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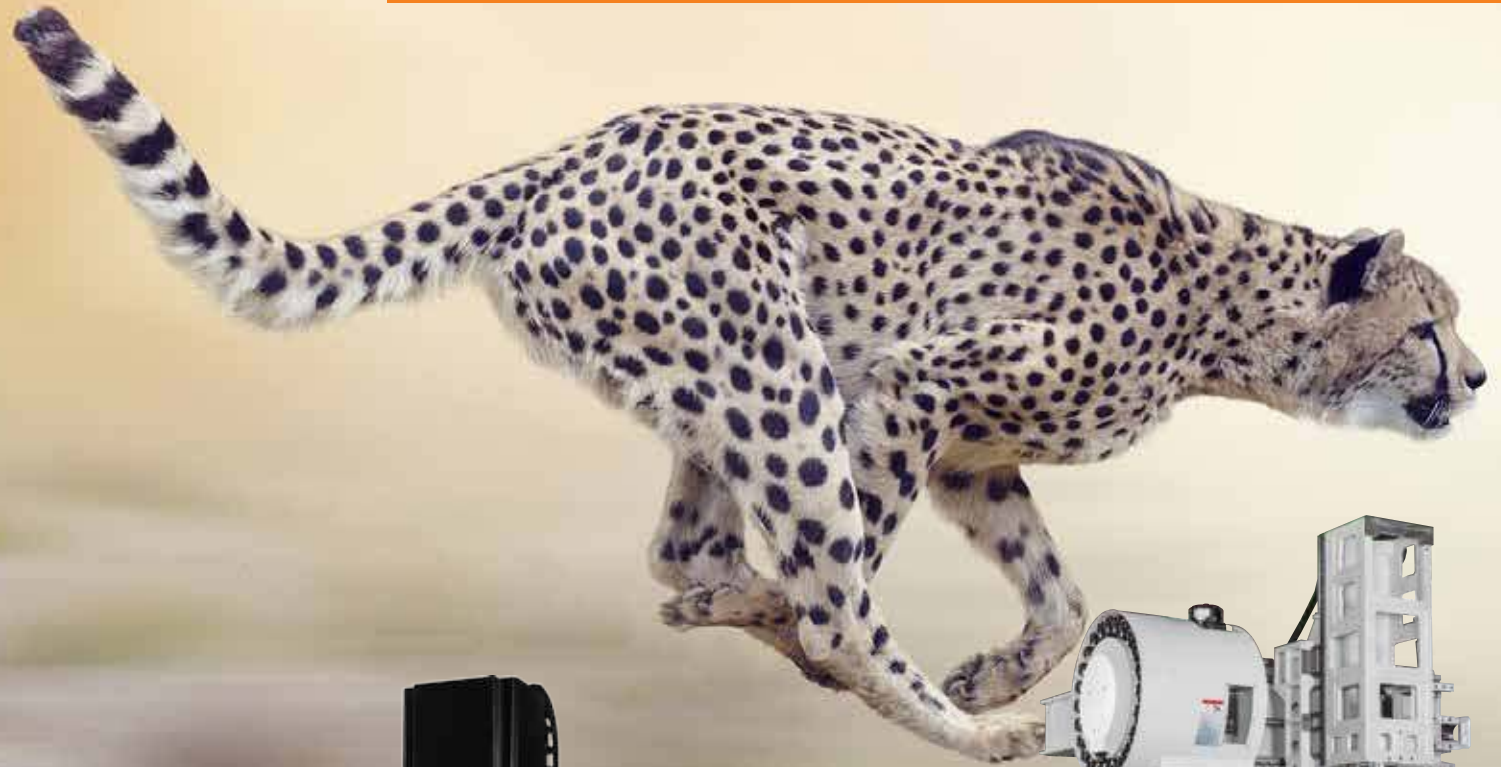
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P RAMADAS
President
Indian Machine Tool
Manufacturers' Association
(IMTMA)

TRANSFORMING INDIA'S MANUFACTURING LANDSCAPE WITH NEW-AGE TECHNOLOGIES

Global IT giant NASSCOM some time ago reported that it expects India to grasp around 20 percent market share in the Internet of Things (IoT). As Indian companies retool their factories for a digitally driven future, this prediction could before long become a reality.

With Industry 4.0 technologies, a significant number of features have been built into machines which minimizes human intervention. This enables them to take care of predictive maintenance, prescriptive maintenance, storing of information for future use, and also increases shop floor efficiencies and productivity for delivering high-quality products. However, it does ask of humans to understand the machine language.

Advances in Additive Manufacturing (AM) or 3D Printing have transformed the ways in which products are designed, developed, manufactured and distributed, enabling the industry to bring forth products with newer designs which are cleaner, lighter and safer.

Meanwhile, Indian Machine Tool Manufacturers' Association (IMTMA) is organizing the 19th edition of IMTEX and 21st edition of Tooltech (IMTEX 2019 & Tooltech 2019) concurrently from January 24 - 30, 2019 at Bangalore International Exhibition Centre (BIEC), Bangalore. It is a significant moment for IMTMA as IMTEX is achieving a milestone of 50 years since its launch in 1969.

IMTMA has always endeavored to bring the latest technologies to the doorsteps of the Indian manufacturing industry. In the same vein, special pavilions on Industry 4.0 and AM have been organized during the golden jubilee show. The pavilion on Industry 4.0 will have the visitors witness and experience all facets of its implementation. The pavilion on AM will familiarize the manufacturing fraternity with its techno-commercial advantages.

These state-of-the-art technologies can prove to be crucial growth drivers of the Indian manufacturing sector that mainly comprises SMEs. IMTEX aims towards educating SMEs on the importance of their adoption in their processes, which can enhance their competitiveness and push themselves closer to the global market.

The global manufacturing sector is undergoing a structural transformation. Hence, the time is just right for the Indian manufacturing industry to take the big step forward by embracing these technologies and emerge as a leader. IMTEX 2019 could serve as an ideal point to begin the journey.

Happy reading!

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PUBLISHER'S NOTE



Wishing you all a very happy New Year.

Manufacturing industry has had a truly remarkable year in 2018 with the industry creating new benchmarks. We are at the beginning of a promising New Year and it is the perfect time to recharge our batteries and look ahead to a prosperous and fulfilling 2019.

Manufacturing industry has a lot to rejoice especially with Indian Machine Tool Manufacturers' Association (IMTMA) celebrating 50 years of its flagship IMTEX exhibition in January. The show will unravel contemporary technologies including Industry 4.0 and Additive Manufacturing which are changing the world of manufacturing.

Readers will find reading a magazine enjoyable when they find depth, value and intensity in the articles which are published inside. This issue of Modern Manufacturing India (MMI) has weaved together some thought-provoking articles on additive manufacturing which is revolutionizing the manufacturing industry today. The issue also features an article on the highlights of IMTEX 2019. The exhibition is expected to spur India's manufacturing sector to higher growth.

On behalf of the Association, I would like to thank you for your continued interest in MMI. Your valuable feedback will be beneficial in our onward journey. Wish you a happy and prosperous New Year and see you at IMTEX & Tooltech 2019.

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DIRECTOR GENERAL & CEO
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WIELDING THE MAGIC OF STORY TELLING

In a moment of musing last month on my birthday, surrounded by the books that were so carefully chosen and gifted to me by my dear ones, dawned a thought that joined all the dots. Growing up, the stories inside the books have been a constant source of companionship, inspiration and the passion to become the best version of myself.

Powerful stories do that. They communicate purpose and businesses with purposeful stories stand out, all eager to capture consumers' hearts and wallets! Our part in the scheme of things is to provide a channel to businesses to convey their stories in their own voice and, at times, tell their stories on their behalf as best as we can.

With the world getting competitive by the day, there is a greater demand to read compelling stories about real people, depicting real problems and the ways to resolve them. Being the premium manufacturing publication in the country, we, at MMI, play the responsible role of choosing those stories that can create awareness among customers and bring in the change that matters. We thank

“Stories are the single most powerful tool in a leader’s toolkit.”

all of you – our readers, contributors and advertisers for your unrelenting support in helping us feature insightful end-user stories regularly issue after issue.

Following our practice, we are privileged to once again present to you this power-packed issue filled

with target specific and niche case studies, articles, and opinion pieces on the latest trends and technologies at an opportune time when South East Asia’s biggest machine tool show, IMTEX, marks its 50th year.

IMTEX 2019 & Tooltech 2019, like always, will be a delightful spread of state-of-the-art technologies and products from all over the globe. The manufacturing landscape is undergoing a massive shift and the exhibition to provide the best kaleidoscope to view it.

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IMTEX 2019: HERALDING A NEW ERA IN MANUFACTURING

IMTEX completing its half a century is a big enough reason for the machine tool players from far and closer home to attend the trade fair that has always exceeded expectations. The upcoming edition will not only be historic, with a plethora of displays and knowledge disseminating seminars, all under one roof, it also promises to be grander than ever.



Source: IMTMA

Indian Machine Tool Manufacturers' Association (IMTMA) will organize its twin show – the 19th edition of IMTEX (IMTEX 2019) and 21st edition of Tooltech (Tooltech 2019) from January 24 – 30, 2019 at Bangalore International Exhibition Centre (BIEC) in Bangalore. IMTEX is crossing a significant milestone of completing 50 years. It is one of the oldest exhibitions in the country and is still evolving. The entire

machine tool manufacturers fraternity along with visitors from user industries and academia will congregate at BIEC to make it bigger and better. IMTEX & Tooltech 2019 is slated to drive machine tool and manufacturing sector to newer heights, expand market opportunities and reach new customers. Recognized as the largest exhibition of metal cutting machine tools and manufacturing solutions in South and South-East Asia, the show has gained

reputation as a premier manufacturing technology exhibition in the world.

IMTEX like never before

With every new edition, the exhibition has grown from strength to strength. As IMTMA, the organizer of IMTEX, celebrates 50 years of IMTEX, many new features have been added to the show to make it all the more grander. Sharing his views on 50 years celebration of IMTEX,

Key Highlights

- Around 80,000 sq mt of Exhibition Space
- 6 Exhibition Halls
- Over 1,000 Exhibitors
- 7 Country-group participation: China, Germany, Korea, Spain, Taiwan, UK and USA
- 23 overseas countries participation: Australia, Austria, Belgium, China, Czech Republic, France, Germany, India, Israel, Italy, Japan, Korea, the Netherlands, Russia, Serbia, Singapore, Spain, Switzerland, Taiwan, Thailand, Ukraine, the United Kingdom, and the United States of America
- Seminars on 'Additive Manufacturing' and 'Industry 4.0'

Jamshyd N Godrej, Chairman, Exhibitions-IMTMA, said that the response has been significantly impressive as could be gauged from the enthusiasm shown by the exhibitors and user industries. The exhibition


is being held in six halls covering an exhibition space of 80,000 sq mt. BIEC has expanded its infrastructure by constructing one more hall (Hall 5) in its premises. IMTEX will be the first major exhibition to be held in this new hall. The addition of a new hall to BIEC infrastructure will enable IMTMA to tap new shows and attract them to the venue. Speaking about the progress of the Indian machine tool industry, P Ramadas, President, IMTMA, said that the market size of Indian machine tool industry for FY 2018-19 is estimated to be over US\$ 2 billion and domestic production accounts for about

Eco Design Award

IMTMA has constituted an Eco Design Award to encourage exhibitors to use eco-friendly materials in construction of their booths. The best stall at the exhibition will be awarded with Eco Design Award. Several categories have been formed under this award and exhibitors are encouraged to participate and contribute towards 'minimum carbon footprints'.

half of the total consumption. Machine tool production for FY 2017-2018 was around US\$1 billion. There was a growth of around 26 percent in production and 27 percent in consumption in FY 2017-18.

Seminars on the current trends

Throwing light on the progress of the Indian machine tool industry, V Anbu, Director General & CEO, IMTMA, said that IMTEX will have two new seminars – on 'Factory of Future: Industry 4.0' on January 25, 2019 and another on Additive Manufacturing on January 26 and 28, 2019. These technologies will also be showcased in the special pavilions during IMTEX. Visitors can see and experience all facets of implementation of Industry 4.0. The pavilion on Additive Manufacturing will familiarize the manufacturing fraternity with the techno-commercial advantages of additive manufacturing. The pavilion will have zones focusing on various aspects such as innovations in product development, engineering and manufacturing, and products developed through additive manufacturing. International visitors from around 65 countries are expected to visit IMTEX 2019 & Tooltech 2019. 

IMTEX 2019 & Tooltech 2019 has acquired immense popularity on social media as well as electronic media as could be gauged from the 90,000 followers on Facebook, 1,700 followers on LinkedIn, and a large number of registered visitors using the online Expo Platform for registration



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EMO Hannover 2019

Frankfurt am Main, Germany - The world's leading trade fair for metal-working, EMO Hannover 2019, which will take place from September 16 - 21, 2019, had already registered 1,780 exhibitors from 41 countries by 01 December, 2018. The trade fair will take place under the motto Smart technologies driving tomorrow's production. A new exhibition area, IoT in production, underscores its claim to position itself as a platform for networking in production. Dr Wilfried Schäfer, Managing Director, VDW (German Machine Tool Builders' Association), the EMO organizer, explained "IoT in production provides a complete overview of the central aspects of networking, including data security, data analysis, process monitoring, predictive maintenance, smart data management and much more."



Source: VDW

Dr Wilfried Schäfer
Managing Director
VDW

Indian economy to grow by 7.3%

New Delhi, India - According to India Barometer report 2019, revealed by FICCI in association with PwC, India has the potential to grow at an average rate of 7 percent or more in the next 12 months.

The survey reported a positive sentiment among business leaders who anticipate faster growth in their sectors in the coming 12 months; around 58 percent believe that their sector would grow faster by at least 5 percent and 85 percent of them believe that their future growth will be driven by export demand. This mirrors India's export performance over the last 12 months. In FY 2017-18, India's exports grew by 9.8 percent, the fastest growth in the last 5 years.

ExxonMobil Receives UL's Silver

New Delhi, India - ExxonMobil's global network of lubricants blending and packaging plants, which manufacture all Mobil-branded products, has received the Zero Waste to Landfill Silver validation from UL, making it the first petroleum products company to secure this validation. The company's lubricant operations is successfully diverting over 90 percent of the waste produced in its global plant network from local landfills. More than 50,000 tonne of waste produced per year are being redeployed into new, productive uses. "Achieving this validation is an accomplishment toward our goal to 'Protect Tomorrow. Today.' and further demonstrates our commitment to bring all consumers high quality solutions to meet their business objectives," said Terry Neal, Global Lubricant Operations Manager, ExxonMobil.

