CV that can attract eyeballs of prospective employers post-Covid-19.

I was informed that the key focus of a post-pandemic resume should be on digital skills, entrepreneurial mindset, resilience, multitasking, virtual presentation skills, emotional intelligence, strong online presence and so on. The monotonous 'Objectives and Goals' in the traditional resume are getting replaced with new formats highlighting one's capability to quickly adapt to the new, unprecedented environment.

As I ponder on the changes around us and our reaction to things that we had never prepared for, I am constantly reminded of a saying of German

essayist Friedrich Nietzsche – “The snake which cannot cast its skin has to die. As well the minds which are prevented from changing their opinions; they cease to be mind.” This simply means that a mind which cannot change itself is not a mind.

“It is not the strongest or the most intelligent who will survive but those who can best manage change.”

– Charles Darwin

We have done well I realize. We have suffered various losses in a variety of amounts, but what we have gained is the assurance that we can adapt to the changes and that too at a rattling speed.

It is our privilege that a few leading industry legends have shared their views and information on how manufacturing companies are re-strategizing to thrive in these times of uncertainties. The present MMI issue is woven around the fact that the solutions we seek are always buried in the challenges we face. And learning to embrace the present moment leads us to finding solutions.

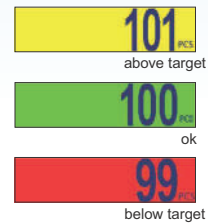
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BOOSTING MANUFACTURING GROWTH

Unlock 5.0 has brought about some respite to the manufacturing players, with it triggering growth of the industry. Gradually recovering from the severe setback suffered from Covid-19 lockdown, the industry looks forward to the opportunities ahead...



Source: Magic Wand Media

Industries have witnessed some of the most challenging times in recent memory with the onset of the coronavirus pandemic. The untoward disruptions in lives and livelihood activities perhaps forced the think-tanks to strategize the means of achieving goals. Industries are showing strong resilience in the face of crisis to tide over the shackles of uncertainty by adopting innovative operational, functional, and business strategies. Normalcy is being restored as industrial activities pick up strongly in this fifth phase of unlocking (Unlock 5.0).

As this happens, India's GDP, which shrunk by almost 24 per cent, is expected to recover some of its lost ground.

Providing support

The Government of India, on its part, is providing thrust to local manufacturers in Government procurements, imposing restrictions on select items, and expanding negative list of items for curbing imports across sectors. Perhaps this gives Indian manufacturers significant opportunities to substitute foreign products with indigenous ones. Moving forward, technology development and acquisition

will be crucial for developing products and systems that are at par with global products. Furthermore, technology development will happen when there are adequate schemes for R&D, funding support and, more importantly, focussed efforts by the industry and the academia. As this happens, India will become self-sufficient in advanced and high-technology products and systems.

The novel coronavirus outbreak has perhaps triggered a tectonic shift in purchasing priorities among customers as manifested in recent upticks in sale of two-wheelers and consumer



CONCURRENT SHOWS



IMTEX 2021 & Tooltech 2021 Digital and Physical Exhibitions

In the wake of the prevailing uncertainty that the world is facing due to Covid-19 outbreak, Indian Machine Tool Manufacturers' Association (IMTMA) has arranged its flagship 'IMTEX 2021 & Tooltech 2021' online exhibition from January 21 - 27, 2021.

The physical exhibition will happen from June 17 - 23, 2021 as announced earlier at Bangalore International Exhibition Centre (BIEC) in Bengaluru.

Post Covid-19 lockdown, the economy and the industry are getting back to the recovery mode, while overcoming challenges in demand, supply chain, safety norms, liquidity issues, etc. It is also recognized that most international exhibitors at IMTEX are finding it challenging to participate in full measure in the current scenario in light of the travel restrictions and health and safety issues.

Shifting the physical show to June 2021 will give room for the Machine Tool and Manufacturing industries to recover, the economic situation to improve, and allow the exhibitors to participate with a stronger resolve with new products and innovative solutions at IMTEX 2021 and enhance business opportunities for customers and the value chain.

goods. The Agriculture package announced by the Government of India under 'Atmanirbhar Bharat' initiative and good monsoon has worked favorably for various industries. The easing of restrictions with Unlock 5.0 is expected to propel this further with better movement of goods and services from one state to another.

Visible signs of recovery

Reflecting on the current developments, Indradev Babu,

President, Indian Machine Tool Manufacturers' Association (IMTMA), said that industries are recovering and we have noticed increased demand, production and healthy orders in the second quarter. There are green shoots, definitely, with Agriculture and Rural Consumption emerging as bright spots. In the Auto sector, vehicle sales which had been plummeting in the recent past are showing signs of recovery. India's leading car manufacturers

have reported an uptick in the vehicles and tractor sales. Leading two-wheeler manufacturers have reported good sales over the recent months in semi-urban and rural areas. Firms are continuing their efforts to drive sales and improve orders substantially. Babu reiterated that the key is to build a confident and self-reliant Manufacturing industry that can take a center-stage in global manufacturing.

Towards holistic growth

Expressing his views, V Anbu, Director General & CEO, IMTMA, said that measures such as production linked incentives for Electronics, Medical and other sectors, establishment of dedicated medical, defence and machine tool parks in collaboration with various State Governments, easing of FDI, labor reforms, etc. will usher integrated and holistic growth. He also pointed out that India has an edge over other countries as it has a vast pool of young, English speaking and experienced technical manpower. For realizing the vision of Aatmanirbhar Bharat, the Manufacturing industry needs to digitalize its activities, optimize its manufacturing processes, adopt the latest technologies and develop competencies to take advantage of the Government's thrust on indigenization and localization.

Technology development will happen when there are adequate schemes for R&D, funding support and, more importantly, focussed efforts by the industry and the academia. As this happens, India will become self-sufficient in advanced and high-technology products and systems.

International Machine Tool & Manufacturing Technology Exhibition



CONCURRENT SHOWS



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FORMS & GEARS PARTNERS WITH SANDVIK

The partnership offers cutting-edge turnkey and digitization solutions to clients in India, South East Asia, Australia and New Zealand.

Swedish giant Sandvik Coromant has partnered with one of Asia's oldest and largest fixture building companies Forms & Gears to offer clients cutting-edge engineering solutions that reduce cycle times, increase productivity, enhance quality and reduce operator dependence.

The two companies have inked an MoU that would cover India, South East Asia, New Zealand and Australia. Forms & Gears, which was founded by RT Varghese an engineer from IIT Kahargpur, has been in the fixture building business for 48 years. The company has a world-class, state-of-the-art fixture building facility situated in Guindy, Chennai. The company supplies fixtures to the world's leading companies in Automobile, Machine Tool and other sectors, in ten countries across the world.

Forms & Gears is a joint venture with Bangalore-based public limited company ASM Technologies, a company specializing in Engineering Design, AI, ML and Engineering related IT. Forms & Gears and ASM have 750 design engineers, making them one of the strongest global Engineering Workholding companies.

Sandvik Coromant is a global leader in cutting tools headquartered in Sandviken, Sweden and is represented in more than 150 countries with around 7,900 employees worldwide. It is part of the business area Sandvik Machining Solutions within the global industrial group Sandvik. In 1942, Sandvik Coromant began in a modest shop in Sandviken and has over time transformed into a global industry leader. At the very core of Sandvik's DNA lies a passion for engineering and pushing boundaries, always in close relation with customers. The company has been very successful in



Source: Forms & Gears

"The two products perfectly sync with each other to offer the customer an array of various outcomes that would give insights into a number of areas that could bring down costs, improve productivity and efficiency, increase knowledge sharing and collaborative working."

Reji Varghese
Managing Director
Forms & Gears

introducing almost six new products to the market every day.

Vinay Deshpande, Vice President, Strategic Relations, Sandvik Coromant, who's been with the company for over 25 years, says, "Sandvik Coromant has been operating in India for the last 62 years and has its head office, production units and the Sandvik Coromant Tech Centre in Pune. As a technology leader, we keep challenging our own technology. We have around 40,000 cutting tool products and we launch 3,000 products every year. Fifty percent of Sandvik Coromant's turnover comes from the products that are less than five years old. One of our biggest strengths is working in turnkey projects with Machine Tool manufacturers and our strategic partner Forms & Gears by offering



Source: Sandvik Coromant

"One of our biggest strengths is working in turnkey projects with Machine Tool manufacturers and our strategic partner Forms & Gears by offering Fixtures. With this approach, we will be able to offer complete solutions to our customers in the value chain with Single Point Contact."

Vinay Deshpande
Vice President, Strategic Relations
Sandvik Coromant

Fixtures. With this approach, we will be able to offer complete solutions to our customers in the value chain with Single Point Contact."

Both Sandvik and Forms & Gears have also invested considerable time and money into Industry 4.0 products. Forms & Gears' Industry 4.0 solution approaches IoT from the aspect of the Fixture and Sandvik's CoroPlus has a comprehensive solution for the connected machine shop. Reji Varghese, Managing Director, Forms & Gears, says, "The two products perfectly sync with each other to offer the customer an array of various outcomes that would give insights into a number of areas that could bring down costs, improve productivity and efficiency, increase knowledge sharing and collaborative working."



CLARITY OF VALUE CREATION

Amongst the growing uncertainty, we have all been emphatic about ‘change being the only constant’ and ‘the rate of change getting faster’. Getting used to this in our businesses, accepting it as the new normal, and building a true competitive advantage in such an environment is something most of us are grappling with. We focus on the more efficient tools we have and count among them - new technologies, different business models, extensive supply chains, digital communications, diverse talent, focused training, new markets, etc.

An important ingredient to build an effective competitive advantage is inspiring and enabling people on the ground and at every level of leadership. A focused approach with inspirational interventions by a strategic leadership helps individuals and, thus, teams become impactful in seeking a bigger, holistic purpose leading to a meaningful change.

If we look closely at most organizations, given the challenging environment of the day, we can see that creation of value happens across the edges of departments or functions and also to disproportionately limited extents. For example, in machine tool companies’ product or feature developments that create value, the edge may be limited to the Sales & Designs department. In production, the value creation edge may be limited to the Application Engineering & Service department. However, we understand that sustainable performance is not just about unlocking value with a focus on outcomes and results, but also about it being seen holistically across the organization.

An organization’s health and its ability to grow depend on its focus and clarity on whether its people understand their individual value creation roles and see to it that they perform them. They should be comfortable about that being measured and the roles’ impact on the team. The teams, in turn, put out their collective organizational impact on the customer and the marketplace, and enhance the brand.

Companies that offer such clarity of value creation to both individuals and their teams enable and support operational and strategic inspiration. They perform better and grow healthier even in the most uncertain and changing times. These organizations are the ones that outperform and outlive the normally good and well-run ones.

Companies that offer such clarity of value creation to both individuals and their teams enable and support operational and strategic inspiration. They perform better and grow healthier even in the most uncertain and changing times. These organizations are the ones that outperform and outlive the normally good and well-run ones.

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

CONNECTING VIRTUALLY

Taiwan's machine tool industry, with its innovative offerings, will be accessible to everyone across the globe from November 10, 2020, as the Taiwan International Machine Tool Show (TMTS) 2020, hosted by the Taiwan Machine Tool and Accessory Builder's Association (TMBA), has been changed to online exhibition, TMTS Virtual.

Over the past 10 years, with the joint efforts of the government and the industry, Taiwan's machine tools have earned a place in the international markets through their outstanding manufacturing quality and performance. The country's machine tools have been serving as a brand and express the spirit of 'high-tech, precision, innovation, global service, advancement and flexibility' in the international markets.

Establishing a new model of smart manufacturing

The short-chain revolution and the US-China trade war have caused Manufacturing industries to migrate. The previously expected economic recovery was delayed by the novel coronavirus pandemic, which has forced global manufacturing industries to move towards digitalization. Taiwan's machine tool manufac-

turers such as YCM, Goodway and Campro, etc. use IoT technology to transfer real-time information in the workshop including data such as production progress and machine operation status. Advanced applications such as monitoring dashboard and mobile devices are employed to achieve remote control and management (RCM). Their personnel can solve real-time problem without frequently entering the workshop. Also, by browsing split-screen, more machines can be managed with lesser manpower. In addition to RCM, the use of augmented reality (AR) under a 5G technical environment also provides the industry a non-contact management model. Via AR remote, manufacturers' support experts can provide online troubleshooting or repair assistance for the equipment by visual instructions, which can replace physical inspection in the workshop. For

manufacturers, preventative and predictive maintenance not only reduce unnecessary daily maintenance costs, but also improve the inspection accuracy or predict when a production bottleneck or machine failure occurs.

The way to achieve smart manufacturing just does not depend on an unmanned environment. Instead, it requires various intelligent tools and equipment, software, and human-machine interfaces. It also needs to enhance the integration of personnel and automated devices to meet requirements. Nowadays, we are in a special era where establishing a new management model for any manufacturer is especially important. With a solid foundation base, Taiwan's Machine Tool industry has seized the opportunity to quickly transform to smart manufacturing, occupying an important position in the global industrial chain with the advantage of combining the resources of supply chain and the markets. As the Covid-19 pandemic spreads around the world, the Taiwan International Machine Tool Show (TMTS) 2020, hosted by the Taiwan Machine Tool and Accessory Builder's Association (TMBA), has been changed to TMTS Virtual, an online exhibition. TMTS Virtual will commence on November 10 this year and will showcase the latest products, allowing global buyers to interact with exhibitors without any constraint of time zones and boundaries. The virtual show will be held on the website – virtual.tmts.tw.