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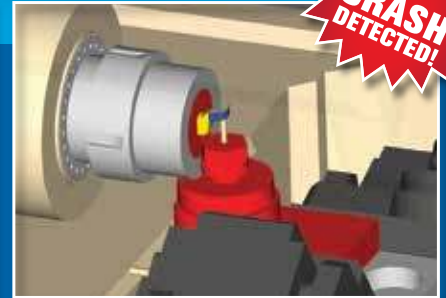
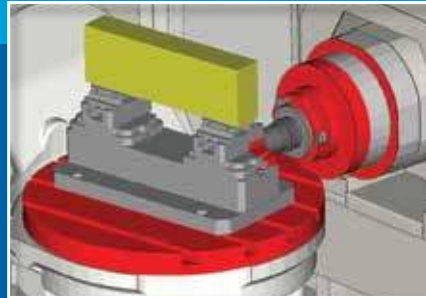
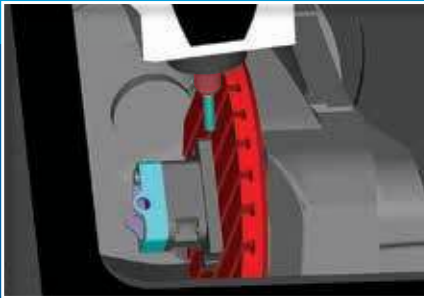
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Location: **Rithala, Delhi**

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ACCURACY IS EVERYTHING

Properly evaluating machine tool capability requires understanding how both the user and the builder can influence precision.

Source: Modern Machine Shop

I define a CNC machine tool's accuracy as how precisely its axes can follow intended paths to commanded end points while under load. I define its repeatability as how precisely it can duplicate commanded motions (again, under load) during multiple cycles throughout the day.

These are definitions for dynamic accuracy and repeatability that likely vary from your machine builder's specifications that commonly indicate static accuracy and repeatability.

Dynamic accuracy and repeatability vary with the amount of stress exerted on machine components. The greater the stress, the more difficult it is to maintain accuracy and repeatability. This makes it impossible for machine builders to provide, much less guarantee, dynamic accuracy and repeatability specifications. There are simply too many variables.

Machine builders' influence

Machine builders should be able to establish whether their machine can achieve accuracy/repeatability requirements for your particular application. Certain accuracy-related factors are beyond a CNC user's control once a machine is installed. These include:

- **The machine's construction:** It must be able to perform the most powerful machining operations in your application without excessive deflection of its support components.

- **The feedback system:** Linear scales directly monitor the position of the moving component for an axis. Unlike rotary encoders, they are not highly dependent upon the integrity of axis system components (way systems, ball screws and couplers).

Machine users' responsibility

Other accuracy-related factors are the responsibility of the machine user. These include:

- **Machine tool calibration:** Machine builders initially calibrate pitch error and backlash compensations, but if accuracy is to be maintained, end users must repeat these calibrations at regular intervals during a machine's life.

- **Environment:** Machine tools must be placed in a stable working environment that minimizes ambient temperature and humidity variations.

Coping with thermal changes

An important repeatability-related issue linked to machine design is thermal variation of moving components. As these components warm, they grow. As they cool, they shrink. This makes it difficult—maybe impossible—to hold size on critical, tight-tolerance surfaces during the machine warm-up period.

Machine builders go to great lengths to minimize thermal changes in machine components (cooling the spindle and/or way systems, for instance). Additionally, they incorporate design methods that minimize the repeatability impact of thermal variation.

When purchasing any new CNC machine, you must confirm that machined-surface variations caused by thermal growth during warm-up will not exceed tolerances. Otherwise, you could be in for a productivity-wasting surprise when you discover that your new machine must run for a warm-up period before it can be used in production.

Ensuring repeatability

Variations of any kind—during a production run or from one time a job is run to the next—can impact repeatability. If the variation is great enough, it could result in scrap.


Examples of variations during a production run include:

- **Tool wear:** As cutting edges wear, machined surfaces will vary. External surfaces grow while internal surfaces shrink.

- **Dull tool replacement:** When dull cutting tools are replaced, extreme caution is required to ensure that cutting edge(s) do not vary from their predetermined position(s).

- **Workholding set-up:** Many factors affect workpiece stability—placement of the workholding device, clamp location and force applied, program zero assignment etc.

- **Cutting tool assembly, measurement and offset entry:** Component and assembly variations result in rigidity variations that can lead to machining issues.

- **Machine condition:** Variations caused by mishaps and the neglect of preventive maintenance can result in sizing problems with jobs that have run successfully in the past. 

Dynamic accuracy and repeatability vary with the amount of stress exerted on machine components. This makes it impossible for machine builders to provide, much less guarantee, dynamic accuracy and repeatability specifications.



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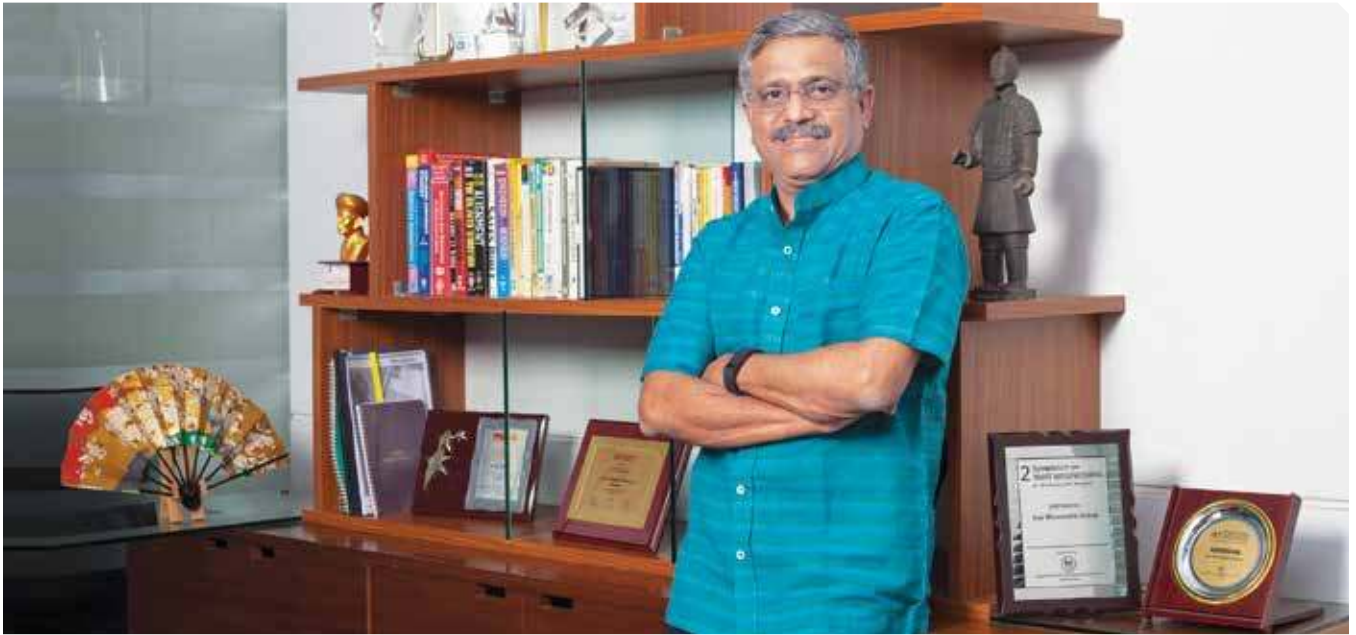
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THE IMPORTANCE OF KNOWING YOUR CUSTOMER

These are the days of information overkill. We are bombarded with so much of data, concepts, approaches and are constantly threatened by competition, volatility, uncertainty etc. We respond by taking several initiatives in our organizations that often run at their own peril while we operate side by side with people working at cross purposes. Most likely, we may not be pouring ourselves deeply enough into basic yet important issues like “Who are our primary Customers?” or “Are we engaging with them enough?”

While these may seem to be too basic questions to ask, answering them is not. Especially for the capital equipment sector, the word ‘customer’ is like a rubber band and stretches to include several people, departments and stakeholders that make this exercise rather difficult. In many cases, the true customer plays no direct role in getting revenue to the organization. Then, is the customer the one who uses the machine? Is he the one who pays for the machine? Is he the one who maintains the machine? This identification is not very apparent and we struggle to identify who the most important customer is. As a result, organizations treat all the stakeholders as customers, which results in a poor strategy. By not identifying the primary customer many organizations that consider themselves customer-focused become defocused.

In the present times of global competition, it is the value selling that brings in the profit margins. Capital equipment organizations that do not identify their primary customers are on a slippery slope. They continue to do normal business for the time being but then get pushed away by the competitors who can identify their primary customer and build internal processes to satisfy this primary customer before others. We have been brought up on the ethos of the customer being the god and he being always right. This leads us to believe that all customers are equal. The need is to understand that all customers are unique, and choose different sets of offerings for the different sets of customers.

This must be done with a disciplined approach based on how the customer organization is likely to contribute to your growth and/or profitability. The framework to choose primary customers is asking ourselves: ‘Who is the best fit for our organization’s business culture and tradition’; ‘Do we have the technical and the financial capabilities needed to match the primary customers’ expectations’; “Do we understand what he values by tracking his buying patterns;” and “Do we have mechanisms in place to track and respond to shifts in his behaviour”. And take it from there.

”
We have been brought up on the ethos of the customer being the god and he being always right. This leads us to believe that all customers are equal. The need is to understand that all customers are unique, and choose different sets of offerings for the different sets of customers.
“

T K RAMESH
Managing Director and CEO
Micromatic Machine Tools Pvt Ltd

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

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A GLIMPSE INTO THE FUTURE OF MANUFACTURING

The Indian manufacturing sector is increasingly assuming significant importance in the global manufacturing landscape. Its rapid transformation is ushering in innovation for improving agility, efficiency and productivity. However, the need is to bring innovators and leaders together with the best solutions to jointly transform operations and sustain our environment, delivering on the promise of a brighter future.



Source: Dassault Systèmes

Manufacturing theme value networks

In the present era of rapid technological advancements, manufacturing organizations are witnessing a global Industry Renaissance. With the emergence of new businesses and categories of solutions, processes, and services, companies now prioritize sustainable innovation and experiences over productivity gains. To keep up with these advancements, businesses must be faster, more integrated and more agile than ever. The companies which are leading in the manufacturing sector today are the ones that create value through

networks to make sustainable and innovative products.

Reimagining the manufacturing of tomorrow

Manufacturing companies should think of manufacturing as a process of value creation and no longer as just a means of producing goods and services. We are living in an experience economy where the utility of the product and the service take precedence over the mere product itself. Businesses now strive to implement value networks in which the real and virtual merge to create new ways of conduct-

ing businesses. What is changing is the platform manufacturers use to deliver the value:

Value networks that transform supply chains to maximize the social impact by breaking down the barriers between industrial trading partners, producers, and makers with new business models for delivering sustainable innovation to consumers.

Sustainable innovation and excellence that eliminates risk, and increases the ability to predict thereby improving operational performance. There is an amalgamation of the power of virtual worlds and real

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operations where people and machines utilize a business platform to come together and change business outcomes

Workforce of the future reveals today's workforce talents which can improve the workforce of tomorrow through the power of experiences and know-how gained by constant learning and collaboration.

Value networks

With digitalization becoming mainstream, there is a surge in the innovation which can disrupt the industry. Now, with the real and virtual world combined, manufacturers can more easily replicate and modify product design and manufacturing processes - anything from an automobile to an electronic device to apparel to a building infrastructure, making it quick and easy to identify, hire and collaborate with the best partner available for each task. It is easily possible to assemble teams from across multiple industries.

The emergence of online marketplaces makes it possible to evolve the supply chain into a value network: a single, virtual, social enterprise, pioneering a new way to do business, innovate, and create value in the manufacturing industry. On-line platforms and marketplaces have already transformed retail, transportation and hospitality services. Now, manufacturing markets are transforming as well by matching makers with producers.

Dassault Systèmes has extended its platform to a 3DEXPERIENCE Marketplace connecting Indian companies (OEMs, SMEs or startups) who are wishful for the adoption of this technology with industrial services providers, leading to online collaboration and faster innovation. Redesigning parts, assembling them and a systematic explo-

ration of the printing process parameters (path speed, path layout, for instance) has never been this easy, that too with an assurance of durability and high quality of parts.

Sustainable innovation and excellence

With the help of digitalization, the availability of big data analytics, real-time data acquisition and digital continuity from ideation to design to production and even to ownership - sustainable innovation and excellence are becoming a reality. We are now able to more quickly than ever embrace technology advances (such as the Digital Twin, Additive Manufacturing, Artificial Intelligence, Industrial Internet of Things). With a mindset of continuous improvement and competitive agility, businesses can drive value, meet market demands and deliver unique, one-to-one experiences for everyone. Virtual modeling is also making continuous improvement possible for product design, manufacturing processes, and customer satisfaction. Unified product and process models integrate feedback from the shop floor (including digital data generated by low-cost wireless sensors and cameras), the supply network, the distribution network and consumers to update and validate operations processes and marketing plans.

Change is crucial

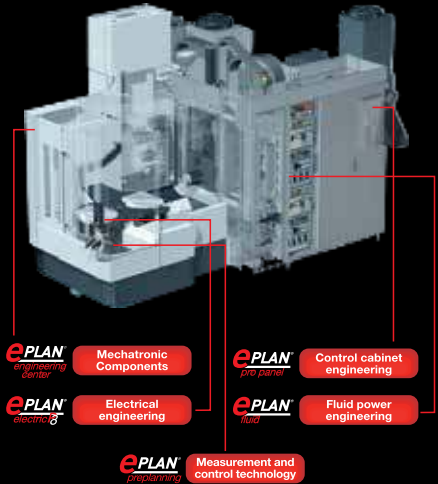
Additive manufacturing (AM) popularly known as 3D printing, is a manufacturing technology that has been evolving since the early 1990s, but can finally be said to be proving its worth in many fields. Recently, the advancements in the technology have brought 3D printing to the desktop and the home through the Maker movement. Significantly, the scope of AM is now

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With the help of digitalization – big data analytics, real-time data acquisition and digital continuity – sustainable innovation and excellence are becoming a reality.

expanding beyond rapid prototyping into industrial applications of both tool-product and direct-part production. Additive manufacturing is an exciting example and transformational component of this change. It is now possible to design a part or subsystem as a single, solid object, rather than relying on multiple components that are assembled. Integrating different materials enables new capabilities for strength, weight, flexibility and more. AM techniques can enable more efficient, low volume production of complex parts and can also save on materials, improving materials usage/waste ratios in production. Companies that can change how they do business or get closer to customers the fastest will have the advantage in transforming how they manufacture, use their value network and maintain operating margins.

Switching from traditional manufacturing to 3D printed parts requires a redesign of the parts or even the assemblies. It requires a systematic exploration of the printing process parameters (path speed, path layout, for instance) to ensure durable high-quality parts. Therefore, companies need to transform themselves to leverage 3D printing. In India, the majority of small and medium sized organizations have lim-

ited access to printers. On the contrary, there has been a surge in OEMs and startups exploring 3D printing and trying to leverage this as a business advantage. This has led to the introduction of multiple variants of 3D printing processes with new and improved technologies. Some large OEMs even have in-house 3D printers, but face the real dilemma when they require access to external ones to test or compare newer processes.

The Indian manufacturing sector has assumed significant importance in the global manufacturing landscape. The time has come when India needs to embrace agility, flexibility, and scalability in its manufacturing units. Moreover, with the emergence of a new business-friendly scenario in the country, today, on one hand, many new factories are coming up and on the other hand, a large number of manufacturing companies are considering installation of production facilities or assembly lines for new product development. However, whether it is a brownfield or greenfield investment, planning from the scratch will be a time-consuming affair leading to over expenditure. Dassault Systèmes' 3DEXPERIENCE TWIN will drastically cut down the time frame and lead to a substantial cost saving – as it allows the en-

tire planning, simulation, testing and validation in the virtual form. As 3DEXPERIENCE TWIN allows manufacturers to design and see the entire model of the factory, with this one, they can ensure the right allocation of the spaces for their activities such as machinery, raw material, and goods storage, in and out-bound docking systems and so on. One can also manipulate the positioning of the activity spaces and watch its impact on the overall factory operation to achieve a lean and agile manufacturing process

Workforce of the future

Continuous improvement for products, processes and customer satisfaction are enabled by highly skilled workforces with knowledge and know-how. The leading manufacturers of the future will be those who successfully educate and empower their employees to deliver new categories of products, sustainable solutions, and imagine new ways of working knowledge and know-how.

By a popular estimate, 65 percent of children entering primary school today will ultimately end up working in completely new job types that don't yet exist. In such a rapidly evolving employment landscape, the ability to anticipate and prepare for future skills requirements, job content and the aggregate effect on employment is increasingly critical for businesses, governments, and individuals in order to fully seize the opportunities presented by these trends and to mitigate undesirable outcomes. In the 21st century, we are no longer limited by the availability of information, experiences or best practices. Thanks to new technologies, collaboration is now possible on a multi-discipline and multi-scale approach.

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By a popular estimate, 65 percent of children entering primary school today will ultimately end up working in completely new job types that don't yet exist.

The capacity to make and learn is vast, with options now available to link current education models with business startups, Fablabs and innovation hubs.

The platform approach to manufacturing

Manufacturing has always meant constantly inventing and reinventing. To continue to be successful, more than ever, we need to place power, meaning knowledge and know-how, into the hands of everyone. We need people who can work together to imagine, test, create and implement ideas in the real and the virtual worlds. They will learn by doing, using existing know-how to augment knowledge building.

The leading companies won't be those who try to repeat the past or tweak the present but those who imagine and create a world that didn't exist before.

Dassault Systèmes' 3DEXPERIENCE platform connects the technologies and solutions to pursue discoveries, nurture them and bring the results to business and people throughout the world. Sophisticated modeling and simulation, data acquisition, analysis and reporting, and breakthroughs in imaging and manufacturing come together for organizations pursuing what was once thought 'impossible'. For manufacturing, the result is an operations management and development environment with a single, federated view of models, processes, operations, and planning. Essentially the 3DEXPERIENCE platform provides a global operations management view that supports knowledgeable decision making to keep things running smoothly and exploring new innovation horizons. This helps optimize production for greater efficiency and output while reducing costs

and time-to-market. A major challenge of manufacturing innovation is that by definition, it creates change.

For a production environment often, change can be seen as bad. There isn't time to stop, adjust, test and go back online which could waste time, production and revenue. But a virtualized 3DEXPERIENCE twin enables companies to innovate while mitigating risks. The 3DEXPERIENCE platform is transforming, enabling innovation for improving agility, efficiency and productivity. Dassault Systèmes' commitment is to bring innovators and leaders together with the best solutions (or experiences). Together, we can transform operations and sustain our environment, delivering on the promise of a brighter future. Such is the promise of manufacturing in the age of experience. 

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HOLDING THE VISION

It takes a tremendous amount of passion and effort to shape an idea and see it through to its success. With the handholding of the eminent Godrej Organization, the vision for an entire machine tool event was turned into a reality. It's been 50 years to it with IMTEX growing bigger and grander year after year with an unparalleled fan following. The support from the Organization, however, remains the same. A snapshot of the expo's remarkable journey...

Aerial shot of Bangalore International Exhibition Centre (BIEC) that is playing host to South East Asia's biggest Machine Tool Exhibition - IMTEX 2019 & Tooltech 2019.



Source: IMTMA

“ I remember the first IMTEX in 1969. It was at Godrej. It was small. But what impressed me most was - it was world-class. Even at that time the execution was world-class, although it was tiny. I think that set the culture of IMTEX right through. Because the way you do it the first time and then you maintain that and improve over the years is what, I think, has made IMTEX beyond doubt the best managed, the best

organized show in the country,” says Jamshyd N Godrej, Chairman - Exhibitions, Indian Machine Tool Manufacturers' Association (IMTMA).

His words paint a scene of an impeccable machine tool show whose journey began 50 years ago. The reason he can so vividly recall it is because he has seen the trade fair since its infancy from extreme close quarters and has been a constant part of its evolution. IMTEX was the vision of Na-

val Godrej, who, fascinated with the subject of machine tools, took up the initiative and made IMTEX his mission.

The vision that took shape

Considered the most momentous event of 1969, the first All India Machine Tools Exhibition (AIMTEX) was organized by IMTMA in Bombay from December 14 to 21. An entirely machine tool show and the first ever industrial exhibition of its

Source: Team MMI

IMTEX's 50 Years Journey (1969 - 2019)



kind in India, it bore testimony to IMTMA's relentless enthusiasm to create a platform to nurture the Indian machine tools industry and get it on par with international standards. In the last fifty years it has continued to be relevant by keeping pace with global developments in machine tools as well as technologies. And this undoubtedly is the greatest success of brand IMTEX.

The Godrej Organization's contribution

The exhibition was held at the newly built plant No. 10 of Godrej & Boyce Mfg Co Pvt Ltd. Beyond being the Chairman of the organizing committee, Naval Godrej (justly considered the founding father of IMTEX)

took a very personal interest and spared no effort in making the machine tools event a fruitful proposition. The Godrej Organization not only placed its premises at the disposal of the Association, but also extended complete support in terms of facilities and manpower in the planning, designing and organizing of the event. The practice is continued even today.

IMTEX today

The IMTEX of today has come of age with its current stature in the global machine tool space being something to marvel at. It has risen over the challenges on the way, remaining true to its purpose of showcasing the cutting-edge in global trends to our domestic players on their home turf.

In the last 50 years, IMTEX has continued to be relevant by keeping pace with global developments in machine tools as well as technologies.

IMTEX has always been a technology fair from the Indian perspective. From where it stands today, the expo can be seen as the link between technology and the high consumption-driven economic growth in India. Broad-based on the ground realities of the Indian market and with an eye on the anticipated trends in the industry, the current edition of IMTEX will showcase advanced technologies like 3D Printing, Internet of Things, Automation, Robotics, and Industry 4.0. IMTMA is introducing two exclusive pavilions: Additive Manufacturing Expo and Factory of the Future: An Expo on Industry 4.0. To cater to the massive crowds thronging the event, an extra hall has been appended to BIEC, the venue of the event. 

MEETING THE GOLD STANDARD

On the golden jubilee of IMTEX, Indian Machine Tool Manufacturers' Association (IMTMA) has methodically worked out the math of making the trade fair larger, innovative and one that can benefit both exhibitors and visitors.



Source: IMTMA

The newly constructed Hall 5 at BIEC is the largest exhibition hall in India, making the total covered exhibition area of 77,500 sq mt.

Reaching a golden milestone is not given to everyone and anyone. Few deserving touch this milestone and when they do, their joy knows no bounds. This year, IMTMA is celebrating its 50th year of IMTEX from January 24-30 at Bangalore International Exhibition Centre (BIEC), Bangalore. The trade fair has come a long way and today is South Asia's largest exhibition in manufacturing technology. Reminiscing the journey, Jamshyd N Godrej, Chairman - Exhibitions, IMTMA, says, "Understanding the needs of manufacturing industry has been IMTMA's core strength over these years. IMTMA took

a lead in showcasing global developments when Indian manufacturing industry was in a nascent stage. We made a start 50 years ago and we are immensely proud of how the show has evolved in 5 decades and fostered an understanding among the manufacturing fraternity." The exhibition has served to bring diverse groups and stakeholders onto a common platform for knowledge sharing and transacting business. Way back in 1969, the trade event was organized on a 7,000 sq mt premises in Vikhroli, Mumbai, with the participation from 26 companies. Today, IMTEX 2019, held at BIEC, covers an exhibition space of around 80,000 sq mt with

participation from over 1,000 exhibitors from 23 countries. Speaking about the show's relevance, P Ramadas, President, IMTMA, said, "IMTEX is a must-attend exhibition for technology enthusiasts. It is here that the latest technologies which are widely prevalent in overseas countries are launched and displayed live. The current edition of the show will showcase advanced technologies like 3D Printing, Industrial Internet of Things (IIoT), Automation, Robotics, and Industry 4.0." Since its beginning, IMTEX has sought to showcase every change and shift in metalworking technology to enable Indian manufacturers to innovate,

Source: Team MMI

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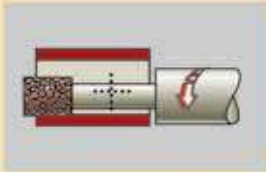


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“Understanding the needs of manufacturing industry has been IMTMA’s core strength over these years. IMTMA took a lead in showcasing global developments when Indian manufacturing industry was in a nascent stage. We made a start 50 years ago and we are immensely proud of how the show has evolved in 5 decades and fostered an understanding among the manufacturing fraternity.”

Jamshyd N Godrej
Chairman - Exhibitions
IMTMA

reinvent, evolve and stay relevant for their customers.

V Anbu, Director General & CEO, IMTMA, said, “It is incredibly inspiring to see how a brand impacts trade in a positive way and leaves its imprints in the timeline. The wheel which was set in motion 50 years ago with All India Machine Tool Exhibition as it was known back then was a significant one. We are glad that as we celebrate 50 years of IMTEX we get an opportunity to retell the story to our modern generation and inspire them to take forward the torch which was ignited by our founding fathers.”

Continuing with its efforts of providing world-class exhibition facilities, IMTMA has added a new hall (Hall 5) at BIEC premises to cater to the increasing demands of space at the show.

What to expect

The much popular trade fair has exhibitors that represent every aspect of traditional manufacturing as well as modern ones.



“It is at IMTEX that latest technologies which are widely prevalent in overseas countries are launched and displayed live. The current edition of the trade fair will showcase advanced technologies like 3D Printing, Industrial Internet of Things, Automation, Robotics, and Industry 4.0.”

P Ramadas
President
IMTMA

While the list is extensive, we will offer a glimpse into what visitors can expect at the fair. IMTEX 2019 will have companies displaying turning, drilling, boring, grinding, milling, tool grinding, and gear cutting machines; CNCs; flexible manufacturing systems; honing, lapping, polishing and deburring machines; robotics & manufacturing automation, and many more. Concurrent to IMTEX 2019 is Tooltech 2019 that will showcase machine tool accessories, metrology and CAD/CAM cutting tools, tooling systems and current trends in the tooling industry. Tooltech manifests recent innovations in technology, design and product development to achieve competitiveness and excellence in the machine tool industry. The idea is to highlight recent innovations in technology, design and product development to bring cost competitiveness in all metal working operations.

Visitors to the trade fair can expect to be pleasantly surprised



“It is incredibly inspiring to see how a brand impacts trade in a positive way and leaves its imprints in the timeline. The wheel which was set in motion 50 years ago with All India Machine Tool Exhibition as it was known back then was a significant one.”

V Anbu
Director General & CEO
IMTMA

this year. Besides the range of latest equipment that has mostly emerged as R&D last two years, the organizers have also allotted special pavilions for Additive Manufacturing and Industry 4.0. What seems most wonderful is that visitors from across the globe involved in aerospace, automotive, extrusion, defence, earthmoving equipment, job shops, material handling, medical engineering, oil & gas equipment, plastics processing, railways, will throng the entire week of IMTEX 2019.

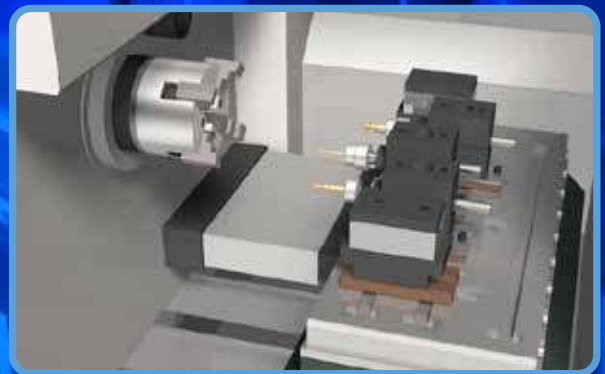
More than money’s worth

IMTMA, on its part, is leaving no stone unturned to assure a successful event. Simultaneously, the organizer, along with EEPC India (Engineering Export Promotion Council), is organizing a Buyer-Seller Meet 2019 by inviting potential buyers of machine tools from target overseas markets to explore mutual business opportunities between Indian machine tools and accessories

IMTMA has added a new hall (Hall 5) at BIEC premises to cater to the increasing demands of space at the show.

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Source: IMTMA

manufacturers. This delegation will be open to dealers in machine tools who are interested to do business with Indian machine tool manufacturers.

The i2 pavilion will present an opportunity to R&D and educational institutes to display their R&D capabilities in the arena of metal working to the world.

The entire fair has been organized around knowledge, technical skills, R&D, and future demand. IMTMA has also organized the 8th International Seminar on Machining Technologies which will dwell extensively on new manufacturing strategies, review and address emerging trends, as well as expose users and manufacturers to a range of value-added machining solutions. Experts from Austria, Germany, Japan, Singapore, Switzerland, the UK, the USA, as well as from India will facilitate sessions here. The seminar will be spread over 3 concurrent sessions and 5 technology tracks.

The inauguration of an Experience Zone on January 24 will take people down memory lane as they watch a flashback of the

glorious events of the 50 years. The Zone is expected to be inaugurated at the hands of dignitaries invited to be part of the morning session. On January 25, IMTMA has organized the Eco Design Award to encourage exhibitors to use eco-friendly materials in the construction of their stall. The best eco-friendly stall at the exhibition will be conferred with the Eco Design Award. The award will be presented by the key members of IMTMA.