Taiwan's machine tools express the spirit of 'high-tech, precision, innovation, global service, advancement and flexibility' in the international markets.



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TOOLS FOR TOUGH TIMES

Manufacturing Execution System (MES)-integrated ERP solutions are claimed to be the key to address the changing demands of the manufacturing sector during this unprecedented pandemic situation. Here's knowing why...

India, being the second-largest Covid-19 hit country in the world, has faced a severe disruption across sectors. The unprecedented outbreak of the pandemic has resulted in demand shifts across the various industries including FMCG, Pharma, and Healthcare. The nature of the virus and high contamination threat in public places forced the manufacturers to swiftly change gears, and announce work-from-home policies to handle severe demand fluctuations and unpredictable supply chain disruptions. While manufacturers are adjusting to the new normal of phased and remote workforces, there has never been a greater need for real-time insights from the plant floor to drive innovation and automation of all the facets of injection-moulding production.

To navigate through the current crisis and sustain during the new normal, companies are prioritizing various facets: reduction in production errors, decrease part lead time, enhanced company-wide productivity, improved quality compliance, low-quality losses, and an increase in production.

Now more than ever, manufacturing excellence depends on streamlining operations on the plant floor and throughout the product supply network. However, traditional factory Manufacturing Execution System (MES) solutions focus mainly on the plant floor, with minimal integration beyond the four walls or across business functions. It has become imperative to enable manufacturers to take control of their operations everywhere in the enterprise to coordinate and synchronize people, processes, equipment,

tooling, and materials on a global scale. Early adopters of MES-integrated ERP (Enterprise Resource Planning) can avail of real-time data, the key to creating a strong and fast supply chain with lightning-fast scheduling and pre-defined manufacturing types. It can also cater to the companies with 100 percent accuracy in labeling and electronic mistake-proofing processes.

By harnessing data in the MES-integrated ERP system, companies have real-time insights to drive innovation, ensure the quality that differentiates it from competitors, and enable the agility to address customers' demands for short-notice production. Industries can rely on the MES-integrated ERP system for real-time process and product monitoring, quality management, traceability, and MES to ensure quality while

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India Director &
Head of Enterprise
Solutions
SOLIDWORKS
Dassault Systèmes





Source: Dassault Systèmes

By harnessing data in the MES-integrated ERP system, companies have real-time insights to drive innovation, ensure the quality that differentiates it from competitors, and enable the agility to address customers' demands for short-notice production.

meeting customers' production deadlines and audit requests. It also enables companies with tracking labor, scrutiny material, locating movements, measuring consumption, analyzing wastage on the shopfloor through automated alerts, and manufacturing intelligence.

Made-to-Stock manufacturers and Engineering-to-Order manufacturers have been facing critical challenges in the shopfloor production efficiency which is eroding their profits and underutilizing the resources, leading to negative productivity. MES-IoT tools can play a crucial role in ensuring a seamless transition through these changes.

Born on the shopfloor

During manufacturing, cost and time savings are made on the shopfloor. This is why precise, real-time visibility is a crucial component of the modern manufacturing environment in

production and factory floors. There is a constant need to enhance visibility and control across every aspect of the manufacturing process by monitoring manufacturing data to deliver actionable metrics and analytics to manage costs while improving quality.


In general, the more digitized a company's processes are, the simpler it is to collaborate remotely. Off-the-shelf integrated MES-IoT solutions support the continuation of operations with both the shopfloor and design floor that ideally should be connected for organization-wide visibility to help the key decision-makers at the corporate floor to make informed decisions based on the real-time data to be more competitive in the market.

Real-time actionable data

Real-time data helps in garnering actionable insights into the

efficiency of manufacturing processes based on IoT-based sensors. Moreover, Manufacturing Intelligence analytics enhances the quality and speed of shop-floor decisions. Through real-time insights and automated processes, companies can ensure quality and compliance, maximize productivity, and provide a superior management experience.

MES-IoT can increase the production efficiency of single machines or entire production lines by using advanced analytics to optimize process parameters. The IoT tools analyze the information on all available variables, including production, scheduling, asset condition, and input goods. Real-time data from individual machines get combined with information about the overall production program, allowing companies to optimize subsequent production steps.

This also allows companies to quickly adjust production schedules to account for changes in demand or unexpected supply-chain disruptions amid the Covid-19 pandemic in India while ensuring zero burnout of the existing workforce on the shopfloor. 

MES-IoT can increase the production efficiency of single machines or entire production lines by using advanced analytics to optimize process parameters.

IN ALIGNMENT WITH CHANGING TIMES

Industry players share the means they have resorted to in order to overcome the challenges induced by Covid-19, and offer their two cents on how can India's manufacturing sector bounce back to growth post this trying phase...

Source: Magic Wand Media

The widespread growth of Covid-19 has generated economic hardships across all sectors. However, despite being severely hit by the significant impact of the pandemic, many Indian businesses are showing resilience in the face of this unprecedented adversity. They are showing high preparedness, have made contingency plans for the future, and are ready to make adjustments to adapt to the new business scene. According to HSBC's Navigator report, almost half (46 per cent) of Indian businesses covered under a survey felt 'very strongly' impacted by the pandemic, yet more than half (54 per cent) felt they

were as well prepared as they possibly could be.

This outlook of Indian businesses has spurred us to have a peek into the Indian manufacturing industry, and gauge the economic and operational impact of the pandemic on the players and how they plan to revitalize their businesses. The common denominator among all is a highly optimistic attitude resonating with the above survey. The other is the readiness to adopt advanced technologies as is the need of the hour.

HP's Digital Manufacturing Trend Report attests to the same. It finds that companies are increasingly investing in advanced 3D print-

ing solutions that provide the agility, speed, and flexibility necessary to grow their business and become more resilient in an ever-changing environment.

It adds that manufacturing decision-makers are seeing opportunities for accelerated innovation, and recognizing that 3D printing is uniquely suited for the mass personalization of new products, and by reducing waste, promoting a more sustainable economy.

Following is a round-up, where a few leading manufacturing players have candidly shared their highs and lows owing to the pandemic crisis and their approach in dealing with the same.

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Source: Chiron India Machine Tools Pvt Ltd

“Indian manufacturing is slowly trying to come out and cope with the current situation. Meanwhile, the sector has immense new avenues and opportunities during this period to prepare for and cater to every growth opportunity that the market presents.”

Rajesh T Ghashi
Managing Director
Chiron India Machine Tools Pvt Ltd

Concentrating on core competencies

Since mid of 2019, the Machine Tool business has been seeing a downturn and the Covid-19 pandemic has surely made a larger impact on the overall Machine Tool business. Hence, it was important to re-strategize how we do our business and emerge stronger in the future and concentrate on our core competencies of business keeping in mind the interests of our customers.

The Chiron Group consolidated all the German manufacturing and assembly capacities of Group products in Tuttlingen and Neuhausen o. E. plants, bundling our production capacities in one of the most modern machine tool factories in Europe which we inaugurated last year. These measures will entail cutbacks.

Further, we strengthened the precision and medical technology sector through our takeover of a Swiss company Mecatis which manufactures 5- and 4-axis machining centers for small and micro parts with their patented technology.

We are also further intensifying the successfully launched activities in the field of Additive Manufacturing.

Also, the Chiron Group exited from the turning applications business by the sale of Scherer Feinbau GmbH. Founded in 1978, the company had been part of the Group since 2012 and produced CNC vertical lathes and vertical shaft turning centers at its Alzenau site.

The Chiron Group will thus concentrate on its core competencies of Milling and Mill-Turning in the future along with Additive Manufacturing.



Source: FIBRO India Precision Products Pvt Ltd

“Every downturn has been proven to be followed by an upturn. The recently announced government policies such as the ‘Atmanirbhar Bharat’ and the Labour Reform bill would certainly attract FDI in the Manufacturing sector.”

Vivek Nanivadekar
Executive Director
FIBRO India Precision Products Pvt Ltd

Changing to cope

FIBRO India, a 100 percent subsidiary of FIBRO GmbH, was established in 2008 and started its operations in a rented place and then moved into its premises in 2013. We expanded our second phase of operations for manufacturing Rotary Tables for the Automation industry in 2017.

Everything was going good until 2018. Due to several reasons, the global economy started declining in 2019 and

It's time to be prepared

Indian manufacturing is slowly trying to come out and cope with the current situation. However, this is going to take some time before we see real growth. We first need to deal with the present situation and until we do not have a sure cure/vaccine for the pandemic, our confidence level in making any plans will only remain on paper. Nevertheless, the Indian manufacturing sector has immense new avenues and opportunities during this period that it can prepare for, and cater to every growth opportunity that the market presents.

now Covid-19 has worsened the situation in 2020. To cope with the changing times, we started re-strategizing our business plans at the beginning of 2019, which were intensified owing to the onslaught of the pandemic. Following are the changes that we have brought about:

- **e-Commerce:** We have developed a web shop so that customers can place orders from anywhere.
- **Digital Marketing:** We now have a strong presence on social media. We have started conducting webinars to educate our customers on any new offerings from FIBRO India.
- **Catering to market demands:** We have started developing those products that are required by the market but are not made in India.

These strategies came in handy during the lockdown period. We received an overwhelming response for the webinars introducing new offerings, and even started receiving orders for them when the industry resumed its operations post lockdown. We also started developing similar products to expand our range of offerings.

“Until we do not have a sure cure/vaccine for the pandemic, our confidence level in making any plans will only remain on paper.”

At the same time, we held back further expansion investment but developed vendors who could supply those critical components to us. Otherwise, we would have bought the machinery or equipment to manufacture those components in-house. On the workforce front, we did not reduce our manpower but halted any new recruitment.

Focused on the silver lining
I am quite optimistic for India's

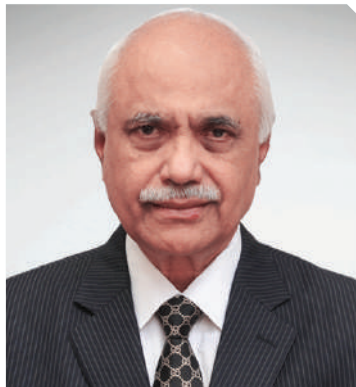
manufacturing sector which would certainly bounce back soon. Every downturn has been proven to be followed by an upturn.

The recently announced government policies such as the 'Atmanirbhar Bharat' and the Labour Reform bill would certainly attract FDI in the Manufacturing sector. As per the 'Doing Business' 2020 report, India has jumped 14 places to the 63rd position in the ease of doing business

rankings. This would also attract FDI in the sector. Already some European/American companies have declared their plans to shift their manufacturing activities or to create alternative manufacturing units in India.

The depreciated Indian currency is an added advantage for exporting manufactured products in India. It is an opportunity not only for foreign subsidiaries, but also for Indian manufacturing companies.

"The key addressable issues continue to be productivity, effectiveness, cost, and customer experience across users."



Source: Lakshmi Machine Works Ltd

"The machine tool manufacturing companies will need to adapt to new technologies going forward to maintain their competitive edge. We anticipate that the disruption caused by Covid-19 will accelerate the adoption of advanced technologies and lead to new ways of working."

K Soundhar Rajhan
Director Operations
Machine Tool Division
Lakshmi Machine Works Ltd

Closer to customer

Infrastructure and products developed in the last four years will support the present surge. As a change of strategy, we had to accelerate the customer connect programs through webinars, telecalling and social media for various industrial segments. The Covid-19 effect was seen only for three months. Thereafter, there was a surge in consumption, driven by all segments, primarily auto components. To cope with the demands, safe travel of field

staff had to be resumed with extra benefits and any public transport were avoided.

The key addressable issues continue to be productivity, effectiveness, cost, and customer experience across users. We must ensure employees' safety by providing them a safe workplace and securing their financial sustainability.

To develop a communication strategy, social media effectiveness during this crisis is crucial to maintaining customer trust, retaining market stability and also maintaining a healthy relationship with stakeholders.

Favorable changes await

The Indian Manufacturing sector has grown steadily over the last few months, with a surge in demand from major drivers including Automotive, Capital Goods, Aerospace, Defence, Railways and others. All these sectors provide immense growth opportunities.

The machine tool manufacturing companies will need to adapt to new technologies going forward to maintain their competitive edge. We anticipate that the disruption caused by Covid-19 will accelerate the adoption of advanced technologies and lead to new ways of working.



Source: Messer Cutting Systems India Pvt Ltd

"This pandemic has offered an opportunity to focus our efforts to do away with the over-reliance on China and become self-reliant. This could be a game-changer for India if the cards are meticulously played."

V Hariharan
GMO
Messer Cutting Systems India Pvt Ltd

The process of reinventing

In a normal course of time, we have all seen Learning, Planning and Execution taking place one after another. But this unprecedented uncertainty forced us to do all three concurrently.

At this unique juncture, the future is a mystery and the past is irrelevant history. You can't bank upon the past trends as the whole world is rewriting history once again. Hence, we found our way of seeing the unforeseen.

Our Value System is fundamentally strong and it has guided us through this tough time.

We shifted focus from P&L to the balance sheet as we fully understood the need to float first to swim later.

We had to bring forth all our faculties to the fore and do a balancing act. We re-engineered our entire business process to make it more agile, buoyant and competent. We put an effective ecosystem in place to create an innovative partnership with both our suppliers and customers. We also balanced our payables and receivables, and found avenues to lessen the fixed cost and capital expenses, but kept the long-term plans alive.