Knowledge factory

With the new pavilions this time, IMTMA has realized that the future of manufacturing must be accompanied by sessions that detail its nitty-gritties. There is a general sense to reach out to the industry to make it prosperous. Most exhibitors who are into Additive Manufacturing are likely to be well-versed with plastics; it is Metal Additive Manufacturing that has just begun to grow feet and has just about come out from research labs into few costlier exotic applications such as Aerospace, Medical Implants and Jewellery.

The seminar will offer more than a glimpse into global and Indian outlook of Additive Manufacturing by giving a fresh perspective of global megatrends, technologies, applications, market players, performance and quality expectancy, supporting ecosystem availability. The seminar on AM will be held on January 26 and 28.

Similarly, 'Factory of the Future' or Industry 4.0 is what IMTMA has set its heart on. If manufacturing is to retain its old glory and charge ahead, it's better to equip people with the right knowledge and tools. January 25 will see a half-day seminar on Industry 4.0 with the aim to harvest benefits, efficiency improvements, profitability, increased innovation, better management of safety and performance, and environmental impact. It hopes to offer a global and Indian outlook of Industry 4.0 by eliminating any doubts and its myths, give a deeper and holistic understanding of the importance of IT infrastructure, data security and IIoT, thereby guiding participants to embark on their journey to implement Industry 4.0.

The fun part

There are moments of fun too at the exhibition venue. There is an inter-college quiz contest on manufacturing technology, mainly for mechanical engineering students. The idea is to bring them up to date on modern manufacturing technologies and make them competitive. From January 25 - 29, college students seeking to participate can look forward to enhancing their knowledge in the field of machine design, automation, machine tool, Industry 4.0, production engineering, and additive manufacturing. In all, IMTMA has kept its promise of making the trade fair larger and more innovative than before. 

The Eco Design Award has been organized to encourage exhibitors to use eco-friendly materials in the construction of their stall.

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GROWTH IS ABOUT PROGRESS

IMTEX 2019 is momentous occasion that celebrates innovation and progress. The past 50 years reflect not just the trade fair's success, but also of those who were part of it and have come this far hand in hand. A few encouraging words from them:



A trade fair like IMTEX is first and foremost the marketplace for initiating business between machine tool suppliers and their customers. Over the past 50 years, the IMTEX organizers have been outstandingly successful in fulfilling this role. For German manufacturers, IMTEX is the most important trade fair for addressing Indian customers.

Dr Wilfried Schäfer
Executive Director
German Machine Tool
Builders' Association
(VDW)



IMTEX has been a showcase of domestic and foreign manufacturing technology for decades. The 50th anniversary is well timed as India's machine tool consumption has grown 37 percent between its low in 2015 through the end of 2017. This is the fastest growth rate of any machine tool market in the world that is larger than a billion US dollars. Our counterparts at IMTMA shared with us at IMTS that they were expecting 2018 to be up another 20 percent over 2017 which would yield a three-year surge of 62 percent.

Douglas K Woods
President
The Association For
Manufacturing Technology
(AMT)



IMTEX, India's largest international machine tool exhibition, is a great opportunity to closely get a grasp on the Indian customers' needs as well as machine sales. This knowledge will help us in the development of machine tools for India.

Masayoshi Amano
President
Japan Machine Tool
Builders' Association
(JMTBA)



Every IMTEX show has been important for the manufacturing industry. It's the one show that the entire manufacturing fraternity looks forward to. This year, we can hope to witness many new ideas of automation and industry 4.0. We have never been disappointed and this year too, we are expecting plenty of excitement again.

L. Krishnan
Managing Director
TaeguTec India Pvt Ltd
Past President
Indian Machine Tool
Manufacturers' Association
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Each edition of IMTEX has given us unique memorable experience in terms of learning, adopting and growing. With the trade fair's golden jubilee this edition, it holds special significance to the participants. It is yet another opportunity to meet quality customers, consultants and decision makers. This would lead to forming of new bonds as well as reinforce our market positioning. The strong presence of SME and large corporate visitors is an added advantage to network with on this business platform. Additionally, spot machine bookings are always an exciting experience during the show which we are looking forward to.

P Jadeja
CMD
Jyoti CNC Automation Ltd
Past President
Indian Machine Tool
Manufacturers' Association
(IMTMA)



We congratulate IMTMA for IMTEX's 50th anniversary. It is one of the most recognized machine tool exhibitions in the global machine tool market. As the manufacturing industry in India has witnessed a rapid growth in the last decade, the demand for cutting edge technology has also spiked, making the exhibition one of the preferred platforms for the machine tool manufacturers across the world to showcase their latest in technology and innovation. Hurco also reached the milestone of 50 years of innovation in 2018. It is, thus, highly opportune for us to showcase our technological innovations which are in demand in the manufacturing segments including Aerospace, Medical, Tool Room, Die & Mould, Infrastructure, Agriculture etc. We are highly optimistic that IMTEX 2019 will fulfil the aspirations of both buyers and sellers.

Sanjib Chakraborty
Managing Director
Hurco India Pvt Ltd



IMTEX 2019 & Tooltech 2019 is a great platform for IPG India to make people aware of the application of fiber lasers. Fiber lasers is a concept that can help enrich the job of the machine tool segment. It helps to replace conventional methods and offers quality and finish in their job. At the show, our main focus will be on the applications including drilling, cutting, marking, and engraving. IPG Photonics has always been at the forefront when it comes to bringing in technological revolution and this time it is no different.

Rajesh Sharma
GM - India
IPG Photonics (India)
Pvt Ltd



Over the last 50 years, IMTEX has become the leading trade fair in India for machine tools and allied products. It attracts visitors from all the major industry segments from different parts of India to witness new technologies being showcased from across the globe. Hence, the show is an excellent platform for the exhibitors to reach out to customers and prospects in one place. It also gives us the opportunity to showcase our latest innovations and share how they can be more effective and efficient for our valued customers. We are looking forward to receiving an impressive footfall in our booth and are expecting a great time.

Subrahmanya Kumar
Country Sales Manager - India
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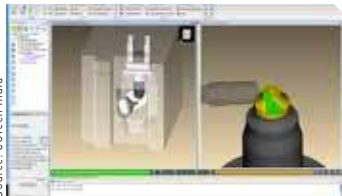
VERICUT brings the Force

CGTech is powering into IMTEX 2019 with its latest physics-based feed rate Optimization module, VERICUT Force.

As the world's most advanced independent CNC machine tool simulation, verification and optimization software, VERICUT it as at the heart of the CNC manufacturing process for many of the world's leading automotive and motorsport engineering businesses. The latest release, VERICUT 8.2, introduces a new optimization module - Force Turning.

Force is a physics-based NC program optimization module that analyzes and optimizes cutting conditions to achieve ideal chip thicknesses while managing the cutting forces and spindle power required. The latest module, Force Turning, optimize turning and mill-turn operations when combined with Force Milling.

Force provides NC programmers with detailed information about the cutting process that they never had before. With a single click, users can review problem-causing cuts, which if left uncorrected, could cause chatter, break the tool and damage the part or machine. Force optimization automatically corrects these issues, such as excessive cutting forces, metal removal rates, power, torque, and tool deflection while simultaneously correcting underutilized cutting conditions by raising them to optimal performance levels.



Source: CGTech India



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Scrap Metal Processing

Chip Compactor by U-Tech

BRIKETTO offers several advantages and can process almost any type of material.

The new compact chip compactor manufactured by U-Tech is used to compact waste metal scrap produced from metal cutting operations like milling, turning, boring etc. The compactor uses 80 tonne of force to press the scrap into briquettes of size 100 mm in diameter and 65 mm in height. The force used to achieve this enables the briquettes to be highly dense, typically more than half the density of the original metal.

The major advantages of using a Chip Compactor are:

- Reduction in storage space
- Better value for dry briquetted scrap
- Recovery of precious coolant
- Reduction in transportation costs
- Improved efficiency in foundry's if briquettes are used instead of scrap.

Almost any type of material can be processed in this Chip Compactor. For Cast Iron, the machine has a capacity to process 250 to 300 Kg of scrap per hour. The capacity, however, varies according to the nature of the chips.

The new compactor requires less floor space compared to the older version. The new design allows the machine to be more flexible so that it suits to different application related requirements.



Source: U-Tech Associates

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Visit us at:
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Vibration Monitoring

Vibration measurement in process monitoring

ARTIS offers sensors in the measurement range between 10 Hz and 5 kHz for acceleration measurement on one to three axes.

Measurement of vibrations and accelerations plays an important role in process monitoring on machine tools. Vibration measurements are used in different ways for the safeguarding and stabilization of processes and is made as close to the process as possible. Sensors are integrated directly into the spindle or placed on the workpiece holder.

Acceleration can be measured with a sensor integrated into the spindle or with external sensors placed in the machine. A transducer then converts the values for the process monitoring system into information about the vibration speed. ARTIS offers sensors in the measurement range

between 10 Hz and 5 kHz for acceleration measurement on one to three axes.

Acoustic emission, a special form of vibration, is measured with external sensors and transmitted over a separate fieldbus. The sensors for acoustic emission cover the measurement range of 10 to 250 kHz.

Process monitoring looks at the entire process complete with workpiece, machine tool and peripheral equipment. The knowledge gained can be used in many ways for safeguarding production. Vibration measurement offers benefits for process monitoring, machine protection and process optimization.



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MOVING FORWARD TOGETHER

As the flagship event of the Indian metal cutting industry, IMTEX rejoices it reaching 50 years' milestone, Batliboi Machine Tool Group too celebrates coming this far with it. The Group has never left IMTEX's side since its beginning and plans to stay conjoined, working together towards achieving further goals.



Batliboi's journey with IMTEX over the years

Source: Batliboi Ltd

One of the architects of an emerging engineering India, Batliboi Machine Tool Group has forged ahead successfully since its inception in 1892 and occupies a prominent position as a leading engineering company today. Its operations cover a wide range of industries including Machine Tools, Air Engineering, Environmental Engineering, Textile Machinery, Renewable Energy, Motors, International Marketing and Logistics.

The company has been an integral part of IMTEX since its beginning, growing with it year after year.

"IMTEX offers more opportunities to engage with our customers and present new products and technologies," states Kabir Bhogilal, CXO - Corporate Strategy, Batliboi Ltd.

To celebrate this remarkable journey marked with consistent accomplishments, Batliboi, at IMTEX 2019, is showcasing a collage of its memories of its

participation in the show spanning last 50 years.

IMTEX 2019 is special

At the upcoming IMTEX, Batliboi is participating with its Principal SKODA Machine Tool a.s, Czech Republic with whom it has over 60 years of association in India. SKODA, with over 105 years of experience in the business and 4,000 machines exported worldwide, has earned its position as the world's leading

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manufacturer of Heavy Duty Horizontal Boring and Milling Machines and Heavy Duty Universal Horizontal Lathes.

"The company offers custom-based solutions for Wind Energy Sector for manufacturing wind turbines and provides best solutions for machining of the main wind turbine workpieces, ranging from 0.8 MW up to 7.58 MW, e.g. Main Frames, Hubs, Main Shafts, Rotor Blades," informs Bhogilal.

"As a team we have sold over 130 machines directly to our esteemed customers. In addition, we continue to serve our large number of customers who have imported SKODA machines as pre-owned," he reveals.

The company is traditionally renowned for its precision and cutting-edge technologies. INDUSTRY 4.0 - SKODA applies the latest trends of next step in industrial revolution (Industry 4.0) and its revolutionary approach creates an intelligent network system where the company and its customers can operate the machine in a more flexible and innovative way.

Plants and subsidiaries

"We are not just about manufacturing and sourcing leading brands from across the world to meet customer requirement in the Indian market. Engineering excellence for us is more about being ready for tomorrow; it's about being machined for the future," states Bhogilal articulating what the company stands for.

"Our focus has always been to engineer futuristic products through sustained investment in technology," he adds.

"Our manufactured and marketed machines - metal cutting and metal forming machines find their presence in the entire Engineering Sector



Source: Batliboi Ltd

"IMTEX offers more opportunities to engage with our customers and present new products and technologies. To celebrate our remarkable journey with the show, we are showcasing a collage of our memories at IMTEX spanning last 50 years."

Kabir Bhogilal
CXO - Corporate Strategy
Batliboi Ltd

- Automotive, Die & Mould, General Engineering, Heavy Engineering, Power Equipment Manufacturers, Wind Power, Nuclear, Defence, Aerospace, Fabrication, Forging, Powder Metallurgy, R&D and even in Jewellery & Medical Devices," informs Bhogilal.

The Group's Machine Tool plants at Surat (India) and Peterborough (Canada) are technologically empowered to design, manufacture and deliver high-end Machine Tools. It has a nationwide network of offices supported by qualified sales and service engineers.

The Surat facility is situated on 180,000 sq mt of land. It has a well-equipped design and manufacturing facility of 30,000 sq mt including a foundry. The products manufactured here include CNC Vertical Machining Centers, CNC Turning Centers, Double Column Machining Centers, VTLs, Conventional and CNC Drilling Machines.

The Canadian subsidiary, Quickmill Inc., headquartered in Peterborough, is engaged in the manufacturing and sale of large sized Gantry Drilling and Milling Machines. Its customers are mainly from Energy, Heat Exchangers, Oil & Gas, Structural Steel & Job Shop manufacturing and Aerospace sectors.

On the ratio of the standardized and customized offerings by the Group, he responds, "Customization has to be offered by any manufacturer as per customer expectations in any Industry. We do offer the same as per customer demand and the proportion varies from time-to-time."

It takes a lot to succeed

When asked about the impressive list of clientele, Bhogilal divulges what it takes to reach the place the Group has reached, "In any transformation, to remain successful, business and technology need to work in tandem. While the business provides the vision, technology provides the structure to deliver it. Both are highly valuable, and neither can be done in isolation. To ensure everyone remains invested, we build meaningful relationships through customer satisfaction."

"From our experience over the years we have built momentum and credibility. This has been possible due to the dedication and performance of our employees," he sums up.



Batliboi Ltd
Hall 1A, Stall A105
www.batliboi.com

Batliboi is participating with its Principal SKODA Machine Tool a.s, Czech Republic, world's leading manufacturer of Heavy Duty Horizontal Boring and Milling Machines and Heavy Duty Universal Horizontal Lathes in the 50th edition of IMTEX & Tooltech Show.



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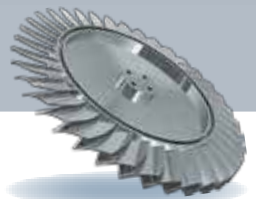
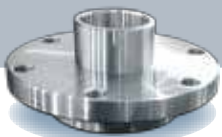
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BEING FUTURE-READY

With its firm footing in the present and a keen eye on the future, Mitsubishi Materials Corporation rightfully occupies its current leadership position in the metal cutting space. Equipped with the ability to gauge customers' evolved demands in the times to come, the Group invests itself in preparing for the future, innovating ceaselessly to offer cutting edge solutions.



Source: MMC Hardmetal India Pvt Ltd

State-of-the-art MMC Hardmetal India Pvt Ltd facility at Aurangabad

MMC Hardmetal India Pvt Ltd has today earned itself the repute of being one of the top five metal cutting solution providers in the highly competitive Indian market. "It has been an encouraging journey," says Prashant Sardeshmukh, Vice President & Director, MMC Hardmetal India Pvt Ltd, as he proudly reminisces the crossing of milestones on the way.

In 2006, the company commenced its Indian operations with Bangalore as its headquarters. The idea, however, had its roots six years prior that and the activities were handled from

Singapore during the period. "It was a humble beginning with two distributors. We kept taking baby steps that soon transitioned to big, rapid strides, evident from our growth rate. In just a decade, we have become a strong team of 100," he adds.

Going strong

With its regional sales offices at Pune, Gurgaon, Ahmedabad and Chennai, the company has established a strategic base to have quick access to any part of Indian market. It has also extended its reach to overseas markets including the UAE, Iran, Bangladesh and Sri Lanka. In this backdrop

Sardeshmukh adds, "We export special tools manufactured at our Aurangabad plant to Singapore and Japan."

"Plans are underway to develop a state-of-the-art Technical Center at Pune," he reveals. In order to support the Indian market with better supplies in quick lead time, MMC Hardmetal India has also started its ultra-modern manufacturing facility at Aurangabad. "This is one of the most sophisticated set-ups of Mitsubishi. Here, we have young and talented team, groomed under Japanese quality culture. We are manufacturing special tools, customized tooling solutions, end-mills and cutters

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with special requirement etc. This has given us enormous advantage, as we are now able to cater special and critical requirements of our customers with minimal lead time," he adds.

All sectors count

Of all the industrial segments MMC India caters to, Sardeshmukh cites the Automobile Industry as the company's maximum revenue generator. "It has been the major driving market for us, accounting for little over 50 percent of our revenue share," he shares.

Elaborating on the company's customized solutions, he states, "We have one of the largest MTB and Projects Team which enable us to offer smart and customized solutions to our esteemed customers. The share of Project Orders in our total business is increasing rapidly year on year."

Prepared for the future

Mitsubishi Materials' slogan 'Drive the Future' is indicative of its focus on the future trends and it also speaks about its leadership position as far as metal cutting solutions are concerned. "It has become our philosophy and has definitely given us an added edge in the market in terms of innovating solutions which the industry will need in future. We are working hand-in-hand with various machine makers to develop future-ready solutions," says Sardeshmukh.

The company's product brand 'DIAEDGE' is in complete align-



Source: MMC Hardmetal India Pvt Ltd

"IMTEX has always been a big carnival for Indian entrepreneurs. It is an excellent opportunity to display our world-class products and reach out to thousands of visitors."

Prashant Sardeshmukh
Vice President & Director
MMC Hardmetal India Pvt Ltd

ment with its slogan. "Our products carry this brand with pride because it comes with a glorious pedigree of Japanese Quality Culture. 'DIAEDGE' (Diamond + Edge) represents high product quality with cutting edge technologies of Mitsubishi. Through 'DIAEDGE' brand, we promise to become the only 'Global Craftsman Studio' in the world for our customers to share our excitement," he adds.

R&D to innovate

The company has the Central Research Institute consisting of 11 Research Departments at its headquarters in Japan which interact closely with its Business Departments. "This gives solid foundation to our innovations in metal cutting industry," notes Sardeshmukh.

He further adds, "We have close ties with our Business Strategy Departments and Individual Marketing Departments and always interact in order to conduct technology exchanges with customers. We participate in trade shows as a part of our proactive developmental activities. And we also dedicate good amount of efforts and innovations on processing and recycling technologies."

Being there for the customer

Mitsubishi Materials' Machining Technology Center is a highly effective medium for the company to reach out to its customers with its latest technologies. "It is one of our best windows that is constantly open for our customers. It works out highly effective and smart solutions that customers may need during cutting. Various suggestions are offered in areas like test cutting, training courses, process improvement proposals and production line diagnoses," explains Sardeshmukh.

"For Cutting Test, we carry out examination in association with chip control, tool life, machining time reduction and so on based on the customers' theme. As regards Production Line Diagnoses, our technical staff identifies the pain areas in the customers' overall production line and individual process and works out the best solution for productivity improvement," he continues.

The company proposes most suitable cutting tools and conditions which address the customers' most critical needs. It uses CAD-CAM and CAE for machining simulation to visualize the most suitable cutting processes for its customers' productivity improvement. "In addition to this, we have domestic toll-free telephone technical counseling service that facilitates direct advice from our cutting tool experts," he informs.

Being at IMTEX 2019

MMC India is all set to be part of the upcoming IMTEX. Speaking on which Sardeshmukh notes, "We will be showcasing latest products such as WJX, WSX445, FMAX and VPX Milling Cutters; a new range of Solid Carbide Drills for centering, chamfering and counter boring; CVD Diamond Coated Endmills for Graphite machining; GW Series Cutting Off and Grooving System at the show."

The Auto-mobile industry accounts for little over 50 percent of the company's revenue share. Other sectors like Die & Mould, Energy, Aerospace, Oil & Gas, Railways and Medical Engineering also have their encouraging contribution to it.

MMC Hardmetal India Pvt Ltd
Hall 3A,
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Prashant Sardeshmukh, Vice President & Director, MMC Hardmetal India Pvt Ltd (first from left) at the company's facility

DISRUPTING MEDICAL MANUFACTURING

The medical sector has received Additive Manufacturing with open arms owing its slew of advantages that include producing patient-specific implants which otherwise are time-consuming and expensive when made using traditional machining methods. Read on for TRUMPF's technological advancements in the field that have helped Moscow-based CONMET achieve its goals.



Source: TRUMPF GmbH + Co KG

CONMET uses TRUMPF's TruPrint 1000 3D printer to produce customized craniomaxillofacial implants.

Additive manufacturing, or 3D printing as it is commonly known, is ideal for producing medical devices. When designing an implant, a CAD engineer will first create a computer model based on precise patient data and then set the 3D printer to work. Intricately shaped, made-to-measure implants are no problem for TRUMPF's TruPrint 1000 3D printer. What's more, products made using this technology have excellent material properties – for example, implants that are robust but elastic and shock absorbent, or implants with a porous structure that fuse well

with healthy tissue but remain stable and durable. Additive manufacturing is also suitable for producing custom-fit implants on a cost-effective basis. And since these implants are made-to-measure, surgeons no longer need to trim them to shape. All they have to do is remove the clean and sterile implant from its protective pouch and proceed with the operation. A further benefit is that, unlike conventional machining methods, 3D printing does not produce any waste in the form of shavings or swarf. And in the manufacture of medical implants, where the material of choice is

generally an expensive titanium alloy, this means genuine savings. Finally, with additive manufacturing, there are none of the retooling costs of conventional methods that result from wear and tear during milling or turning, for example.

Working together for solutions

CONMET, a Moscow-based market leader in craniomaxillofacial surgery and implantology, first looked at additive manufacturing some ten years ago. At the time, however, the technology was still insufficiently mature for such applications. "CONMET

RAMONA HOENL
Spokesperson
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asked various machine-tool suppliers to produce benchmark parts but wasn't happy with the quality," recalls Andreas Margolf, Project Manager, Additive Manufacturing, TRUMPF.

In 2017, the company decided to take another look at the technology and approached TRUMPF to find out how far it had evolved. "We set up a second meeting. Over the course of two days, our experts answered all their questions on additive manufacturing, while our machines produced the benchmark parts," she adds. This time, the quality of parts and the design of the system met the company's requirements.

CONMET also wanted a partner that could provide it with back-up services for the actual process. "TRUMPF is the only supplier on the market for 3D printing that develops its own lasers and all the optical components. We also have a wealth of experience in the areas of machine tools and services. That means we are able to assist CONMET with any aspect of the process," Margolf explains.

Compact footprint and short set-up time

The first task was to determine the right machine for CONMET, along with the relevant process parameters. It was soon clear that the ideal set-up was TRUMPF's own TruPrint 1000 3D printer with the laser focused to a diameter of 30 µm. This machine is especially compact and could, therefore, be easily installed in CONMET's existing production facilities.

Equipped with a 200 W fiber laser developed by TRUMPF, the machine has no problems working with the titanium alloys generally used to produce implants. TRUMPF also spent quite some time fine-tuning the focal diameter at which the laser beam hits the powder bed. "Our tests showed that reduc-

ing the focal diameter to 30 µm improves the surface smoothness of the implants by around 20 percent. This makes the process slower and slightly more expensive, but that's not a key issue in the field of medical devices," Margolf explains.

TRUMPF also provides CONMET with the titanium powder from which the implants are made. "We've supplied 20 Kg of powder for each of the titanium alloys used by CONMET, along with the corresponding process parameters," she adds. This ensures that the quality of material for the implants produced by CONMET is of a reproducibly high standard.

Saving production costs

CONMET has been operating with the TruPrint 1000 at its Moscow production facilities since the beginning of 2018. The company uses the new machine to produce dental implants and craniomaxillofacial implants for cancer patients.

These products are marketed in the Commonwealth of Independent States (CIS) region and Europe. Hospitals provide CONMET with CT data of patients. Engineers at CONMET then design the implant, in consultation with the surgeon, and the machine prints it out. "We currently produce 60 implants a month with the TruPrint 1000, and are planning to increase our output by ten percent," says Nadeschda Morozova, Project Manager, CONMET. The implants not only have an especially high quality level overall, they are also substantially cheaper. "Compared to conventional machining methods such as turning and milling, the new process saves us 40 percent in production costs," reveals Morozova.

In the near future, CONMET intends to start producing custom-fit spinal fixation devices



A laser sinters a precisely shaped implant from the powder bed.

Source: TRUMPF GmbH + Co KG

using 3D printing. The company also has plans to manufacture mass-produced prosthetics with the TruPrint 1000. For this, CONMET will be investing in new machinery and has once again opted for TRUMPF technology. As Morozova explains, the new machine will be a TruPrint 3000, with a larger construction chamber.

Local service partner and Russian-speaking technicians

The medical devices produced by CONMET are certified according to European standards. And since TRUMPF supplies not only the 3D printer, but also all the associated products, including the coating tool, substrate plate, software and process parameters, the implants produced with the 3D printer are also perfectly congruent. Should CONMET have any questions about 3D printing, TRUMPF's local agency, TRUMPF Moscow, is on hand to provide a local service partner and Russian-speaking technicians. "It's not just about the customer buying equipment from us; we also want to see them earn money. CONMET's success with additive manufacturing shows we are on the right track!," states Margolf. 

In the near future, CONMET intends to start producing custom-fit spinal fixation devices using 3D printing. The company also has plans to manufacture mass-produced prosthetics with the TruPrint 1000.

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KEEPING UP THE PACE

Mechasoft could upgrade its Groove Milling Machines to Industry 4.0 capability through ifm electronic India's timely intervention.

Here's how it happened...



ifm's wide range of IO-Link products

Source: ifm electronic India Pvt Ltd

Established in the year 2004, Mechasoft is well known in the industrial sector for its Special Purpose Machines. The company has an ultra-modern facility equipped with high-speed Vertical Machining Centers, Surface Grinders, Micro Finishing Wire EDMs, Sink EDMs with a good support of advanced design software like Unigraphics, Powermill and many more. It also manufactures in-house machines compatible for Industry 4.0 applications.

Going with the flow

With more and more Indian companies embracing emerging advanced technologies to improve their capabilities and compete better, Mechasoft too planned on implementing Industry 4.0 solutions.

ifm electronic India Pvt Ltd is the market leader in Industry 4.0/IO-Link products. It was a sheer coincidence that the company approached Mechasoft when it was planning to upgrade its Groove Milling Machines to Industry 4.0 capability.

Implementation of Industry 4.0

Upgrading Groove Milling Machines to Industry 4.0 capability for their customers was the main target of Mechasoft.

Tushar Kulkarni, Managing Partner, Mechasoft, Ichalkaranji, speaks on the challenges on the way, "Incorporating the Industry 4.0 concept on the machines and fulfilling the requirements of our customers was a huge challenge. Collecting the data from machine through sensors, generating it through

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Challenge

Mechasoft wanted to upgrade its Groove Milling Machines to Industry 4.0 capability.

Solution

ifm electronic India installed its package of Smart PLCs, IO-Link Modules and IO-Link based sensors for level, temperature, oil pressure, spindle vibration monitoring and counter balance pressure monitoring in the machines.



Source: ifm electronic India Pvt Ltd

Tablet with a customized web page connected with Wi-Fi

PLCs and displaying on smart devices was not an easy task for us. It all came together with ifm electronic India team helping us in this project by selecting

the right type of sensors and interface through machines.”

The upgrade was possible with the ifm’s package of Smart PLCs, IO-Link Modules and IO-Link based sensors for level, temperature, oil pressure, spindle vibration monitoring and counter balance pressure monitoring which was installed in the machine.

ifm’s smart PLC controls send live data via Wi-Fi on connected devices such as the mobile phone, tablet, desktop or laptop. “Apart from this, cycle time, job counting, data logging and values are all available on a customized web page from ifm electronic. This helps to monitor critical operation and machine parameters, making predictive maintenance of machines possible,” informs Kulkarni.

With the introduction of Industry 4.0, the cycle time, job counting, and data logging have become easily accessible, which helps in maximizing the company’s production output.

“We have continued our association with ifm India team and have successfully worked on several projects together like manless forging line where distance sensors and curtain



Source: ifm electronic India Pvt Ltd

“Incorporating the Industry 4.0 concept on the machines and fulfilling the requirements of our customers was a huge challenge. It all came together with ifm electronic India team helping us in this project by selecting the right type of sensors and interface through machines.”


Tushar Kulkarni
Managing Partner
Mechasoft, Ichalkaranji

sensors are highly effective,” he adds.

“The first machine’s success has brought in several inquiries. Immense thanks to Bipin Jirge and Shinde of ifm India for their valued contribution,” says Kulkarni.

Knowing the force behind

With more than 5,200 employees in more than 70 countries worldwide, ifm electronic gmbh is one of the leading manufacturers in the automation industry. In 1994, the family-owned international company opened a branch in India. ifm realized the potential of the Indian economy at an early point in time and, therefore, is one of the first German companies in the country.

ifm electronic offers a wide range of ‘Made in Germany’ product range catering to various industry segments such as Machine Tools, Dairy, Food & Brewery, Automobile, Steel & Coal, Mobile Machines etc. 

With the introduction of Industry 4.0, the cycle time, job counting and data logging have become easily accessible, which helps in maximizing the company’s production output.



Source: ifm electronic India Pvt Ltd

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Technical Data: Chuck diameter, max. 160 mm, Main spindle Power, max. 142 kW at 40% ED, 17.9 kW / 142 Nm, Workpiece gripper diameter, max. 160 mm, Workpiece diameter, max. 106 mm, Workpiece length, max. 400 mm,urret tool stations 2 x 11, Turning tools and driven tools applicable

EMAG

LIQUID TOOL - HELPING CUSTOMERS WIN!