We made our entire workforce realize that cash is the king and cost prudence is the key to survival. We sensed the K-shaped recovery happening in the economy and diverted our focus towards those sectors showing strong growth. All along, we ensured that our human resource is kept motivated to their best and firing on all cylinders. The

game is far from being over and the New Normal is unveiling a new world of opportunities.

A possible game-changer

Even in normal market conditions, India does not have enough business indexes available to predict the future market condition. We are always forced with the challenge of predicting the future market with available and unreliable information only. This pandemic has made the scenario worse. It has made every prediction go wrong and irrelevant. There is a school of thought that India will have a V-shaped recovery by mid-2021. It grossly depends on the availability of vaccine for Covid-19 by Jan - Feb 2021. But what we could glaringly see at present is the K-shaped recovery happening across the market. The Government should create an ecosystem to revive and rejuvenate those sectors which are struggling to survive or are on the

road to decline. The extended credit lines and offering of loans may not be enough for the recovery of these sectors. We need stimulus packages to provide direct relief to MSMEs in terms of partial payment of interest and salary costs. If that happens, the chance for the economy to get back to the Pre-Covid-19 levels is brighter.

This pandemic has offered an opportunity to focus our efforts to do away with the over-reliance on China and become self-reliant. This could be a game-changer for India if the cards are meticulously played. Boosting consumption is a paramount part of bouncing back to growth. All of us have a very crucial role to play in this, apart from the Government. As small drops make an ocean, every penny spent by all of us in the right direction is a nation-building process. Let us do that and make the economy become buoyant again.

"The Government should create an ecosystem to revive those sectors that are struggling to survive or are on the road to decline."



Source: RadCAM Technologies Pvt Ltd

"By the next quarter, things will start to look positive and one can see a 100 percent capacity production back. As of now, the companies have come back to more than 50 percent workforce and production, and that's something to cheer about."

Siddhu Jolad
Director & Business Head
RadCAM Technologies Pvt Ltd

Rethinking business

We cater to a segment where cap-

ital investment comes into the picture. That was severely hit and the industry sentiment was not so good. Everyone today wants to re-strategize and rewrite the game plan for 20-21 and 21-22, so we too are forced to do the same. But I feel this may be a positive move as re-structuring may give companies food for thought to think about what is essential and what is not. Many of them have realized that they want more automation in the organization than ever. Many have cut a lot of unnecessary weight now. The cooling period must give all of us a breather to rethink, resurrect and remerge. There will be a fresh wave of what is to be done and otherwise. We have our fingers crossed.

Lots to cheer about

Nobody wants to buy Chinese

machines anymore and the 'Make in India' move is getting a push. However, the loan that was promised by the Government for industries, seems to be taking time to get implemented. When that happens, there will be no looking back for Indian companies. There will be more smart manufacturing and the product lines will change with the need to have new designs, manufacturing, and supply. By the next quarter, things will start to look positive and one can see a 100 percent capacity production back. As of now, the companies have come back to more than 50 percent workforce and production, and that's something to cheer about.

The Government policies including the 'Make in India' drive, 'Vocal about Local', 'Atmanirbhar Bharat Abhiyan' have given much-needed respite to the Indian Machine Tools industry.



Source: Wendt (India) Ltd

“The pandemic has been a catalyst to accelerate the pace at which the manufacturing companies have started adopting Automation, Digitization, Robotization, AR and AI to get back the business to normalcy while providing a safe working environment.”

Rajesh Khanna
Executive Director & CEO
Wendt (India) Ltd

Exploring unexplored areas

We at Wendt India Ltd have been extremely proactive in doing all that we can to safeguard our employees and their families from the spread of Covid-19. Our groundwork started in March itself with the announcement of the lockdown. We had a quick Senior Management meeting and formed 'Covid-19 Action Team' and 'Covid-19 Crisis Response Team', ably led by our Departmental Heads located near our facility in Hosur. We could foresee that this would be a long-drawn pandemic with considerable challenges for the business. Hosur being in Tamil Nadu, we also pre-empted that the Karnataka border would be closed, and cross border movement could be restricted. With most of the senior colleagues staying in Karnataka including me, we empowered the local team while distributing the responsibilities. We had regular team meetings since the lockdown and had focused scenario planning exercise, and we strategized, reworked our business plans, CAPEX and alternate production plans. We

strategized our overall initiatives and redeployed the resources to attend to the crisis.

The Pre-Covid-19 economy itself had been experiencing a considerable slowdown, most effected due to Automotive, Housing, Infrastructure, Metal & Mining sectors. This slowdown was more pronounced in the Automotive sector where we mainly cater to, reeling under the pressure of the implementation of Bharat-VI norms and e-mobility drive. The resultant slowdown was experienced by the capital equipment and the demand for machine tools. The pandemic added fuel to the fire having a multiplier effect due to the slowdown.

However, the Government policies including the 'Make in India' drive, 'Vocal about Local', 'Atmanirbhar Bharat Abhiyan' have given some much-needed respite to the Indian Machine Tools and Tooling industry. This has unfolded good opportunities in unexplored areas for business in sectors like Defence, Aerospace, Railways, Steel, Engineering, and Medical. We have restrategized our business plans accordingly and have been strongly focusing on the following:

- Offering import substitute high-end Precision Grinding and Honing machines and competing against international companies on global tenders in Public Sector Undertaking in above-referred areas.

Having supplied and met the stringent requirements of these machines to industries and customers like Indian Railways – DLW Varanasi, and Aerospace – HAL has given us the confidence of addressing the Indian industry needs.


- Offering Roll Grinding and Re-profiling - Dressing machines for the Indian Steel industry, again offering an import substitution to Steel Authority, & Rerolling mills.

- Offering High-End Super Abrasive Tooling and encasing on import substitution and Atma Nirbhar drive.

As a part of our growth plan, our focus is to upgrade our machines with automation and digitalization and offer products and services related to additive manufacturing.

Optimism prevails

The impact of the Covid-19 lockdown on our lives has been both widespread as well as unique and the challenges that it has posed to the Manufacturing sector have been particularly more daunting. However, the pandemic has been a catalyst to accelerate the pace at which the manufacturing companies have started adopting Automation, Digitization, Robotization, AR and AI to get back the business to normalcy while providing a safe working environment. More and more repetitive routine activities are being carried out remotely adopting the 'work from home' concept and with virtual control. Most of the backend support is managed well remotely, improving efficiency, and saving on various costs.

The phased unlocking of the economy has provided an impetus to India's Manufacturing sector showing signs of recovery and attaining normalcy in August and September with an upsurge in the demand from most of the user segments and their resumption of business operations. To back it up, the IHS Markit India Manufacturing Purchasing Managers' Index (PMI) increased from 52.0 in August to 56.8 in September. I am optimistic and believe that, going forward, the Indian Manufacturing sector will be back to normalcy in Q3 / Q4 itself. The strong optimism would prevail with the release of a vaccine to combat the pandemic, vaulting the Manufacturing sector back to the growth trajectory. 

THRIVING DURING CRISIS

Pravin Saraf, President, Operations, Endurance Technologies Ltd (ETL), in this interview with MMI's Editor-in-Chief Soumi Mitra, talks about the importance of maintaining quality in manufacturing, the significant changes in the current market scenario, Covid-19 impact on the Electric Vehicle goals, and how the Indian machine tool manufacturers should up their game...



Source: Endurance Technologies Ltd

Pravin Saraf, President, Operations, Endurance Technologies Ltd

You have had an impressive 29 years of national as well as international work experience in Manufacturing & Quality. It makes you an ideal person to shed light on the importance of maintaining quality to harness excellence in manufacturing.

Pravin Saraf: I have always believed that excellent product and process quality is a tool for achieving manufacturing ex-

cellence. Manufacturing excellence is achieved on the foundation of lean principles and its main pillars comprise - capable manufacturing processes; implementation of TPM practices; engaged and competent employees; high OEE (Overall Equipment Effectiveness) and smart manufacturing. These pillars ensure high quality standards. Process capability and

TPM practices are prerequisites for sustained product quality. With engaged and skilled people as well as advanced technologies like Industry 4.0, standards can be followed and continuously improved.

With your extensive experience in the industry, what are the significant changes that you witness in today's market?

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The actual production, the actual sales, and projection for the customer demand in November are highly encouraging.

Saraf: Today's market can be best described as VUCA - volatile, uncertain, complex, and ambiguous. Nothing can be predicted to perfection. The demands are highly fluctuating and customer expectations are fast changing. At the same time, there is a quick response to changes in the PESTEL (Political, Economic, Social, Technological, Legal) environment. All this has an impact on the product lifecycle, which is reducing with increasing speed. The best example is the number of new models getting introduced every month in the Automotive industry. Quality and service expectations are increasing similarly. Customers are not accepting inferior quality in products and slow response in service. To meet customer expectations, there is more focus on the product and process innovation. What is proven is no more valid. An example is the time gap between the four industry evolutions in the Manufacturing industry. Industry 1.0 (Mechanization) happened in 1784; Industry 2.0 (Mass Production) in 1870, which is after 86 years; Industry 3.0 (Automation) in 1969, after 99 years; and Industry 4.0 (Internet of Things), the current one, has happened after 50 years.

With the Government of India's initiative in adopting BS-VI and EV mobility and the current rapid technology transformation in the Automotive Manufacturing industry, India was expected to emerge as the world's third-largest passenger-vehicle market by 2021. However, the emergence of the Covid-19 pandemic has disturbed the course that we were on. When, do you feel, will that goal be attained now?

Saraf: Covid-19 pandemic has had a big impact on the manufacturing supply chain. Besides,



Source: Endurance Technologies Ltd

“We should be able to erase our image as the industry with low-cost and low-reliability machine manufacturers and prove ourselves as cost-effective smart solution providers with high robustness and durability in our machines.”

Pravin Saraf
President, Operations
Endurance Technologies Ltd

the political situation and the change in relation with various nations, the Government may need to relook at the strategy for the implementation of Electric Vehicles (EV). No one can predict when the expected growth will be visible, and the demand is back on track. The actual sales numbers of September, October and the projection for November are highly encouraging. If we can receive the Covid vaccine soon, we can see high demands after November too. Taking into account the domestic demand, higher projection of GDP growth, increasing aspirations of customers, and the Government's push for EV, I hold no other view other than we are the third-largest passenger vehicle market. Only no one can predict whether that will surely be in 2021, mainly due to Covid uncertainty. A good thing is that the Indian industry is taking all the necessary efforts in preparing itself

for the introduction of EVs and ensuring simplification of the supply chain.

How important do you think is embracing advanced technologies, such as Industry 4.0 for India to become a manufacturing powerhouse and come at par with its global peers? How far have we reached in this endeavour?

Saraf: The benefits from the implementation of Industry 4.0 are numerous including high productivity, waste elimination, quality improvement, reduction in the investment and lead time, and inventory reduction. It also helps in reducing the manufacturing cost, improving sales, and increasing profitability. Industry 4.0, with additional features of AI, is a distinctive advantage for the Indian industry to be at par with its global peers.

Although the initial response from the Indian industry was sluggish, in the recent 12 months, phenomenal progress has been witnessed in its adoption. Earlier, there was also considerable concern that automation could lead to an increase in unemployment. The Indian manufacturing industry has started embracing smart manufacturing where it deems crucial and of advantage to the local situation. We have developed a high amount of expertise and requisite skillsets to implement advanced technologies with our resources. Along with big OEMs and Tier 1 companies, now Tier 2 and even smaller companies have become open to the idea. We can already witness excellent examples of digitalized factories. However, there is still a long way to go. In the coming year, we will observe a sea change in our products and processes, and witness more of digitalization.

In what way should Indian machine tool companies step up their game to meet global auto and component makers' requirements?

Saraf: We have a highly established Machine Tool industry in India. It has a reputed history of continuous improvement. However, when we compare with the global benchmarks and as well the auto OEMs and auto component manufacturers' expectations, the Indian Machine Tool industry should focus on

- Highly flexible concepts
- Compact machines with high speed
- Machines with Industry 4.0 features
- High robustness with less machine maintenance cost
- Availability of economical spares
- Ability to maintain accuracy for longer duration and usage
- Reduction in the lead time
- Necessary in-build automation.

We should be able to erase our image as the industry with low-cost and low-reliability machine manufacturers and prove ourselves as cost-effective smart solution providers with high robustness and durability in our machines.

The domestic Automotive industry is expected to take five to seven quarters to recover from the impact of Covid-19. The Automotive Components industry is expected to follow a similar timeframe. Please comment.


“The benefits from the implementation of Industry 4.0 are numerous including high productivity, waste elimination, quality improvement, reduction in the investment and lead time, and inventory reduction. It also helps in reducing the manufacturing cost, improving sales, and increasing profitability.”

Pravin Saraf
President, Operations,
Endurance Technologies Ltd

Saraf: The Automotive Components industry is dependent on the domestic Automotive industry and the export market. The global markets are recovering. The Indian Automotive market is recovering faster than the global markets. Looking at the current Covid situation, it is difficult to predict how many quarters will take for the recovery to happen. However, the trends are encouraging. The actual production, the actual sales, and projection for the customer demand in November are highly encouraging. Hopefully, we soon find a solution to Covid to arrest the situation and witness a further increase in the demand and a faster recovery.

Most companies are facing liquidity pressures due to high fixed costs, low capacity utilization until production ramps up and high levels of inventory. How is Endurance Technologies weathering the storm?