Productivity, economic efficiency and machining quality in the manufacturing process depend decisively on the choice of the right coolant. Hence, Blaser Swisslube endeavors to holistically analyze its customers' processes to proffer them unique solutions for their unique challenges.



Source: Blaser Swisslube

"Liquid Tool gives us a chance to grow with customers who have a holistic approach to production and manufacturing processes, and recognize the true value of cutting fluids. We want our customers to be more successful with our Liquid Tool and would like to commit ourselves to do everything possible in this journey."

Punit Gupta
Managing Director
Blaser Swisslube India Pvt Ltd

The current manufacturing scenario is getting increasingly competitive. Manufacturers today are constantly grappling with challenges of high productivity, uncompromising quality, cost-effectiveness and tighter deadlines to meet the ever-changing consumer demands. Consistent high work piece quality, minimal reworking times, longer tool life for greater machine availability, lower cycle times, increased process reliability etc. are a few vital elements in machining. Speaking on which, Punit Gupta, Managing Director, Blaser Swisslube India Pvt Ltd, states, "Liquid Tool is our value proposition, which helps in

increasing competitiveness of our customers. Doing it by driving their productivity has been a key success element of our company globally. It brings transparency and a holistic view on overall returns on their investments,"

Industry is opening up

Following five success stories from its customers bear testimony to Blaser Swisslube's significant contribution towards them through its Liquid Tool approach. They have experienced considerable enhancement in Tool optimization, Total costs of ownership, Metalworking fluid optimization, Productivity increase, and Process optimization.

Challenge

Bajaj Motors needed reduction in tool cost without compromising the quality

Solution

Blaser Swisslube's Blasocut BC 4000 Strong

WORKING TOGETHER IS THE SECRET

A quality supplier of forging, casting, machined components and assemblies, Bajaj Motors Ltd successfully dealt with a deadlock in reducing cost of its tools with the help of Blaser's Blasocut BC 4000 Strong. Here's how...

Blaser Swisslube has been an active partner of Bajaj Motors in its pursuit to reach the next level of success. Hence, Blaser's aid was sought to examine the AAWA AAYA line for improvement potential. After a detailed on-site analysis, the Blaser experts could find a great deal of scope to improve tool life while reducing tool cost by using the right coolant. Blaser Swisslube recommended

its high-performance Blasocut BC 4000 Strong to gain the desired results.

Favorable outcome

The results achieved with the Blaser's suggested coolant, Blasocut BC 4000 Strong were overwhelming. Its innovative Liquid Tool solution helped Bajaj Motors reduce tool costs and improve their surface quality. The assessment showed that the investment paid back in a



Source: Blaser Swisslube

"Automobile manufacturing is one of the most challenging and changing industries. Process optimization and productivity increase is the only way to survive. I thank the Blaser team for their support in our initiative. We were unaware that by incorporating a small change in our process through the Liquid Tool, we could gain substantial savings."

Tarun Bhargava
Asst. Vice President
Bajaj Motors Ltd

month's time and generated an annual net saving of almost ₹5.6 million.

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Challenge

To improve sump life, enhance coolant stability, reduce machine break downs, improve tool life

Solution

Blasocut BC 20 SW

PARTNERS IN GROWTH

Highway Industries' search for a competent coolant partner led to Blaser Swisslube's solution that helped the company gain improvements in areas such as tool life, sump life, coolant stability and machine breakdowns.

In its relentless efforts to meet the needs of its customers, Highway Industries continuously keeps investing in newer technologies and high performance machine tools. To upgrade to an entire manufacturing process, various parameters were looked into by the company, including the metalworking fluids. Corrosion in the machine parts triggered a need to search for a competent coolant partner with a broad expertise in machining.

Finding the answer

Highway realized that there was a huge potential of improve-

ment in regards to the coolant technology. To this end, help was sought from Blaser Swisslube that entailed a detailed on-site analysis by the Blaser team. The goals to be achieved were clearly defined, which included improvement in sump life, coolant stability, corrosion protection, and tool life, and reduction in machine breakdowns. The project started with the use of Blasocut formulation that is based on a unique bio-concept which makes it one of the safest formulations in the world for humans and the environment. The results achieved were highly exciting for



Source: Blaser Swisslube

"The implementation of a robust coolant monitoring system was exactly what Highway was looking for. Thanks to the Blaser Team for helping us achieve significant improvement in tool life."

Devinder Singh
General Manager - Production
Highway Industries Ltd

Highway. The high performance of Blasocut BC 20 SW made it possible to improve the sump life and the coolant stability with a substantial reduction in tool cost. The implementation of a robust coolant monitoring system was exactly what Highway was looking for. This optimization helped the company achieve an annual saving of ₹1.1 million for 23 machines.

Challenge

Process security and improved tool life

Solution

Coolant B-Cool 9665

COMBATING IT TOGETHER

Cummins India was seeking an aide to look into corrosion issues on its costly machined components and work on the process security. Blaser with its coolant B-Cool 9665 proved to be the one.

The Phaltan Engine Plant manufactures QSK 23 L and 60 L engines along with critical components machining with design flexibility for KV, N14 and K19 models. The plant experienced corrosion issues on costly machined components and there was an urgent need to work on the process security. In the plant, all the machines are connected to a large-sized central system which motivated Cummins to look for a new competent partner having experience of handling central systems as well. Cummins believes that the han-

dling of single filled machines and central systems is a different ball game. Therefore, the partner should have a robust technology and a high competence to analyze and support. In a joint meeting, experts from Blaser shared their rich experience and know-how. They spoke on the possible benefits of process security, improvements in corrosion protection and tool life.

B-Cool 9665 proved to be the answer

After a thorough research and a detailed evaluation, Cummins decided to work with Blaser



Source: Blaser Swisslube

"Blaser's expertise has helped in good coolant monitoring practices. We are highly confident that it is going to be a long journey of mutual co-operation and success with Blaser."

Abhijeet Bhandari
Deputy General Manager
Cummins Technologies India Pvt Ltd

Swisslube. The central system of 1,20,000 L was filled with Blaser's innovative formulation B-Cool 9665 that has an excellent corrosion protection behavior and a good cutting performance. It gives an extremely stable emulsion due to a very robust formulation technology.

Challenge

Productivity increase with improved quality parameters

Solution

Blasocut BC 25

GROWING IN TANDEM

India's largest utility vehicle manufacturer, Mahindra's Bolero saw an increased demand from the market. Here's how Blaser's Blasocut BC 25 innovatively came to its aid in increasing the output.

Mahindra's popular utility vehicle (Brand name: Bolero) saw an increased demand from the market. Having the machining processes fully optimized and capacities fully utilized, it was a big challenge to increase the output further.

Quantity with quality

Since there was a pressure to produce more components for Bolero, Mahindra heard out a Blaser Specialist on the Liquid Tool approach and decided to try what seemed like a unique value proposition for increasing productivity and profitability.

During the on-site analysis, it was found that there was another challenge to improve quality parameters as well. Blaser submitted a proposal with a new technology product to reduce cut time of Cylinder Blocks and to machine with a better quality. Blasocut BC25 has a very high cutting performance and a high stability, which met with Mahindra's requirements.

A few weeks of intense testing resulted in a cycle time reduction of 15 percent (from 10 min 30 sec to 8 min 56 sec). After ensuring the sustainability and repeatability, the decision was taken to deploy



Source: Blaser Swissslube

"The holistic approach of Blaser and our investment in its Liquid Tool solution was the right decision for us. We are excited to explore more of the solution while implementing it in our other areas of manufacturing."

Pandurang Kasture
Senior Manager
Mahindra Vehicle Manufacturers Ltd

the new Blaser coolant Blasocut BC25 to the entire Cylinder Block line. This resulted in a huge saving of ₹3.6 million for Mahindra. The accuracy in machining cylinder blocks improved by more than 33 percent, which was an added value.

Challenge

Cutting time reduction, improved process security, long-term stability and machine compatibility

Solution

Blasogrind HC 5

THE KEY LIES IN COLLABORATION

Comprehensive round cutting tool manufacturer, OSG India keenly believes that quality drives profit. In keeping with its philosophy, the company resorted to Blaser Swissslube's solution that helped it achieve reduction in the cutting cycle time and a 12 percent productivity increase.

As part of the drive to fulfil its customers' demands through continuous improvements, OSG India wanted to enhance its long-term process capabilities. Since the carbide grinding processes are extremely critical in nature, OSG has invested in specialized high-technology machines. The critical aspects for consideration, therefore, were to look at the compatibility with machine parts and productivity. Blaser Swissslube has a rich global experience and expertise

in Carbide grinding application along with high-technology formulations. The company's experts visited the OSG India facility and discussed the value addition through the Liquid Tool approach. A joint project was initiated with a mutual collaboration at Falta plant under the lead of Nishikawa using the innovative hydrocracked formulation, Blasogrind HC 5. Blasogrind HC 5's high performance and reliability made it possible to reduce the cycle time and achieve a 12 percent



Source: Blaser Swissslube

"We have achieved good results with the Blaser's solution. The co-operation has begun and we are excited to look at the consistent results on various process parameters for the next five years and to even expand our collaboration."

Naoki 'Noah' Nishikawa
Managing Director
Carbide Cutting Tools
(OSG India Pvt Ltd)

productivity increase. A joint study was also conducted to monitor the improvements in wheel loading, thus improving the process security and surface finish. The investment done by OSG was more than justified with an annual saving of ₹14 million.

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10 THINGS ABOUT COBOTS

Technology advances related to collaborative robots suggest this technology will become more capable and commonplace. Below are the pointers shedding light on how far has it come and what's more to watch out for...

This cobot was photographed at a robotics event late last year at TechSolve in Cincinnati, Ohio. The cobot here not only loads and unloads the machine tool, but also closes the door and presses cycle start.



Source: Modern Machine Shop

In machining facilities today, automation applications tend to call for robots that are powerful and perilous. That is, robots with a high payload and high speed, typically fixed in one place and operating behind a safety fence. By contrast, collaborative robots (cobots) are designed to be easily redeployable and safe for use near people, but this generally makes them payload-limited and slow to an extent that limits the machining jobs where they can succeed.

However, cobots are coming. Specifically, they are coming in increasing numbers to CNC machining applications. Cobot technology is advancing, and trends in manufacturing favor their greater use, including in machining. We would do well to keep

an eye on cobots and understand them better. Following are the ten things that I know and need you to know on cobot technology:

1 Cobots, vision and AI all go together.

Machine vision plus AI will solve important challenges with robots in general and cobots in particular. One of them is this: The gripper or end effector in a robot application is a complex component that often has to be customized to suit the job. The problem is worse with cobots, because the end effector might bring safety hazards that ruin the robot's ability to collaborate. However, vision in combination with AI promises to enable a robot to analyze the shape of an object to take hold of it using just a general-purpose gripper.

This is what we humans do, after all: We use vision plus intelligence to guide our own general-purpose gripping hands. Powerful interests are helping to motivate this technology development. Amazon, in its warehouse applications, would benefit significantly from robots being able to quickly and accurately grasp a variety of objects using a single, unchanging gripper.

2 Cobots do not guarantee safety.

As suggested, the gripper or end effector is a component that could impose safety hazards canceling out the cobot's collaborative nature. A cobot is not collaborative if it is wielding a knife or torch. A cobot-based palletization system has been replicated and deployed at sites

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Source: Modern Machine Shop

Advances in the precision and capability of AGVs have made them increasingly effective platforms for cobots. This mobile cobot was photographed at the most recent EMO trade show in Germany.

throughout Procter and Gamble. Ensuring operator safety in the palletization system entails not just specifying a cobot, but also padding the gripper and the potential areas of contact, such as the cobot's elbow, where an operator stooping to pick up boxes might hit his or her head.

3 Cobot applications need not feature collaboration.

Cobots are cheap, easy to set up and program, and small. This is frequently why they are used. Safety need not be a factor. While cobots are engineered to work safely alongside people, this 'collaboration' often does not figure into their successes.

4 Automation's payback period is declining.

In addition to providing opportunities for low-cost automation, decline in cobot price has made their application more economical still. Meanwhile, wages for manufacturing employees have increased. These moves together make cobot automation more attractive by reducing its payback time.

5 Trends in manufacturing favor collaboration.

However, there is a counterpoint to this. The increased incidence of design and product change in

manufacturing means some automation applications can never achieve payback from one product alone. Therefore, automation needs to be redeployable, and in cases in which the process change is so frequent that human involvement is needed, the automation solution needs to be collaborative. Trends toward mass customization and faster product cycles favor cobots, and these trends are perhaps the chief reason why more of them will be coming.

6 Cobot adoption might be held back by lack of people.

One more point is also counter-intuitive: While we generally assume the lack of people to be an enabler and justification for automation, this lack can go too far where cobots are concerned. This type of automation is still a new idea to many manufacturers, and manufacturing facilities today are often too lightly staffed to be able to effectively explore new ideas. Thus, the lack of people with whom to collaborate is holding back the adoption of collaborative robots. It turns out that it takes a certain minimum number of people to explore the ways to overcome a lack of people.

7 Advancing AGV technologies make cobots mobile.

There are various technology advances that affect automated guided vehicles (AGVs). More precise rotary actuators enable these devices to achieve precise physical positioning. Augmented-reality technology related to inferring 3D space has had the side benefit of addressing challenges in AGV navigation, and better wireless data speeds enable better control. These performance improvements make the AGV a fitting platform for a cobot.


8 Attention recognition is coming.

Vision systems employing eye tracking can measure human intent by inferring what a person is looking at. As a result, in the future, automation might be able to answer the ambiguous question, "What is that?" because it will know what the speaker is looking at. Applied to manufacturing, attention recognition could help cobots be even more collaborative, enabling them to anticipate the human worker's next move and pre-position the part or tool the worker will need next.

9 'Collaborative' can be done in different ways.

When I imagine a cobot, I think of a force- and speed-limited robot—a robot moving with too little power to hurt me, and one that will stop if it makes contact. However, there is another way to do collaborative. A technology for speed and separation monitoring is being developed. The combination of vision plus AI (back to point 1) produces a system that can recognize a human coming close to the robot, calculate that human's potential to make contact, and slow or stop the robot as needed. With this system, robots can be fast and powerful, but still collaborative. We will not necessarily think of cobots as small and weak anymore.

10 'Collaborative' can be a bigger idea.

The speed and separation monitoring via vision and AI is an idea that is bigger than robots. Potentially any programmed machinery could be made collaborative in this way. Past a certain point, the continued advance of collaborative robots will bring us beyond robots to automation throughout our world behaving in a collaborative way. 

Decline in cobot price has made their application more economical. Meanwhile, wages for manufacturing employees have increased. These moves together make cobot automation more attractive by reducing its payback time.



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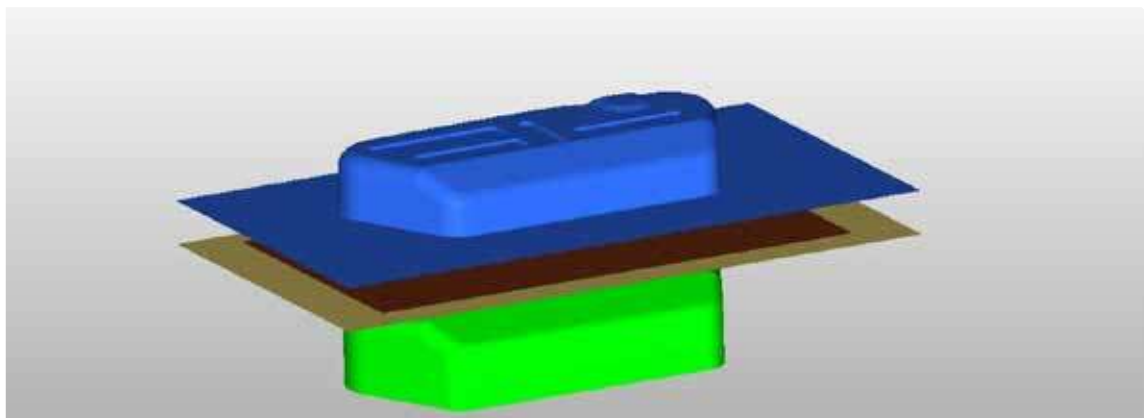
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IRONING OUT THE WRINKLES

An interesting account of how Altair Inspire Form helped Pragati Engineering address sheet metal formability and inconsistent thinning issues while reducing physical try-out time by 50 percent...



Tool Setup

Source: DesignTech Systems Ltd

Pragati Engineering, established in 2004, is one of the leading press tool design and manufacturing companies in India. The company manufactures quality made-to-order dies and fixtures for a variety of customers.

With new technologies, facilities, and experience in Press Tooling, the company is confident of seamlessly catering to any requirement in the sheet-metal forming segment.

The company has an impressive list of clients from various sectors and supplies automotive sheet metal parts to leading companies such as Mahindra & Mahindra, Hitachi, JBM, TATA Ficosa, and Federal Management.

Reducing prototype iterations

The Pragati team employs world-class solutions and technologies such as CAD, CAM, CAE, and PLM to give only the best to its clients. On its way to becoming a formidable player in the area of

its expertise, the company regularly faces many challenges.

It faced one such unique challenge of cracks and wrinkle formation in one of its products being formed. Because the team earlier used its traditional method of trial and error, it was unable to predict these occurrences. The traditional trial-and-error method forced the team to do die corrections manually and also rebuild a new tool. These unplanned iterations and physical die tryouts substantially increased the product development time and cost and impacted delivery schedules. Product quality and output accuracy was also an issue with the traditional method.

Using Altair HyperWorks to nullify errors

In its search for a reliable solution to fix the issue of crack and wrinkle formation, the Pragati team came across Altair's Inspire Form through one of its vendors who was already using the soft-

ware. The vendor strongly recommended Altair Inspire Form as a robust solution to the team.

The team was sure that simulation would play a vital role in improving product quality and reducing the number of physical prototypes. Pragati procured Altair Solution and started using it for all its product lines. Altair Inspire Form helped the team in finding out instances of failure, wrinkles and cracks in sheet metal panel components right at the design stage. This breakthrough eliminated soft tool manufacturing and drastically reduced the number of physical trials.

The Pragati team found immense value in Altair Inspire Form as the solution reduced product development time and also increased design and output accuracy.

Error-free manufacturing saving time and cost

The Pragati team is delighted with its choice of Altair



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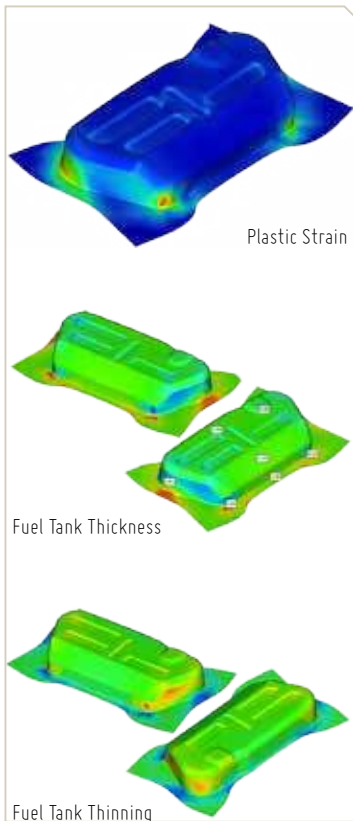
IoT & Additive Solutions at **Hall 6**

Challenge

Pragati developed cracks and wrinkles in one of its products. Unplanned iterations and physical die tryouts substantially increased the product development time and cost and impacted delivery schedules.

Solution

Altair Inspire Form helped the company find out instances of failure, wrinkles, and cracks in sheet metal panel components right at the design stage. It reduced the physical tryout time by an impressive 50 percent along with improving design accuracy and product quality.




“FARO has made the measurement and inspection process much easier and quicker for us. Our team is adept with the FaroArm now, and we plan to invest in more such solutions to help us in the area of profile projection.

Davinder Kumar Dhingra
Owner & Director
Techno Engineers

Solutions as they rendered accurate and precise results in terms of formability (FLD), thinning variation, and plastic strain through Altair Inspire Form. Altair Inspire Form also helped the team to easily optimize process parameters, which drastically reduced errors and improved the life of tools. The team was able to reduce the tooling delivery cycle time to just between one and two weeks which earlier used to take almost a month by using traditional

trial-and-error method. Altair Inspire Form reduced the physical tryout time by an impressive 50 percent along with improving design accuracy and product quality. The team used Altair Inspire Form extensively in the Mahindra U321 Shock Tower project and got accurate and speedy results,

enabling it to deliver the product within the set timelines and as per agreed quality benchmarks. The team now saves time and development cost by using Altair Inspire Form in all its projects and has done away with their traditional method, which was prone to errors and resulted in inaccurate prototypes and inflated prototyping cost. 

The Pragati team is delighted with its choice of Altair Solutions as they rendered accurate and precise results in terms of formability, thinning variation, and plastic strain through Altair Inspire Form.

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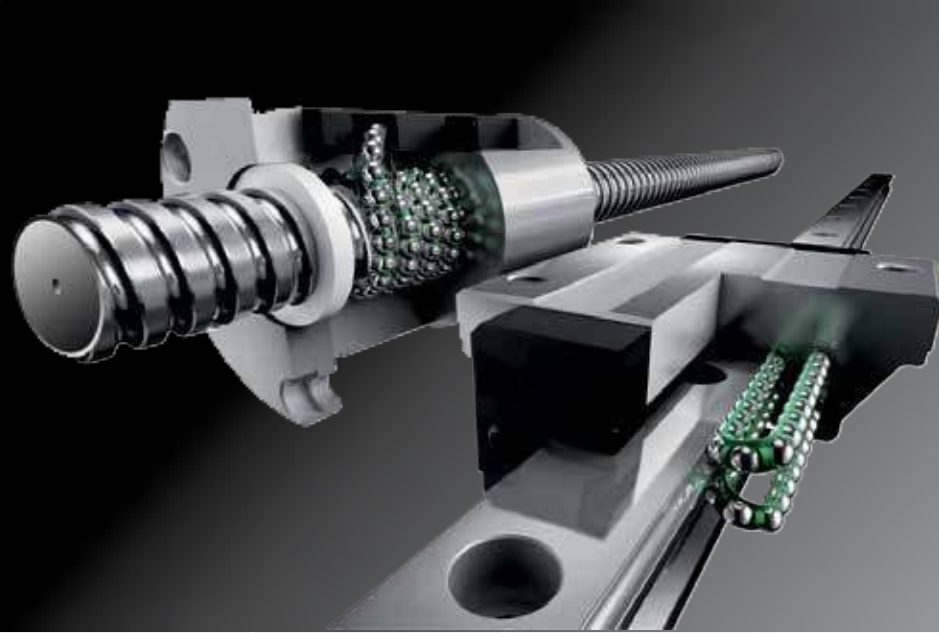
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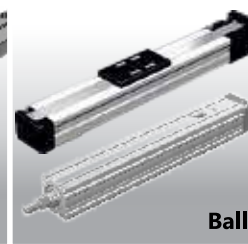
Cam - Roller Follower



Rod End - Link Ball



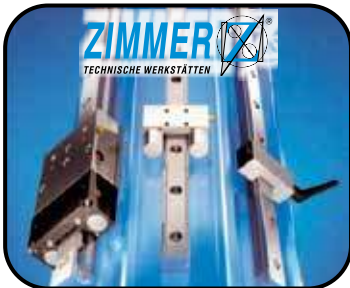
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PRECISION IS THE PRIORITY

The FARO Edge proved to be the answer Techno Engineers was so earnestly seeking. It resolved its measurement and inspection woes, rendering the processes the precision they deserved.



The FARO® 8-Axis QuantumS ScanArm (pictured) is the company's latest all-in-one measurement solution.

Source: Faro Business Technologies

The familiar adage of the customer being always right may not be helpful when taken to the extreme but it has proven useful for businesses at times through incorporating useful customer suggestions.

One such company that experienced a positive transformation in its production process is Techno Engineers, a tooling and machining specialist that specializes in manufacturing an array of high-quality special purpose machines (SPMs), robotic

cells, jigs, fixtures, receiving gauges, welding fixtures, panel checkers, and tooling systems.

A machine shop's measurement needs

Techno Engineers has to frequently check for the align-

Source: Faro Business Technologies

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Challenge

- Techno Engineers' conventional methods to measure its products, involving hand tools such as height masters, height gages, slip-gages, micrometers, and Vernier calipers, was highly time-consuming.
- Certain complex structures could not be measured with the tools.
- The accuracy of the results also depended on the skills of the operator.

Solution

- The FARO Edge could carry inspection checks on the company's objects efficiently, regardless of size, weight, or shape complexity.
- Additionally, reports could be easily generated with the accompanying 3D measurement software, the FARO CAM2 Measure 10.
- Time taken for the inspection of complete bike frames reduced to 60 - 90 minutes, with 1 - 2 team members instead of 5.



Source: Faro Business Technologies

Infinite rotation on the FARO Edge allows users to measure anything — even hard-to-reach spots or awkward angles.

ment, calibration, and installation of jigs, fixtures, and gauges that it manufactures. In addition, it also conducts inspections and obtains dimensional calculations of components to ensure that its products meet quality standards before delivery.

The team earlier relied on hand tools such as height masters, height gages, slip-gages, micrometers, and Vernier calipers for measurements. While these conventional methods worked, obtaining measurements was highly time-consuming.

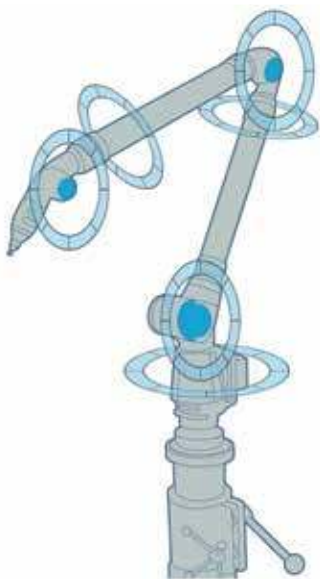
Speaking on the need for an alternative way to measure, Davinder Kumar Dhingra, Owner & Director, Techno Engineers, states, "Inspection of one prod-

uct alone would occupy a team of 4-5 people for several days. The accuracy of the results was also heavily dependent on the skills of the operator, and there were certain complex structures that our existing tools were unable to handle. It was not ideal and we were determined to find a better solution."

Taking the customers' recommendation

Techno Engineers had always enjoyed a strong partnership with its customers, creating an atmosphere of open sharing and honest feedback. On separate occasions, the company's customers recommended FARO's measurement solutions

The FARO Edge tackles inspection checks on objects of a wide range of sizes, weights and shape complexities efficiently, helping Techno Engineers provide accurate results with tolerances up to 20 micron.



Source: Faro Business Technologies

The measurement arm resembles a human arm. Each joint contains encoders that calculate the probe's exact position in 3D space.



Source: Faro Business Technologies

The portable FARO Edge enables inspection anywhere on the shop floor.

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to it. After careful consideration, Techno Engineers then invested in a 9-ft FARO Edge and the move has enabled the company to boost customer satisfaction levels tremendously. On any given day, the team works with objects of a wide range of sizes and weights – with parts as small as 10 × 10 cm in size or SPMs as large as 2 × 1 m, and corresponding weights from 100 g to about 1 metric ton (1,000 kg). The FARO Edge tackles inspection checks on these objects efficiently, regardless of size, weight, or shape complexity. Operators no longer have to worry about moving a bulky, heavy object to a measuring room, or about finding a suitable hand tool. Moreover, Techno Engineers can now provide results that are far more precise and accurate, with tolerances up to 20 micron. In addition, the company can easily generate reports with the FARO CAM2 Measure 10, an accompanying 3D measurement software




Source: Faro Business Technologies

FARO CAM2 Measure 10, an accompanying 3D measurement software enables to easily generate reports.

software. Importantly, these objective reports serve as a source of reliable reference between them and their customers, who are also familiar with the FARO solutions.

Enhanced efficiency and improved capabilities

Today, Techno Engineers can inspect complete bike frames within 60 to 90 minutes, with 1-2 team members instead of 5. Factoring in the time taken for corrections, assembly, and a second round of inspection, a process that used to take 7-10 days can now be condensed into just a day.

“The improvement in efficiency is remarkable. FARO has really made the measurement and inspection process much easier and quicker for us. Our team is adept with the FaroArm now, and we plan to invest in more such solutions to help us in the area of profile projection,” Dhingra concludes. 

Techno Engineers' investment in a 9-ft FARO Edge has enabled the company to boost customer satisfaction levels tremendously.



Source: Faro Business Technologies

With the FARO Edge, operators no longer have to worry about moving a bulky, heavy object to a measuring room, or about finding a suitable hand tool.