Saraf: The key in this challenging time is ensuring cash flow so that our suppliers and service providers can be paid on time. This will

help the supply chain to function smoothly and without any obstacles. We at ETL always have focus and control on the fixed cost, inventory, and receivables. Capital investment is one of the key drivers for increasing the fixed cost. To reduce inventory, we focus on reducing complexity in the supply chain. We are near to our customers and our supplier base is also in proximity to us. Also, we are not highly dependent on imports. Our manufacturing lines in different locations are highly flexible and can manufacture different types for different customers with less changeover time. Every year, there is an increasing focus on reducing changeover time. Our manpower is flexible and with systematic skill development, we have made our people capable of running more processes. There is a continuous effort towards making our manufacturing processes simple to operate. Most of our tooling is manufactured with the in-house facility and with less lead time. Our manufacturing is based on lean principles and TPM. The same principles are followed in the entire supply chain -- at our suppliers as well as at our service providers. Lean principles ensure that we run with optimized inventory and no waste. TPM principles help us achieve our goals of zero accidents, zero failures in quality and deliveries. In Covid times, the same principles are applied to have zero Covid patients on our premises. We do this by taking adequate measures such as social distancing, temperature checks, Oxygen level measurement, and maintaining hygiene in the canteen and elsewhere. The pandemic situation has taught us a lesson to be prepared for worse situations and be lean, agile, and flexible in our products and processes to adapt to ever-changing scenarios. 

Indian industry is taking all the necessary efforts in preparing itself for the introduction of EVs and ensuring simplification of the supply chain.

Today's market can be best described as VUCA – volatile, uncertain, complex, and ambiguous. Nothing can be predicted to perfection. The demands are highly fluctuating and customer expectations are fast changing. At the same time, there is a quick response to changes in the PESTEL (Political, Economic, Social, Technological, Legal) environment. All this has an impact on the product lifecycle, which is reducing with increasing speed.

SCALING SUSTAINABLY

GROB Machine Tools India Pvt Ltd has been consistently serving a wide range of industries with its innovative offerings. The company, over the past decade, has successfully secured its pivotal position as a sole supplier of turnkey solutions and has solid plans for the time to come....



Source: GROB Machine Tools India Pvt Ltd

GROB India has had a remarkable decade-long journey in the Indian market with its operations commencing in 2009 with just one employee. “We have had a consistent business growth that has encouraged us to keep increasing our highly skilled and trained manpower. We currently are 35 personnel strong with plans to cross 100 in the next three years with our new upcoming plant,” shares L Jayarama Naidu, Managing Director, GROB Machine Tools India Pvt Ltd. In the last 10 years, the company has installed more than 200 5-axis machines at its esteemed Indian customers in different high-technology-oriented manufacturing sectors. “Besides, we have several projects in hand

to deliver and install machines before April 2021. Thanks to GROB Group that has more than 90 years of experience and expertise in delivering turnkey projects, for many of our customers we are sole turnkey partners for supplying complete manufacturing lines including automation, ancillary equipment, and non-cutting machines,” he adds.

“Our biggest strength is our highly reliable machines and an equally strong service and application support to our Indian customers for them to achieve faster cycle time, better and consistent accuracies,” he emphasizes.

GROB India currently works out of a sprawling facility of 5,44,000 sq mt. To be future-ready and further increase

its support and value addition to its Indian customers, it has acquired another 20 acre of industrial land and started its new plant construction with the first phase investment of ₹100 Crore. The company’s major Indian and international customers include VW, Skoda, Audi, Daimler, BMW, Hyundai, Ford, Mahindra, GM, Scania, Volvo, MAN, Johndeere, Cummins, TVS, Tata Motors, Azad, Wipro, Bosch, Greatoo, KHS, Force Motors, ZF, Fiat, Renault, Poclair, Endurance, Kumar Exports, Kranti, and Linamar.

Indian automotive industry is crucial

The Indian automotive industry being a strongly growing market is understandably of high impor-

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tance to GROB India. Naidu sheds light on the offerings that cater to a wide variety of industries along with the challenges encountered, “We launched our G series horizontal 5-axis machining centers for the Automotive industry in the year 2000, and for other manufacturing sectors like Aerospace, Die & Mould, Medical and Precision Engineering in 2007. We produce both single-spindle and two-spindle 5-axis machining centers with and without pallet changer. Our generation 2 5-axis machining centers are the market trendsetters today in terms of their rigidity, reliability, speeds & feeds, and accuracy.”

Price, he says, is the company’s biggest challenge since the latest and advanced technology machines cannot be the cheapest. “We sell our machines to Indian customers based on technology, demonstrating GROB machines’ advantages in terms of the reduced number of set-ups due to their 5-axis configuration, higher production with less cycle time, low tool cost per part, compact footprint and reduced lifecycle costs due to low maintenance and energy consumption,” he adds.

“Selling our first 5-axis machining center is always a challenge. Once the customer realizes the benefits and advantages of our machine, all their subsequent purchase of 5-axis machines has to be from GROB,” he remarks.

Along with its machines, the company also delivers its own automation solutions like pallet changers, rotary and linear pallet storage systems, I & H type gantries, swivel part changers and custom-built automation.

Ensuring products’ high quality

For all GROB’s machines and automation solutions engineering, R&D is done in Germany. “We produce the same machines in our plants worldwide following



Source: GROB Machine Tools India Pvt Ltd

“We sell our machines to Indian customers based on technology, demonstrating GROB machines’ advantages in terms of the reduced number of set-ups due to their 5-axis configuration, higher production with less cycle time, low tool cost per part, compact footprint and reduced lifecycle costs due to low maintenance and energy consumption.”

L Jayarama Naidu
Managing Director
GROB Machine Tools India Pvt Ltd

the same technical standards and manufacturing processes. To ensure high quality and strict timelines, all the components of our machines are 100 percent manufactured, assembled, and tested in-house including motor spindles,” Naidu explains.

Its special departments like CIP continuously work on improving reliability, longer lifetime, and lower energy consumption of its machines. They follow a multi-level quality checking, tracking, and approval for each element in their machines before it is released for the next processes.

Unfazed during pandemic

The pandemic lockdown has brought about challenges in the day to day operations of companies that have stopped them in their tracks. “The pandemic situation had little influence on our machine manufacturing schedules as we manufacture all our machine parts in-house. We did face some challenges with small delays in getting bought out parts from our suppliers but could largely manage with the emergency inventory that we always maintain. With quick decisions from our management and with immediate internal adjustments, despite the difficulties, we could meet all our committed delivery timelines,” explains Naidu.

He elaborates on GROB’s Industry 4.0 technologies impact and implementation (for the new normal). Following the core principles of GROB Group, GROB India has developed its own GROB-Net4Industry. It offers modules like GROB4Line (machine insight via smartphone); GROB4Connect (connection from the real world to the ERP system); GROB4Analyze (feedback from the machine for CIP process), GROB4Pilot (multi-functional, interactive machine operation); GROB4Simulate (complex processes and parts simply simulated); GROB4Automation (intuitive production control software for unmanned operation); GROB4Coach (programming, simulation, and train-

Along with its machines, GROB India also delivers its own automation solutions like pallet changers, rotary and linear pallet storage systems, I & H type gantries, swivel part changers and custom-built automation.



Source: GROB Machine Tools India Pvt Ltd

“Under the ‘Make in India’ program, if the high-technology capital equipment manufacturing industry has to grow, the government needs to bring in special reforms and support.”

ing); GROB4Track (machine axes in view at all times); GROB4Interface (easy route to machine communication); GROB4Care (service and maintenance portal) etc. “These modules are developed on an open platform so that our customers can use them with any machine and any latest CNC controller,” claims Naidu.

“From October 5 - 10, 2020, we are also hosting a virtual open house. In addition to presentations of our latest machines and systems, a digital tour of the company and exclusive web seminar about our current technologies and service offers will be available. Registered customers can also have live chat with our experts and the world premiere of the new 5-axis universal machining center G150 from GROB can be seen live,” he shares.

No competition from Chinese players

With Chinese dominance in the global metal cutting machine tools market and projected future growth in the sector, Naidu presents his take on India’s current capability especially after the ‘Make in India’ push and Government reforms.

“We, GROB Group, have a long-term strategy for the Indian market. Our management has



Source: GROB Machine Tools India Pvt Ltd

realized that India is the future market and, hence, has decided to make a huge investment in our new upcoming plant near Bengaluru in four expansion phases. We don’t see a big threat from Chinese machine tools manufacturers in our class of high-technology machines. China continues to be one of the biggest markets for our machines. Under the ‘Make in India’ program, if the high-technology capital equipment manufacturing industry has to grow, the government needs to bring in special reforms and support. Growth in capital equipment domestic manufacturing is the base for achieving ‘Make in India’ goals since this makes

the local technology available and reduces dependency on imports,” he explains.

Mapping the future

GROB Management considers India to be one of the biggest markets for the future. “Recognizing the nation’s potential, we have laid down our roadmap and structured our investment plans with the new plant. Closely following the Automotive industry trend in 2012, we have started R&D and new product development in the Electromobility sector. We are already the market leaders and provide turnkey solutions for battery cell manufacturing, cell to module, and module to pack assembly lines, stator, rotor, and final assembly lines for e-motor,” reveals Naidu.

The company has also added new technologies like Spray bore machines for cylinder blocks and 3D metal printing machines for Aerospace, Medical, and other sectors. In the Automotive sector, in addition to supplying turnkey machining solutions to power train parts in 2017, it has launched its F series machines for machining frame structure and chassis parts. “We continue to strive and develop new technologies to remain a global market leader in our business,” he states summing up. 



Source: GROB Machine Tools India Pvt Ltd

DODGING CRASHES

A full-service contract manufacturer's discovery of VERICUT machine simulation software from CGTech being critical to avoiding five-axis machining center crashes...



Source: CGTech Inc.

Jemco Components and Fabrication Inc., a family-owned business in Kirkland, WA, is a one-stop-shop that offers prototype and production machining, sheet metal fabricating, contract assembly services, laser marking and etching, and a host of finishing options, and has been doing so for three decades and two generations.

Raising the stakes

Two years ago, however, the stakes grew higher. As

the company's level of five-axis machining grew, the management decided that an alarming number of 'little crashes' could quite easily turn into one big crash, possibly damaging an expensive machine tool and, at the very least, disrupting deliveries to any one of its customers in the Aerospace, Military, Medical, or Energy industries.

With more than two dozen five-axis machining centers on the line, Travis Moore, Vice President, Jemco, and his team began

looking for an alternative to the traditional 'push the green button and pray' program prove out.

"A number of companies tried very hard to sell us their simulation software, telling us how their solution would address all of our needs, but after a lot of research and talking to a number of people, we found that VERICUT was the only software with true G-code simulation," Moore says.

Since 1988, VERICUT from CGTech, Irvine, CA, has been the leader in CNC toolpath and

Source: CGTech Inc.

machine simulation. Because it reads the actual code used by the machine controller, it picks up where CAM systems leave off. Every workpiece, fixture, toolholder, and machine component can be accurately modeled, leaving nothing to chance. Gouging and uncut areas are clearly identified. Setup times are reduced, and because complete visibility

to the machining process is achieved, opportunities for process improvement are greatly enhanced. Best of all, collisions are virtual rather than spark-filled and noisy.

Straddling the manufacturing fence

Moore's parents started the company when he was a child. Their decision to pursue sheet

metal fabrication and precision machining under the same roof was made on day one with the purchase of a Finn-Power turret punch and an Okuma Cadet machining center. It was apparently the right decision, because Jemco has become quite successful at both types of metalworking.

The fabricating side of the 70,000 sq. ft. shop is now home to Amada press brakes, a Mazak OptiPlex 4kW laser cutter, Finn Power punch presses with sheet loading capabilities, and TIG, MIG, and Spot Welding equipment. There are laser markers and fastener machines, and Jemco has strategic partnerships with a variety of metal finishers.

Altogether, Jemco has around 40 CNC lathes and machining centers on its production floor. Equipment builders include Haas, Okuma, Mazak, and others, but topping the list is a pair of DMG Mori NMV1500 five-axis vertical machining centers—one sporting a 40,000 rpm spindle—and serviced by a 34-pallet robotic cell material handling system.

"We try to be really diverse," he says. "My dad saw from the very beginning that there was value in having a one-stop-shop. There are plenty of complex fab parts that require milling, and he felt that managing both was something he could do fairly easily. It's been smooth sailing ever since."

Calm waters

Part of that smooth journey has been due to VERICUT, at least recently. "All those little crashes we were seeing have died down to nothing," he says. "That's saying a lot, because most of our production quantities are small—say between two and two dozen pieces—and we, therefore, set up many jobs

Challenges

Jemco Components and Fabrication Inc., feared a number of 'little crashes' turning into one big crash, possibly damaging an expensive machine tool and, at the very least, disrupting deliveries to any one of its customers in the Aerospace, Military, Medical, or Energy industries.

Solution

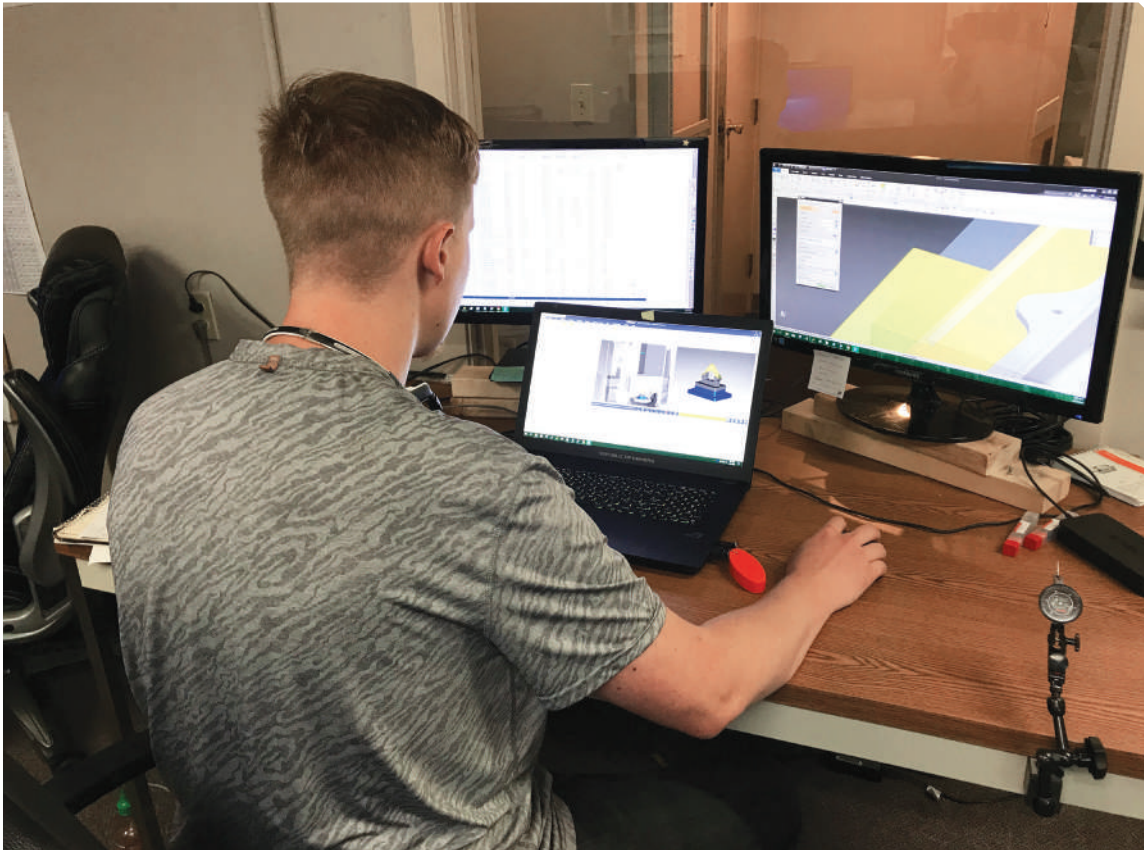
VERICUT machine simulation software from CGTech offers a number of advantages.

- It reads the actual code used by the machine controller; it picks up where CAM systems leave off.
- Every workpiece, fixture, toolholder, and machine component can be accurately modeled.
- Gouging and uncut areas are clearly identified.
- Setup times are reduced.
- Complete visibility to the machining process is achieved, enhancing opportunities for process improvement.
- Collisions are virtual rather than spark-filled and noisy.

Since 1988, VERICUT from CGTech has been the leader in CNC toolpath and machine simulation. Because it reads the actual code used by the machine controller, it picks up where CAM systems leave off.



Source: CGTech Inc.



Source: CGTech Inc.

According to Chuck Macomb, CNC Programmer, Jemco, VERICUT helps answer the many questions that arise when generating toolpaths for a machining center that cost more than most people's house.


each day. And as anyone in this business will tell you, the more times you're setting up, the more opportunities you have to mess up. I strongly tie our lack of crashes to VERICUT."

A lot of jobs also means a lot of programmers. In Jemco's case, there are seven, each with his or her own way of

doing things. Chuck Macomb, CNC Programmer, Jemco, says VERICUT helps him answer the many questions that arise when generating toolpaths for a machining center that cost more than most people's house.

"Is there any interference between the toolholders and the vise? Did the program cut

the part right? Is the spindle going to bump the workpiece? Did each axis go the direction you expected it to? There are all kinds of problems that can occur, but because the CAM software doesn't see the same thing the machine sees, there can be occasional surprises. VERICUT eliminates the wondering," he adds.

Tony Maldonado, CNC Programmer, Jemco, agrees. "We use Siemens NX for our CAM platform here," he says. "It does a good job on most parts of telling you if you're going to crash or violate the part in any way, but you have to pay close attention to see it. Sometimes things are moving so fast that it's easy to miss something, and that's where VERICUT comes in. You can see any areas that you missed during programming, any gouges, and especially any crashes." 



Source: CGTech Inc.

PRODUCTIVITY QUOTIENT GOES HIGH

Rajkot-based Kishan Auto Parts has experienced an immediate reduction in cost and gauging cycle times of more than 80 percent with Renishaw Equator™ flexible gauging comparator. Besides, accuracy remains maintained despite a 21°C range. Read on to learn more...



Source: Kishan Auto Pvt Ltd

L leading manufacturer of connecting rods for major names in the car, compressor, heavy commercial vehicle, tractor, marine engine and earth mover manufacturing industries, Kishan Auto

Parts was founded by Shantibai Changela in 1988. It started off by manufacturing 2,000 connecting rods per month and today manufactures up to 50,000 per month with 360 variants. The company's customer list

reads like a who's who in the world of cars, compressors, heavy commercial vehicles, tractors, marine engines and earth movers. Kishan exports 90 percent of its production to leading in-

Source: Kishan Auto Pvt Ltd

Challenges

With increased demand for its products, Kishan Auto needed a faster method of gauging for its Connecting Rods. It also needed a solution to bring down the cost of gauging.

Solution

Renishaw Equator™ Flexible Gauging System that helped the company achieve a significant reduction of 80% in cost and gauging times, with the flexibility to gauge many different parts with an immediate pass/fail decision.

dustrial and developed nations including the USA, the UK, Germany, Singapore, Italy, China, Poland, Brazil, and the Netherlands. The company has a reputation for high quality within required tolerances at a competitive price. It specializes in manufacturing connecting rods from raw material to finished product within their own forging plants, with a lead time of 60-90 days.



Source: Kishan Auto Pvt Ltd

“Essentially, Equator and the CMM complement each other perfectly, one providing traceable certified accuracy, the other providing thermal capability and extra capacity.”

Shantibhai Changela
Managing Director
Kishan Auto Pvt Ltd

In need of a faster inspection system

For many years, Kishan Auto had been using air gauges for checking diameter, circularity and 'bend and twist'. For each of 360 variants of connecting rod, the company used three or four different gauges. On larger connecting rods for heavy use applications, this could be at a 100 percent sample rate.

In Kishan's experience, these hard gauges usually lasted up to 10,000 uses, and then had to be reworked. For each different connecting rod, three of the four gauges costed ₹6,000 (approx US\$120), while the display costed ₹30,000 (approx US\$600). However, with the fourth gauge, for measuring 'bend and twist', the cost went up to around ₹3,00,000 (approx US\$6,000). This included a golden part which could be easily damaged and often had to be replaced.

In addition, the whole process took 120 seconds for each air gauge. So, for each part tested, the whole process took more than eight minutes. With increased demand for its products, Kishan needed a faster method of gauging.

Cutting the cost of gauging

Time and the ability to cope with temperature were not the only issues for Kishan Auto; the cost of gauging was more important than all. The company identified 77 variants of connecting rods which the Equator system could accommodate. The operators use the system to measure 500 units per day in a 10-hour shift.

If Kishan Auto were to invest in hard gauging for all 77 variants, it would mean an investment of ₹23 million (approx US\$450,000), just for the hardware alone. There were also other costs to consider, such as skilled labor to set up and maintain these gauges, storage, and running costs.

Search ends with Equator

Managers from Kishan Auto were in Germany for business meetings and to visit the EMO Hannover exhibition. After having searched without success for more than two years for an inspection system that could achieve the speed of operation they required, they did

For testing each part, the whole process took more than 8 min. With increased demand for its products, Kishan Auto needed a faster method of gauging.



Source: Kishan Auto Pvt Ltd

The company now operates 100% inspection of components, quickly and easily, and guarantees a 100% quality assurance on all its parts.



Source: Kishan Auto Pvt Ltd

not have high hopes of finding a solution. It was only as they were leaving the show that they spotted one of the Equator system demonstrations at the Renishaw stand which was gauging a connecting rod. It was a chance encounter that ultimately solved their problems. They requested a demonstration within a few days of returning to India, and having seen the Equator gauging their own parts, immediately decided to purchase a system.

Versatile gauging on the shop floor

Kishan Auto is now using Equator to gauge multiple variants of connecting rods, and is adding more every day. Typical gauging time of 55 seconds per connecting rod is a significant reduction over previous methods. The operators can use

one Equator machine for many different parts, gauging all the features in a single operation with an immediate pass/fail decision, along with a report of the component dimensions.

Despite its location in Rajkot, Gujarat, where temperatures soar to 40°C (104°F) and drop to 19°C (66°F), Kishan is seeing repeatable results from its Equator system. This is achieved by re-mastering at least every three hours, or when the team notices that the temperature has changed significantly. 'Re-zeroing' the system removes the effect of thermal growth from the measurements, and, therefore, guarantees component quality. The master part must be kept close to the machine and subject to the same thermal conditions as the production parts. If, at any time, the ambient temperature changes rapidly and a part goes

out of tolerance, the operator can measure the master part to re-set the system and check whether the reported 'fail' is not due to the environment.


Traceability and extra capacity

The master parts are 'calibrated' on Kishan's CMM, which gives them the traceable accuracy they rely on to guarantee quality. However, the high thermal variation means that the CMM has to be used within the company's temperature-controlled room. Equator gives Kishan the opportunity to extend the certified accuracy to the shop floor whatever the conditions.

For this particular requirement, Equator has removed the need to purchase an additional CMM with scanning capability, as Shantibhai Changela, Managing Director, Kishan Auto, comments, "Essentially, Equator and CMM complement each other perfectly, one providing traceable certified accuracy, the other providing thermal capability and extra capacity."

Enhancing quality

For Kishan, quality is the result of the right work ethics and processes for both management and operators, plus having the right equipment to achieve the required aims. The introduction of the Renishaw Equator gauging system has significantly enhanced quality. The company is now in a position to operate 100 percent inspection of components, quickly and easily, and is happy to guarantee a 100 percent quality assurance on all its parts.

As Changela comments "Quality is critical to us. We constantly strive to achieve 100 percent quality, improving efficiency and passing those savings on to the customer. Equator has taken us to another level." 

A MATTER OF PRECISION

The following strategy for machine-integrated laser measuring technology expands the possible applications of process measuring technology in grinding machines. A precise, universal, non-contact measuring process supports the user in his efforts to increase efficiency in precision machining.

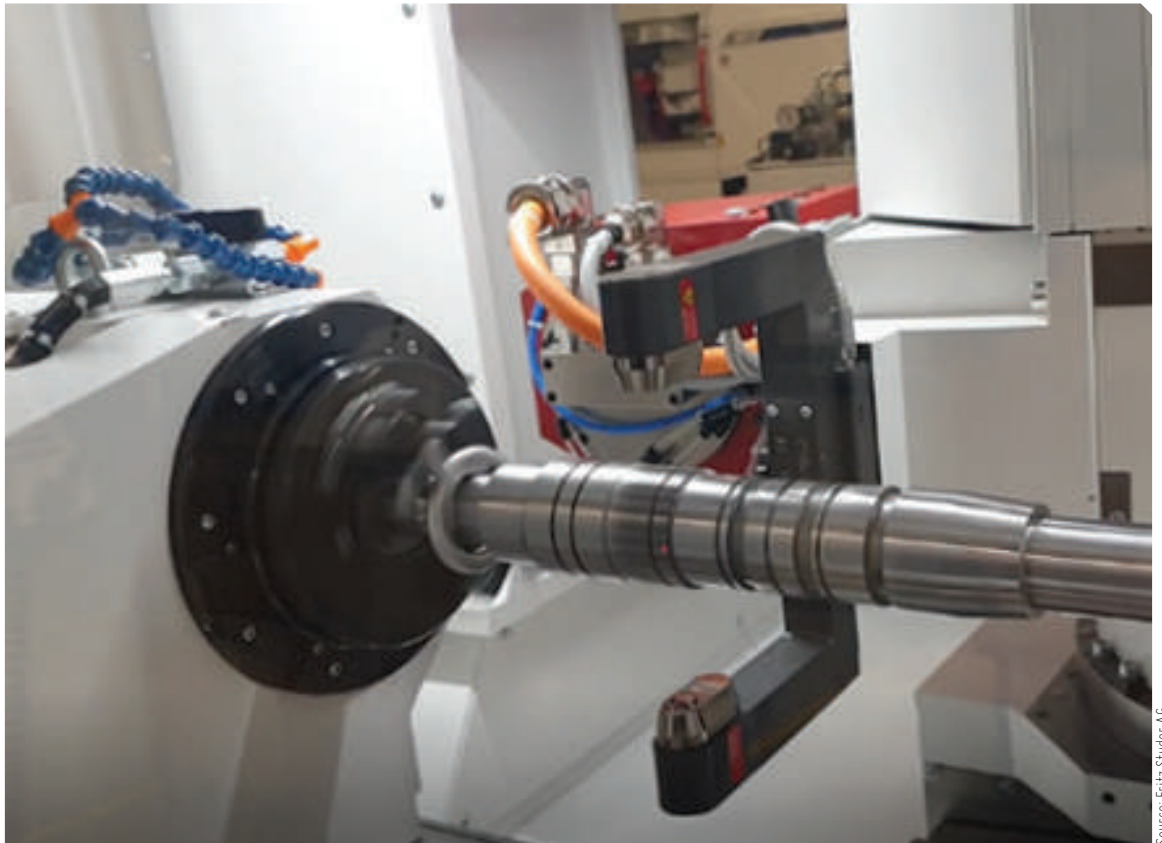


Figure 1: Example of universal use

Finishing processes on grinding machines often demand exacting tolerances in relation to dimension, form and position accuracies, as well as highly accurate surface qualities. Often companies have empirical values available to fulfil these requirements. However, with small lot sizes, in particular, process evaluation on the machine is desirable, as intermediate measurement on external measuring machines and the resulting corrections

prolong the processing time for part machining. These control measures would significantly increase process reliability and productivity. Solutions that can be flexibly used for a wide variety of workpieces are ideal and preferable.

Process measuring technology in grinding processes

Production engineers have diverse measuring functions available for process evaluation, which are based on different

principles of production measuring technology. The measurement of process forces such as grinding forces (F_t , F_n) or comparative grinding spindle currents, for example, provide an index for achieving the service life of tools or, equally important, they enable the determination of fluctuating allowances, which can influence process stability and compliance with required tolerances. Besides, tool costs can be reduced as excessive dressing is prevented. Familiar acoustic

The demand for non-contact measurement of tools, which have cutting edges or guide rails, can now be met with the integrated laser measuring technology.

touch sensors assist so-called contact detection in the grinding process to reduce grinding time, or monitor the true-to-profile dressing process with its envelope curve functions. Tactile measuring systems such as measurement and control systems for diameters or workpiece lengths, pneumatic systems, or microsensors for longitudinal expansions of spindle systems also support increased process reliability. Other measuring functions can also be described here, such as the use of camera or laser systems for process monitoring. Laser measuring technology, in particular, opens up interesting fields of application.

STUDER universal cylindrical grinding machines

Fritz Studer AG, established in 1912, is a market and technology leader in universal, external and internal cylindrical grinding as well as non-circular grinding.

The name STUDER stands for hardware, software, system integration and Swiss quality service. With a customized complete solution for each grinding task, the customer also receives our knowledge and know-how about the grinding process. The company has 100 years of experience in the development and manufacture of precision cylindrical grinding machines.

STUDER can draw on more than 10 years of experience in the use of machine-integrated laser measuring technology, which has been evaluated for trials in the measurement of grinding wheels or workpieces. Such fundamental studies are a tradition at STUDER, to ensure the company is prepared for future trends in production technology. This knowledge and experience have been

used to respond to the current requirements. The systems used in other industries for tool monitoring have been further developed STUDER-specifically based on the latest laser measuring technology, only recently available, for measuring workpieces on grinding machines.

The necessary measuring device (see U-profile in Figure 4) is mounted mechanically, similarly to our measuring probes on our B-axes, which carry the relevant grinding spindle. This situation is not an unfamiliar one for the operators.

The size of this measuring device can be adapted to the workpiece diameter. The existing air nozzles for blowing off the workpiece during measurement and the newly developed dirt screens efficiently protect the laser optics from the cooling lubricant in the machine. In comparison to previous models, the laser unit manufacturer also uses an enhanced, more accurate laser optics. However, the most striking element from our point of view is the possibility of generating many thousands of measuring points for evaluation with the workpiece rotating. This significantly reduces

the measuring time. These features have been integrated into the STUDER-specific measuring cycles. The user is thus provided with a suitable method for non-contact measurement for the machining of precision workpieces.

The measuring cycle can be selected as desired after each machining operation or at the end of the grinding process. The STUDER software logs (see Figure 3) the measured values per diameter after each measuring cycle. This process enables the operator to ascertain the quality of the ground component at a glance.

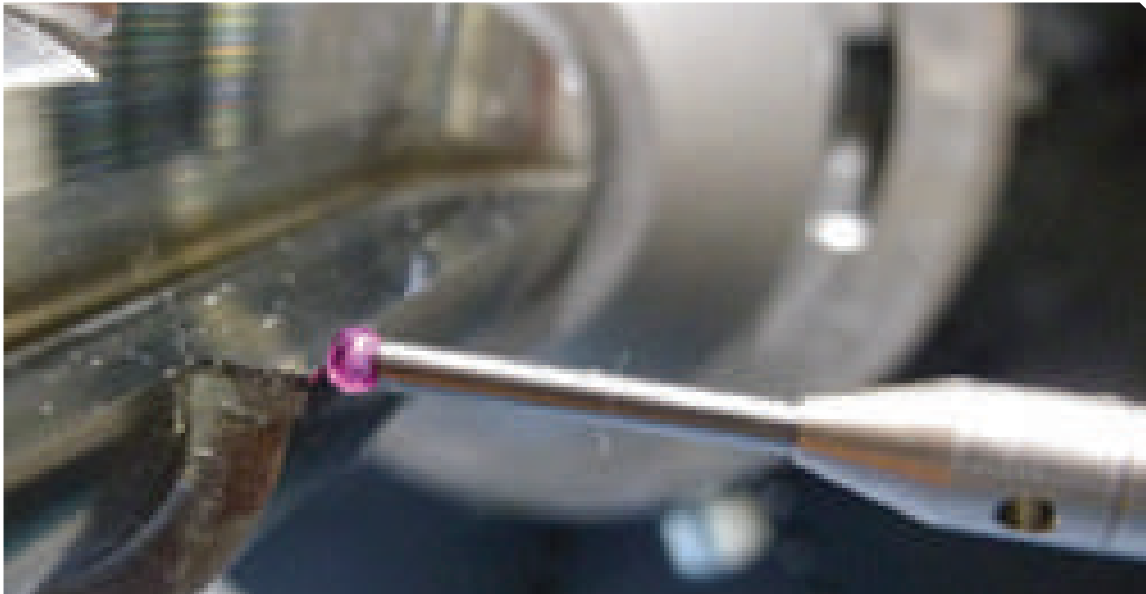
Example of application of laser measuring technology for cutting tools

A highly efficient example of the use of an integrated measuring strategy is the complex machining of small batches of tools with PCD cutting edges. Often the question here is who is machining who; is the diamond grinding wheel machining the tool or vice-versa. The so-called 'closed loop process' with tactile measuring devices is often used for this purpose (Figure 3). The cutting edges are measured, ground, measured,

ID	Nr.	Typ	Sollwert	Istwert	Abweichung	Korrektur	Status
5	4	Ø	16.3300	16.3300	0.0000	< 0.030	✓
5	3	∠	-0.0000	-0.0000	0.0000	< 0.030	✓
5	2	→	19.9910	19.9910	0.0000	< 0.030	✓
5	1	Ø	19.7000	19.6990	-0.0010	< 0.030	✓
4	4	Ø	16.3300	16.3300	0.0000	< 0.030	✓
4	3	∠	-0.0000	-0.0014	0.0006	< 0.030	✓
4	2	→	19.9910	19.9901	-0.0009	< 0.030	✓
4	1	Ø	10.7000	10.6940	-0.0060	< 0.030	✓
3	4	Ø	16.3300	16.3374	0.0074	< 0.040	✓
3	2	∠	-0.0000	-0.0014	0.0006	< 0.030	✓
3	1	→	19.9910	19.9900	-0.0010	< 0.030	✓
2	4	Ø	16.3300	16.3300	0.0000	< 0.030	✓
2	3	∠	-0.0000	-0.0016	0.0004	< 0.030	✓
2	2	→	19.9910	19.9917	0.0007	< 0.030	✓
2	1	Ø	10.7000	10.6940	-0.0060	< 0.030	✓
1	4	Ø	16.3300	16.3301	0.0001	< 0.030	✓
1	3	∠	-0.0000	-0.0000	0.0000	< 0.030	✓
1	2	→	19.9910	19.9900	-0.0010	< 0.030	✓
1	1	Ø	10.7000	10.6990	-0.0010	< 0.030	✓

Figure 2: Measuring record for a workpiece

Source: Fritz Studer AG



Source: Fritz Studer AG

Figure 3: Tactile measurement of cutting tools

etc. in several iteration stages. Diameter tolerances of ± 1.5 micrometer are achieved with this measure, which is a very good result. Increasing demand for non-contact measurement has developed for these applications as the PCD cutting edges sometimes react sensitively to tactile measurement.


This demand for non-contact measurement of tools in this tolerance range, which have cutting edges or guide rails, can now

be met with the integrated laser measuring technology described here (Figure 4). Typical measuring tasks that are required in this sector are, for example, Measurement of a tool with cutting edges, where the smallest and the largest cutting-edge diameters are determined in a measuring plane. Measurement in two different planes of the cutting tool, i.e. in different planes of the measuring cylinder generated by rotation, gives the dimension of the

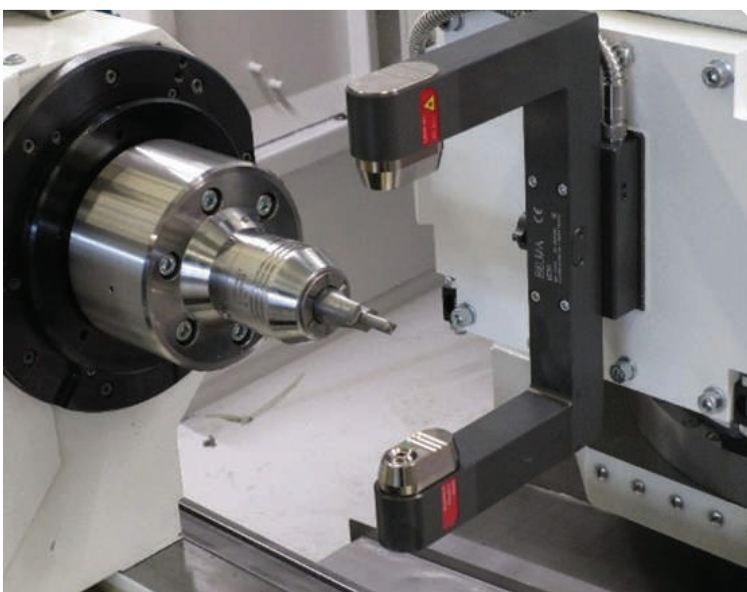
desired taper on cutting tools, which can now be output.

Depending on the measuring differences between the diameter of cutting edges and guide rails of a cutting tool in the same measuring plane, the laser optics can determine this diameter even with the workpiece rotating. This will be the case for most tools and will have a positive effect on measuring time reduction.

STUDER measuring cycles can help anyone who wants to know before machining and with the tool to be ground clamped, how large the runout is from the tool shaft to the cutting-edge diameter at the end of the tool.

It should also be mentioned that not only can different diameters be recorded with a laser measuring device, but precise control measurements can also be carried out on 'interrupted' diameters, such as shafts with keyways or longitudinal grooves and toothed gears in the diameter range (see Figure 2). The setup and resetting of previously used tactile in-process gauging devices are omitted, and efficiency rises dramatically. 

Not only can different diameters be recorded with a laser measuring device, but precise control measurements can also be carried out on 'interrupted' diameters.



Source: Fritz Studer AG

Figure 4: Non-contact measurement of precision tools with laser measuring technology

MAKING IT BIG

Yet another tale of resilience that started from a small workshop and steadily worked its way to the top. A pioneer in the area of manufacturing indigenous hydraulic equipment in India, Hydax Hydraulics has been ceaselessly innovating and has reached a coveted position in the industry today...



Source: Hydax Hydraulics Pvt Ltd

Hydax Hydraulics Pvt Ltd was established in the year 1979 by DB Mukherjee, a technocrat with over 40 years of expertise behind him. The concept right from the onset was to create products that would be indigenously designed, technologically superior and commercially viable. "It must be pointed out that we were pioneers in the area of manufacturing indigenous hydraulic equipment in India. We began our operations from a small workshop in Whitefield, Bangalore and now manufacture from two units in Bangalore. Using our available resources and applying sustained efforts, we have designed and manufactured prod-

ucts that are at par and most times, even better than others available in the world market," shares Meetal Mukherjee, Managing Director, Hydax Hydraulics Pvt Ltd.

The concept, she explains, from the days of inception has been to be a workplace which provides an atmosphere to generate ideas and engineer a product out of those ideas. "We want to proffer an integrated experience to the market in the shape of innovative and superior goods. While doing so, creating a climate conducive to inclusive thought and action is paramount to our ethos," she adds. The total area of the unit 1 is 16,500 sq ft and that of unit 2 is 23,000 sq ft.

Catering to wide array of sectors

HYDAX works with small to large OEMs, an extensive dealer network pan India and some Asian and European countries, and caters to end users in Machine Tool, Agriculture, Material Handling, Construction, Mining, Marine, Oil & Gas, Power, Steel and Textile sectors. "We cater to a wide spectrum of customers with products that are easy to assemble at highly competitive prices," informs Mukherjee. HYDAX has recently acquired the technology to manufacture Electrochemical Deburring Machines, Coolant Filtration systems and component Washing Machines. "We are also working on building indig-

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enous ROSA (Robotic Sense for Automation), which consists of machine tending robots, vacuuming robots and inspection bots for the rapidly growing use of automation in the manufacturing sector," she adds.

"In India, our evenly spread network of stockists assures the customer of prompt delivery and easy availability of spares. Our list of clients reads the who's who of the Indian industry and forms an impressive list of satisfied customers," she adds further.

The company has an established group of retailers in some countries of the Asian subcontinent, the Middle East and regular clients in many other locations worldwide. Its major Indian and international customers include Godrej and Boyce Mfg. Co. Ltd, Kion India, Yuken, Tata Power, Sona Koyo, Tal Mfg., Bharat Forge, Asia Precision (Thailand), Al Mustwa Technical (Sharjah), etc., and its turnover for the fiscal year 2019-20 was ₹3.29 Crore.

India for Fluid power

Mukherjee explains the Fluid power that forms the basis of most mechanical devices used in the industry and is the foundation stone for automation, "With the recent marriage of other streams like Electrical and Electronics with hydraulics, fluid power equipment is achieving greater accuracy and energy efficiency. This makes it the natural choice for most automation systems in all industrial sectors



Source: Hydax Hydraulics Pvt Ltd

"We want to proffer an integrated experience to the market in the shape of innovative and superior goods. While doing so, creating a climate conducive to inclusive thought and action is paramount to our ethos."

Meetali Mukherjee
Managing Director
Hydax Hydraulics Pvt Ltd

that consequently multiplies the possibilities of applications and thereby business from it. All eyes have been looking towards India and China to fulfil these requirements and it remains in our hands to cater to the demand."

Utilizing reserves during crisis

The economic market disruptions induced by Covid-19 has caused delinquencies with SMEs hitting refinancing prospects. Mukherjee sheds light on the company's plans for achieving breakthroughs during the current crisis, "The pandemic has certainly hit our production processes badly. Our supply chain is missing an entire rung in many instances and we are unable to find dependable alternatives. Production planning is being rescheduled ever so often

and we are looking at more sophisticated means of achieving our targets."

"The idea is to redesign our methods for which we do need some additional funding. Financial insti-

tutions are right now reluctant to extend their services and we have to take risks with our reserves to fulfil our needs while pursuing conventional banking modes," she shares.

Ensuring skilled labor

To attain the goal of making India self-reliant and 'Aatma Nirbhar Bharat', the Government of India is looking up to MSMEs in turning the coronavirus crisis into an opportunity through sustained focus on making the Indian economy globally competitive. Mukherjee offers her view on whether India has what is needed of it to become a manufacturing powerhouse globally in the coming years, "India has had a skill warehouse for decades, which is now slowly dwindling. We have a population to provide labor that is not necessarily skilled. Let us not limit ourselves being a sweatshop for overseas manufacturers. We have to develop newest engineering skills in man and machine to be considered a powerhouse."

"The one way would be to manoeuvre the labor to drive pre-programmed processes and simultaneously develop employable skilled labor. Both are achievable in the medium- and long-term of three to five years. We have to accept that many countries in our vicinity have similar plans and are forging ahead with them. The government can undertake the task of providing the infrastructure for educating the labor and establishing dedicated product development centres where design, prototyping, testing and certification facilities are available at major industrial hubs of India. MSMEs can pretty much sustain their functions on their own but can grow exponentially with the above support," she opines signing off.

HYDAX has recently acquired the technology to manufacture Electro-chemical Deburring Machines, Coolant Filtration systems and Component Washing Machines.

Source: Hydax Hydraulics Pvt Ltd



COMBATING COMMON CHALLENGES

A reflection on the hurdles that arise in the measurement and alignment tasks of large parts and their assemblies, and how portable 3D technology such as the FARO® Tracer Laser Projector can come to the rescue.



Source: FARO Technologies

Tracer^{SI} guiding an operator through the layout and welding process: Positioning of a component guided by a laser template.

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In the world of manufacturing, dimensional control is a fundamental building block that cannot be compromised. It determines part-to-part variation, establishes part-to-CAD comparison to check whether specs are met, and ensures proper fit in a final assembly. Beyond getting part geometries right, however, there are more important reasons for maintaining standards in accordance with design specifications. Investing in precision equipment for measuring and aligning components helps ensure that everything fits the first time around without any unnecessary rework, saving time and other resources for a com-

pany. Further, more serious consequences such as equipment failure or production delays can be avoided when alignment, measurements, and inspections are conducted properly and at appropriate phases of production.

A 'greater' need for precision

For industries such as Aerospace, Automotive, Shipbuilding, Heavy Equipment Manufacturing, and many others that handle large components and assemblies, measurement and alignment tasks are a considerable challenge in the overall production process. On the surface, these challenges may not seem too different from what

most manufacturers typically encounter. Yet, the difficulties, as well as the consequences of missed specifications, are magnified manyfold owing to the size of the objects being built.

Manufacturers that handle large workpieces would candidly share that as product size increases and part geometry grows more complex, it becomes harder for them to perform measurements and inspections accurately. Conventional hand tools such as rules, gauges, calipers, micrometers, squares, and protractors are effective up to a point, but they are also demanding in terms of time and operator skill, often making them prone to human error.

Portable 3D technology to the rescue

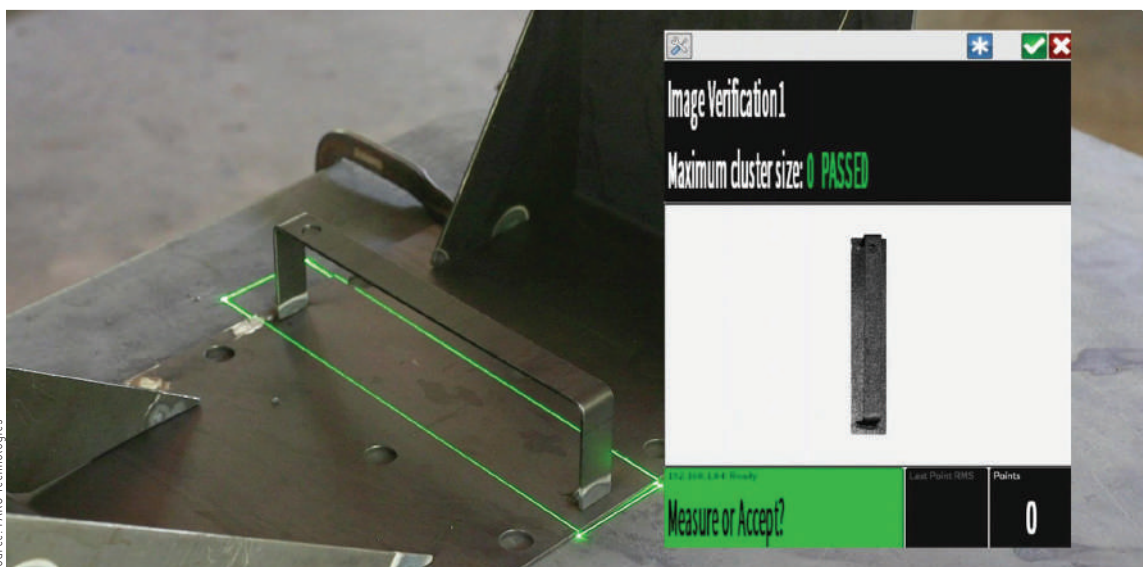
Portable 3D coordinate measurement devices have long been the choice solution among manufacturers for large-volume measurement, as they combine accuracy with flexibility. Compared to conventional hand tools, portable 3D technology offers manufacturers a much higher level of precision, efficiency, and productivity all at once. Unlike fixed CMMs, these solutions require much less capital investment at the onset, and are robust enough to perform even in a non-controlled environment, such as right on the production floor, in a dry-dock or hangar. Besides metrology grade measurement and inspection, however, there are additional ways in which 3D technology can support companies dealing with large assembly challenges. This is done through technical assistance systems for guided assembly and assembly verification based on virtual templating. These systems are based on the underlying philosophy that Quality Assurance starts with the assembly process, and they provide great support for layout and assembly workflows.

Guiding and verifying the layout and welding of large frames

When working on large, complex assemblies with numerous components, manufacturers who verify the accuracy of their assembly steps early on, or those that get the process of layout, positioning, and assembling components right tend to achieve better results in the final stages. In the example of welding large frames – which can have up to seventy or more ‘trinket’ pieces to weld on – a call for rework on errors made during the assembly process can have detrimental effects on a company’s productivity and bottom line. The team at Wisconsin-based crane lifting solutions manufacturer, Manitowoc Cranes, had been accustomed to using blueprints, tape measures, chalk, and physical templates to set their frames. However, there were downsides to the traditional way of laying out each frame using manual measuring methods. Parts located on the wrong side of a chalk line or parts welded on backward because the holes were offset in the plate were typical errors

that required rework. In addition, given the complexity of the frames and number of components that need to be welded on, positioning all these parts manually also cost a lot of time. There was also no effective way to detect if something was laid out or welded improperly without performing a 100 percent inspection. Furthermore, training new employees and cross-training veteran ones also proved to be an ongoing challenge. To overcome these challenges, the manufacturer decided to invest in a FARO® Tracer Laser Projector to increase throughput, reduce rework, and to lean out its processes. The Tracer Laser Projector provided operators and assemblers at Manitowoc Cranes with a virtual template to quickly and accurately position components. In addition, the Tracer system enabled a visual verification of individual process steps. Initially, there was doubt among its staff – who would try to measure and verify the lines projected by the Tracer. But with the Tracer, the number of mistakes and the

The FARO® Tracer Laser Projector increases throughput, reduces rework, and leans out processes. It provides operators and assemblers with a virtual template to quickly and accurately position components. It also enables a visual verification of individual process steps.



Source: FARO Technologies

In Process Verification of the Tracer[®] automatically checks whether a process step has been carried out correctly – for example if a part has been welded in the correct position.

With the right portable 3D device, manufacturers can boost customer confidence, accelerate delivery timelines, and reduce scrap and rework rates all at once.



Source: FARO Technologies

The Tracer^{S1} can be installed and positioned in any orientation (horizontal, vertical, overhead, angled) according to your specific projection requirements.

need for rework were reduced significantly. In fact, Manitowoc Cranes performed some time studies and confirmed that a return on investment for three projectors was realized in less than a year.

In a broader sense, the Tracer system eliminates the need for physical templates and tools in a broad range of layout, ply layout, and assembly applications. The device supports the layout/assembly process and also enables either a visual verification or a system-based, automated in-process

verification of process steps or the final assembly (based on the model). As a result, the risk of human error and costly rework is substantially reduced.

Moreover, manufacturers can avoid the time and cost associated with using large and heavy templates, while significantly improving assembly and quality control processes. Instead of blueprints, operators follow the sequential guide through the assembly process provided by the system. This takes the stress off operators who have to work on large components, know-

ing that the Tracer uses the full CAD design of the entire workpiece to take care of the 'big picture.' Furthermore, this eliminates the risk of misalignment by less experienced employees, allowing manufacturers to ensure alignment accuracy every single time.

Staying at the top of the game

By offering 3D-based laser templating and helping users breeze through assembly and verification processes, the metrology industry has enabled manufacturers to achieve precision with unprecedented efficiency, ensuring quality right from the start of the assembly process. With the right portable 3D device, manufacturers can boost customer confidence, accelerate delivery timelines, and reduce scrap and rework rates all at once. Companies that wish to gain a competitive edge should contact a 3D measurement specialist to reassess their needs and identify a suitable portable solution right away. 



Source: FARO Technologies

Counting Scales

Advanced Scale ICS465

Mettler Toledo offers a solution for advanced counting, totalizing and checkweighing, all in one device.

Mettler Toledo is the world's leading manufacturer and marketer of weighing instruments for use in laboratory, industrial and food retailing applications. The company has come up with an easy to use, the ICS465 Advanced Compact Scale for counting, totalizing and checkweighing. The graphical LCD display with the basic colorWeight™ indicator shows operators at a glance whether results are in- or out-of-specification for high throughput and fewer errors. The numeric keypad facilitates article data input. A wide range of capacities and readability up to 0.001gm make the ICS series the perfect fit for a wide variety of applications. It is available in the range of 0.6 - 35kg as a compact scale and up to 600kg as a free combination of terminal and platform.

Customer testimonial

Volz Group from Swabia, Southern Germany, is among the highly specialized world-market leaders with more than 90 years' experience in the hydraulic fittings industry. It operates according to just-in-time production and packaging standards and regulations. Volz supplies tube couplings and connectors to the hydraulic industry and balls to the ball-valve industry.

Using the PFK9 floor scale, Volz checks all incoming materials to ensure that their quality standards are met. Additionally, Volz uses counting scales to guarantee that customers receive the exact amount of product ordered. To ensure each package does not exceed 10kg, they use the ICS465 to count to target for each order.

The ICS465 is easy to use and simple to read, with its color-Weight® indicator that uses colors to notify the operator at a glance whether the weight is within specification. When Volz provides customers with the precise amount of goods they expect, it saves the business money by avoiding over-filling and facilitates exact production calculations to prevent process variations.

Volz has relied on Mettler Toledo scales for many years. "As we have high expectations to deliver high-quality products to our customers, we demand the same outcome from our quality control tools," says Dejan Milutinovic, Application Engineer, Volz Group.

"Mettler Toledo scales not only are easy to use for our employees, but they also help us achieve the best and most reliable results," he adds.



Mettler Toledo India Pvt Ltd
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SHOWCASING EXCELLENCE

With the aim to demonstrate Taiwan's high caliber in smart manufacturing to global players in the machine tool arena, a webinar cum trade meeting was arranged recently. Highlights of the event...

TAIWAN SMART MANUFACTURING TAIWAN-Your Intelligent Partner For Advanced Manufacturing

Webinar

Chien-Hao Ferng
馮健豪

Questionnaire

TIME & ACTIVITY

- 14:30 - 15:00 Registration & Testing
- 15:00 - 15:05 Opening
- 15:05 - 15:15 The Wire EDM's solutions for Smart Manufacturing
JERRY CHER, Ckt Room Special Assistant, AccuteX Technologies Co., Ltd.
- 15:15 - 15:25 Innovative Technology Creates The Highest Valueable of Heating Forming and Working Machines
CRYSTAL SUNG, Overseas Sales Specialist, Da Jie Electricity Machinery Industrial Co., Ltd.
- 15:25 - 15:35 High Value-Added Grinding Solution for the Automotive Industry
ELYN HUANG, Manager of Sales Dept., Palmary Machinery Co., Ltd.
- 15:35 - 15:45 High Value and Smart Sheet Metal Equipment
NCT turret CNC punching machine, CNC laser cutting machine, CNC bending machine.
P. PETER DEVOTTA, Regional Manager, Tailift Group
- 15:45 - 15:55 The Vision of Smart CNC Lathe
LIN CHEN YU, General Manager, L&L Machinery Industry Co., Ltd.
- 16:00 - 17:00 One-on-One trade meeting

Organized by: MOEA, TAITRA, TDEC, TMECA, TMSA

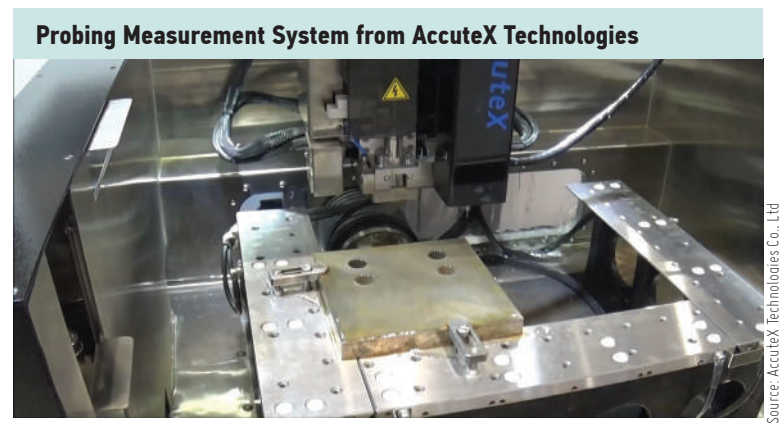
Co-organized by: TSM, TMSA

In the global machine tool industry, Taiwan plays a significant role with it being the 7th world's biggest producer and the 5th largest exporter of tools. The nation's Smart Machinery industry today holds an equally stellar reputation. With the aim to provide international players a glimpse into its Smart Manufacturing Solutions, the Bureau of Foreign Trade (MOEA), Taiwan External Trade Development Council (TAITRA), and Corporate Synergy Development Center recently organized a free webinar and online trade meeting under the title 'TAIWAN - Your Intelligent Partner for Advanced Manufacturing'. The webinar caught attention of buyers from around the world, particularly Europe

and Southeast Asia. It had five companies - AccuteX Technologies, Da Jie Electricity, Palmary Machinery, Tailift Group, and L&L Machinery - presenting their high-quality products and efficient solutions to hard-to-crack technical issues to the audience. Here's

knowing the companies and their cutting-edge offerings that they showcased...

AccuteX Technologies Co., Ltd
Established in 2001 by a group of ITRI (Industrial Technology Research Institute)



SOVAN TUDU
Sub-Editor
Sovan.tudu@
magicwandmedia.in



Source: TAITRA

Source: AccuteX Technologies Co., Ltd

engineers, AccuteX has since been developing cutting-edge Wire EDM machines and providing ideal solutions to the Mould industry.

The company presented the topic of 'The Wire EDM's solution for Smart Manufacturing'. It demonstrated innovative functions to complete the last mile of the wire EDM automated production. It proposed the first function of 'Probing measurement' to install the highly sensitive touch sensor that works with the controller to complete the alignment, which was conventionally aligned manually. The alignment is made by the NC program to complete X and Y axis rotation and reference point finding. The machine then moves to the correct spot and makes equal discharging. It released a new type of flushing nozzle in the second, 'final core removal' function. The controller can sense core falling, then pick up and drop it by the magnetic force. The process can be completed without any manual operation. The new function makes the machine stop when the core falls. The flashing nozzle picks up the core and is carried to the box. The controller finishes the rest of the cutting until the entire job is done.

"AccuteX uses the 'CIMFORCE FMS system' for the EDM production. The operator can just input the CAD files. The system generates the standard GM code accordingly for machines."



Source: AccuteX Technologies

"AccuteX uses the 'CIMFORCE FMS system' for the EDM production. The operator can just input the CAD files. The system generates the standard GM code accordingly for machines."

Jerry Chen
GM Room Special Assistant
AccuteX Technologies

The system generates the standard GM code accordingly for machines. It provides the 'end to end' solution including the CMM quality assurance," explained Jerry Chen, GM Room Special Assistant, AccuteX Technologies. "The system uploads all the information to the cloud server to allow the operator to monitor the machines' status, productivity and maintenance. Additionally, the system has an auto-scheduling ability if there is a demand to process an urgent delivery. It is a unique point in the AccuteX smart manufacturing system."



Source: Da Jie Electricity Machinery Ind. Co., Ltd

"Da Jie has developed Condenser Welding Machines for guide vanes used in the Pump industry and Upsetter Machines for high-class knife shanks."

Crystal Sung
Overseas Sales Specialist
Da Jie Electricity Machinery Ind. Co., Ltd

Da Jie Electricity Machinery Ind. Co., Ltd (Da Jie)

Da Jie specializes in Electrical Heating Upsetter Machines, Resistance Welders, MIG, TIG, Friction Welders, and Laser Welding Machines. Its products feature innovative technology of automation and high-production capacity.

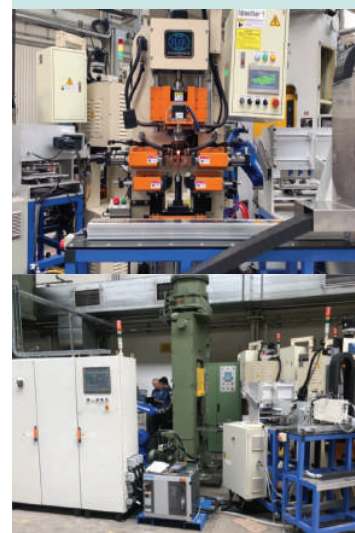
Taiwan plays a significant role in the global machine tool industry with it being the 7th world's biggest producer and the 5th largest exporter of tools.

AccuteX Technologies' WEDM Smart Manufacturing Site



Source: AccuteX Technologies Co., Ltd

Da Jie machines' applications in producing Automobile Parts



Source: Da Jie Electricity Machinery Ind. Co., Ltd

Da Jie has developed an Inverter Seam Welder for SS water tanks for addressing water shortage in more water demanding countries.

Da Jie's offerings for a wide range of industries



Source: Da Jie Electricity Machinery Ind. Co., Ltd

Their extensive applications include automobiles, water tank, aluminum and titanium machining industries as well as whole-plant equipment production lines.

The company, during the online meeting, presented its products including Automatic Upsetter machines, and high-efficiency and power-saving Seam Welders, and also deliberated on 'Innovative Technology Creates the Highest Valuable of Heating Forming and Welding Machines'. Da Jie has developed an Inverter Seam Welder for SS water tanks for addressing water shortage in more water demanding countries. It also makes Condenser Welding Machines for guide vanes used in the Pump industry and Upsetter Machines for high-class knife shanks.

Palmary Machinery Co., Ltd

Founded in 1998, Palmary Machinery has two subsidiaries and production bases in Taichung, Taiwan, along with two branches in China and Thailand. With 22 years of professional grinding machine manufacturing experience, the company supplies its grinders to more than 47 countries including China, India, and Japan. By adopting TQM (Total Quality Management), Lean

Production management, the MES (Manufacturing Execution System) in production lines, the company produces grinding machines of superior quality with international standard CE norms. Palmary presented its take on 'High Value-added Grinding Solution for the Automotive Industry' and also demonstrated its five series grinding machines. Its Centerless Grinder machines have the grinding wheel sizes from 12 to 24 in, with both various spindle and hydrodynamics spindle types. The Cylindrical Grinder machines have centers from 400 mm to 4 m. The company also has various CNC types including angular infeed and multi-spindle types. Its Internal Grinder has the maximum inner gradient diameter of 200 mm,



Source: Palmary Machinery Co., Ltd

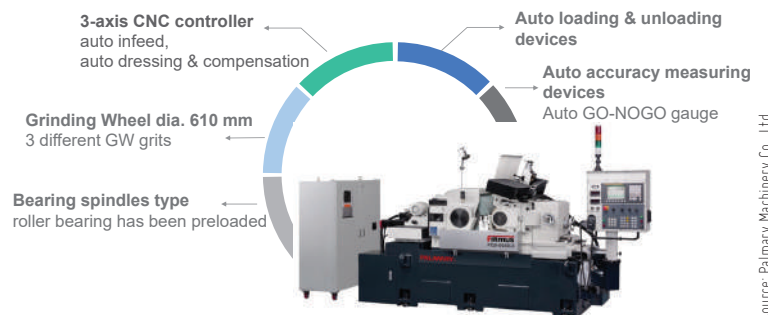
"The shock absorber's main function is to absorb shock impulses and keep cars, scooters and trucks in a stable condition while on the road. The most important component is the piston rod which needs precise outer diameter grinding."

Elyn Huang
Section Manager - Sales Department
Palmary Machinery Co., Ltd

along with one-wheel spindle and two-wheel spindle types. Its Vertical Grinders have diameters ranging from 200 mm to 1.6 m and are suitable for heavy or non-round shape workpiece grinding. It also showcased its Surface Grinders and Special Purpose Grinders. "The shock absorber's main function is to absorb shock impulses and keep your cars, scooters and trucks in stable condition while on the road. The most important component is the piston rod which needs precise outer diameter grinding," asserted Elyn Huang, Section Manager - Sales Department, Palmary Machinery,

Grinding Solution from Palmary Machinery

Auto line with 3 no. CNC Centerless Grinders PCB-6040-3



Source: Palmary Machinery Co., Ltd



Source: Tailift Group

“You can reduce the maintenance cost by using our machine. The fiber laser is made up of a vibrator and an external optical path through the fibre optic tube. No mirrors are needed, which greatly reduces the maintenance time.”

Jeff Lin
Vice General Manager
Tailift Group

on fulfilling requirements through its CNC centerless grinders model PCB-6040-3 for Piston Rod Grinding Solution. “The Palmary grinding application team is ready for your grinding requirements in not only the Automotive and Motorcycle industry, but also Mechanical components, Aerospace, Mould manufacturing and so on,” she concluded.

Tailift Group

Established in 1973 by a team of engineers led by Steve Lin, Tailift today has five factories with headquarters in Taichung, Taiwan, and sales offices in Indonesia, Dubai, and Vietnam. Since the production of radial drilling machines in 1975, it has developed forklifts, sheet metal equipment, automated equipment, and related products that find applications in Building, Heating/Cooling systems, Displays, 3C electronics/ Machine equipment, Medical equipment, and Transportation. The Group shed light on ‘High-value and Smart Sheet Metal Equipment’, and also its Laser Cutting machines that offers two series - FL series (Fanuc system)



Source: L&L Machinery Co., Ltd

“For the point R&D technology, we can choose a suitable machine according to the following conditions for users like the weight, diameter and length of a workpiece.”

Esme Chen
Sales Representative
L&L Machinery Co., Ltd

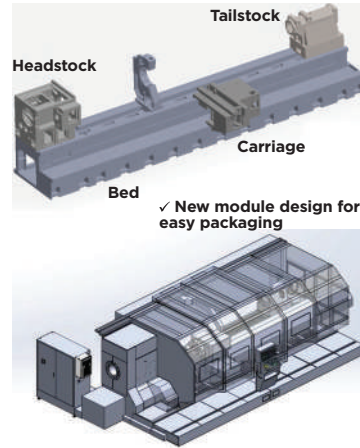
for high end, and TL series (PC based with nLight). “You can reduce the maintenance cost by using our machine. The fiber laser is made up of a vibrator and an external optical path through the fibre optic tube. No mirrors are needed, which greatly reduces the maintenance time,” said Jeff Lin, Vice General Manager, Tailift Group. “We also provide different kinds of power sources. We have 12000W, 2000W, 3000W, 6000W, and for 4000W, we offer a Variable Focus Corona Series. We use nLight Resonator made in the US and also FANUC Resonator used with FANUC 31iLB controller.”

Laser Cutting Machine from Tailift Group



Source: Tailift Group


L&L's R&D Technology - CAD Mechanical Design



Source: L&L Machinery Co., Ltd

L&L Machinery Co., Ltd

L&L Machinery (L&L) is a heavy-duty lathe manufacturer and provides customized and standard lathes to many industries. The company introduces smart design PLM, develops LL series and high-class CNC lathes, integrates design information to create virtual machine tools, adopts remote monitoring systems to connect with customers through IOT, and adopts image information to quickly respond to customers' needs. Its LL series machines have been awarded Taiwan Excellence in 2019 and 2020.

L&L's presentation focused on 'The Vision of Smart CNC Lathe', with its product capabilities. Its product line includes Manual Lathes, Standard CNC Lathes, Heavy-Duty CNC Boring Lathes, Large CNC Lathes (LFS, LFM), 5 Bed Way CNC Turning Boring Lathes, and 5-Axis Turning Milling CNC Lathes. The workpiece can be of the maximum weight of 40 tonne and 14m length. “For the point R&D technology, we can choose a suitable machine according to the following conditions for users like the weight, diameter and length of a workpiece,” informed Esme Chen, Sales Representative, L&L Machinery. 

L&L Machinery's LL series machines have been awarded Taiwan Excellence in 2019 and 2020. Its presentation focused on 'The Vision of Smart CNC Lathes'.

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