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Faro Business Technologies
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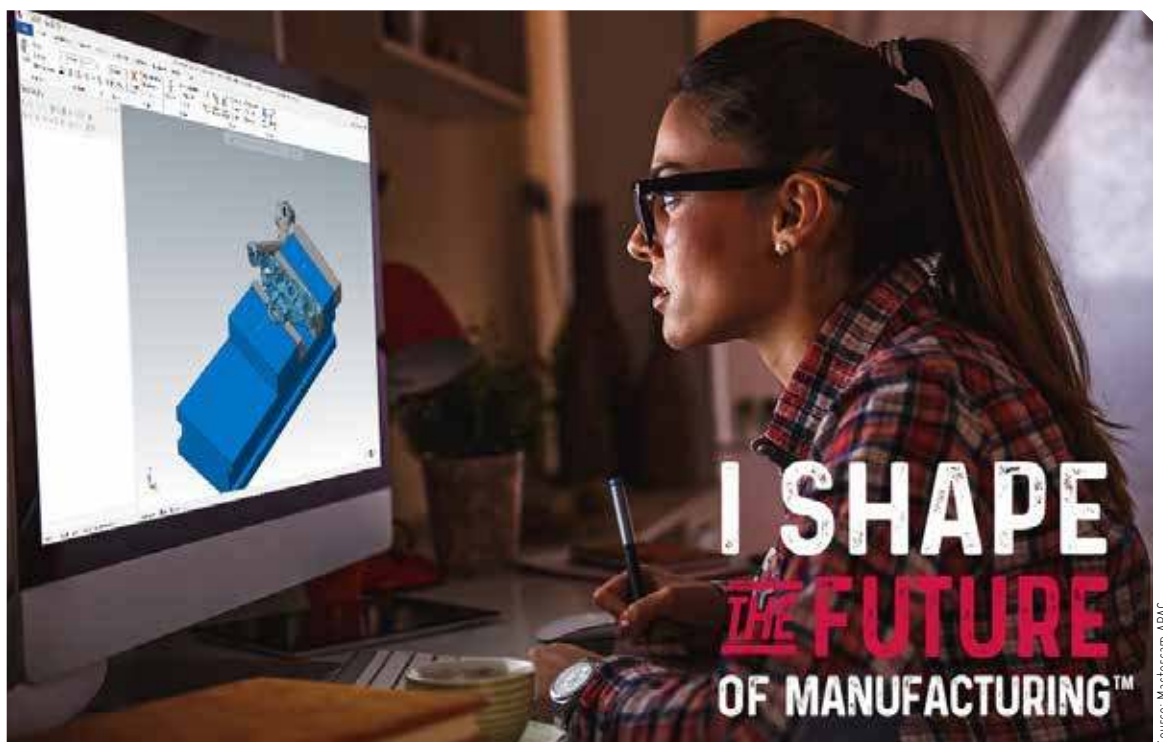
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LEARNING IS FOREVER

CNC Software, Inc., the creator of Mastercam, is one of the few CAM companies in the world to have a strong focus on education. The company, through academic institutions and its 24/7 online courses, offers quality training to the beginners and those seeking to hone their skills. A spotlight on its initiative in India which is proving to be of tremendous help to CAM aspirants.



A positive shift is happening globally where the two important entities – the academia and the industry – are working towards a robust collaboration in a bid to develop an ideal environment that can enable innovation and growth.

In the same vein, CNC Software, Inc., the creator of Mastercam, engages with young engineers and trainees on multiple levels to ensure that they get first class education on the CAM front. “On a micro level, our nationwide network of strong resellers and authorized training centers

conduct training on our CAD/CAM system. They also work with regional technical colleges by organizing training camps and seminars,” explains Vineet Seth, Managing Director – South Asia & Middle East, Mastercam APAC. On a macro level, the company works with Skill Development Initiatives and Industry Apex Bodies to help with world-class content as well as experience that it carries as a leader in this domain. “Specifically, with colleges and universities, we try and provide a continual engagement of Latest Software, People and Experience.

Latest Software version ensures that students learn current day technologies and not a defunct or obsolete version. With People engagement, we try and provide an Industry perspective to the students and faculty via seminars and interactions, to help them prepare to be Industry ready. Finally, on the Experience front, we use tools like Mastercam University to ensure that knowledge pooled in the organization through decades of global exposure, is available to the students – on demand, at any time,” he adds.

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OUR CERTIFICATIONS



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Source: Mastercam APAC

“Mastercam India has over 1,500 colleges, vocational institutes and universities as customers and many reputed and well-known institutions such as the MSME Toolrooms, IITs, CIPET centers, NTTFs, IGTRs, CTTCs and Advanced Training Institutes (ATIs) – amongst others that offer regular courses on Mastercam.”

Vineet Seth
Managing Director -
South Asia & Middle East
Mastercam APAC

Academic tie-ups in India

Mastercam India has over 1,500 colleges, vocational institutes and universities as customers and many reputed and well-known institutions such as the MSME Toolrooms, IITs, CIPET centers, NTTFs, IGTRs, CTTCs and Advanced Training Institutes (ATIs) – amongst others that offer regular courses on Mastercam.

Universities like BITS Pilani, Savitribai Phule University, Anna University and SRM University to name a few, use Mastercam for academic purposes as well as for their Workshop practical.

Currently, the programme is not being offered to school students due to limitations in infrastructure at schools – non-availability of CNC machines, which is key to Mastercam technology.

Open all days, at all times

Mastercam University offers 24/7 online training to anyone looking to begin a career in CNC programming or to current Mastercam users with the desire to sharpen their job skills. Several courses are available which cover many areas of the Mastercam product. “Re-

gardless of the skill level, there is a Mastercam University class available to strengthen user knowledge of most Mastercam products. With Mastercam University, students learn tips and tricks at their own pace, in their own time, and from experienced Mastercam trainers,” notes Seth.

Mastercam University is the only online training created by CNC Software, Inc. There is no better way to learn the software than from the experts themselves. “In this application-based training, trainees learn Mastercam by designing and programming toolpaths on real industrial parts. Important concepts are covered that show how to program more efficiently. For example, you learn how to program quickly and effectively, how to apply multiple set-ups, and how to select the best toolpath strategy for fast runtime and superior surface finish,” he states describing the course.

Mastercam University is open to anyone with internet access and purchased through Authorized Mastercam Resellers. A free version of Mastercam Demo / Home Learning Edition is also included with every course.

Topics covered

Mastercam University provides the following topics –

Principles for Machining - This course covers the US - National Science, Technology, Engineering, and Math (STEM) standards. While forming the base of the course, it lays the foundation for establishing sound fundamentals across the four disciplines, to ensure that the students get things right, the first time.


Turning - Essentials and Advanced Modules - This course starts with both wireframe and solid model creation specifically for parts machined on a lathe, followed by a quick overview on how to create support information and toolpath for a simple

lathe project. The third section covers the typical lathe toolpaths the way one would use them in a production machine shop. This includes using a parts catcher and flipping the stock to machine the back of the part. The last lesson covers live tooling in both C and Y axis. There is also a Mill-Turn Module that deals with programming and process for multi-tasking machines.

Milling - Essentials and Advanced Modules

- The Essentials cover introduction and in-depth study to Mastercam's intelligent, application-specific, 2D and 3D high-speed dynamic milling toolpaths. The Advanced Mill Design and Toolpaths is designed to help a machinist of any level become a proficient Mastercam 3-axis user and, potentially, better CNC programmer. Examples used in this class are based on parts created using Mastercam's CAD functions and then machined using the latest 3-axis CAM functionality. The curriculum is designed to teach the machining of parts as if they were programmed in a typical machine shop. Parts are completed quickly, as lesson directions are straightforward and to the point.

Multi-axis Milling - Essentials and Advanced Modules

- In this module, trainees are introduced to 5-axis machine programming. The module surveys the three most common machine configurations with their advantages and programming considerations. It will introduce collision checking and avoidance options, along with advanced multi-axis strategies to program complex parts on a host of corresponding 5-axis machines. 

The Mastercam University offers 24/7 online training class on most Mastercam products. The students learn tips and tricks at their own pace, in their own time, and from experienced Mastercam trainers.

Concurrent Show

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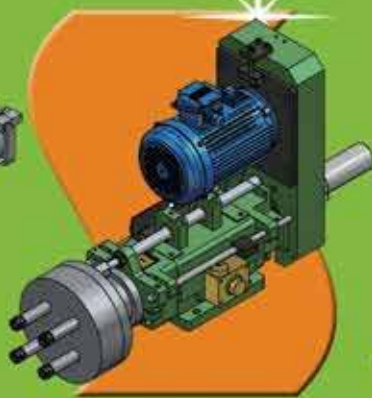
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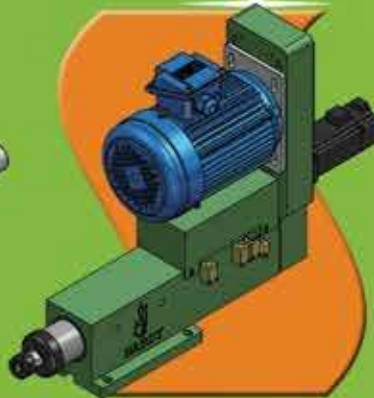
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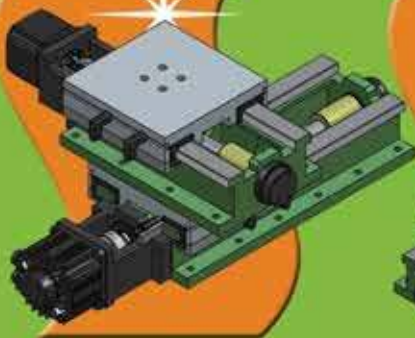
Tapping Spindle Head



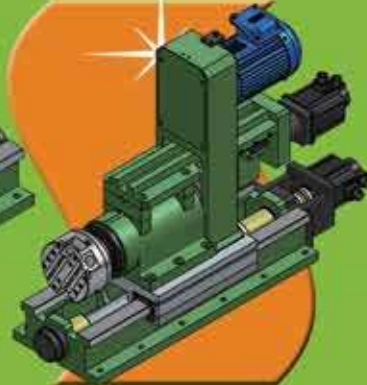
Multi-spindle Head



Tapping Spindle Head



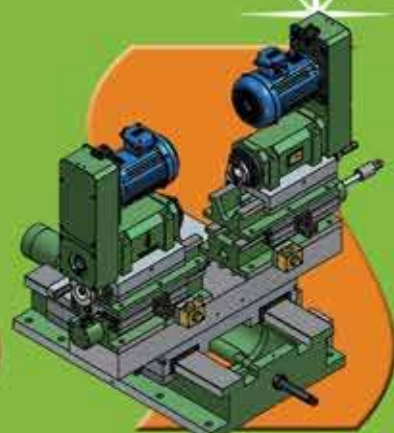
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POWERING THROUGH

With the power industry being transformed to a buyers' market, L&T MHPS Turbine Generators had to think out of the box and come up with a systematic plan to enhance productivity of its Turbine Blades, meet stringent delivery schedules and cut down costs.



Rough machining on 3-axis machine

Source: L&T MHPS Turbine Generators Pvt Ltd

L&T MHPS Turbine Generators Pvt Ltd (LMTG) is a joint venture company of Larsen & Toubro Ltd (L&T) and Mitsubishi Hitachi Power System Ltd (MHPS) Japan. A joint venture agreement for setting up a manufacturing facility to supply super-critical Steam Turbines and Generators in India was formed between the two in 2007. Manufacturing of Turbines and Generators is a promising product of L&T's offerings, which is currently facing a challenge due to immense competition. In the present scenario, the power industry has transformed from a sellers' to a buyers' market with stringent delivery timelines. As an OEM for power generating equipment with aspirations to become a market leader in the field, it was highly essential for

LMTG to make high-performing products available at a competitive cost. To make this possible, the company had to implement a systematic plan which could improve the manufacturing of Turbine Blades to double the capacity.

Trigger for the project

In a bid to cater to the changing market demands, the company had to improve the product in terms of quality, cost, delivery and performance. Hence, LMTG introduced the most effective equipment in power generation - Ultra-Super Critical Turbine. These turbines operate at a very high temperature of 620°C and a steam pressure of 670 Kg/cm². The Blade is the most critical part of the Turbine. The accuracy in the manufacturing of the blade directly impacts the

operating efficiency of a power plant. Aerofoil or the profile part of the blade plays a vital role in the smooth flow of steam. To achieve the required accuracy, turbine blades are manufactured on the most accurate 5-axis machines.

LMTG Plant was designed for 5 sets of Turbines and Generators per annum, which required around 37,000 blades for 63 stages. Switching over to a new design of ultra-super critical Turbine, the numbers of blades for 5 sets were increased to 58,000 for 100 stages i.e. around 5,000 blades/month. To meet the new requirements, the company called for an additional investment of around ₹20-25 crore for machinery and accessories. The revised requirement of blades prompted LMTG to take a project that delivers 60,000 blades/annum with the same set of manufacturing facility.

Solution through innovation

Considering the increased blades requirement, LMTG took up the project of producing 60,000 blades per annum. The flow diagram shows the company's approach towards the implementation of the project. The analysis indicates effective utilization of 3-axis machines which was increased by shifting some of non-critical operations from 5-axis machines to 3-axis machines.

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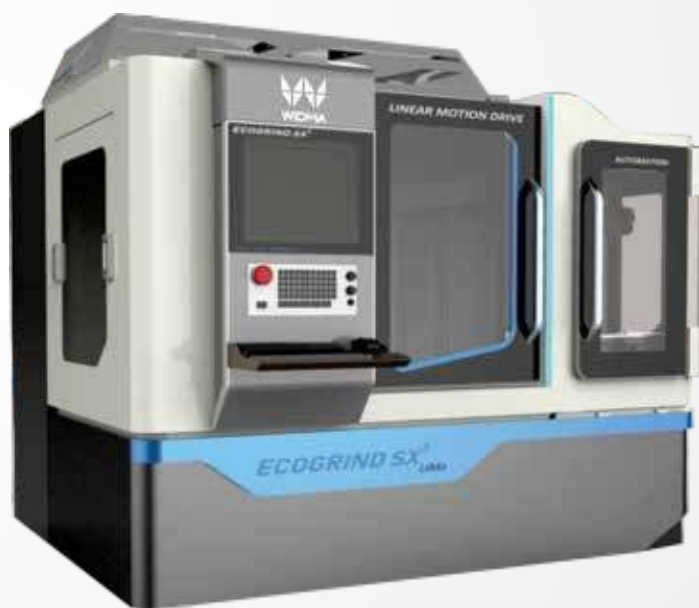


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Output of rough machining on a 3-axis machine



High feed inserts

Source: L&T MHPs Turbine Generators Pvt Ltd

Source: L&T MHPs Turbine Generators Pvt Ltd

By reducing the overall cycle time of blade manufacturing on machine, the company could reduce the energy use from 86 KWh to 36 KWh per manufactured blade.

Tooling is a major concern in machining. It directly affects quality and productivity. Hence, machining parameters, required accuracies and surface finish are a few factors that the company considers while deciding on the tools for any job. To get acquainted with the latest innova-



Finished machined blade

Source: L&T MHPs Turbine Generators Pvt Ltd

tions in tooling, LMTG interacts with tool manufacturers on a regular basis.

In this case, the company tried to work on the form cutters which were used to machine a Fir tree root type Blades. The HSS Form cutters after replacing with the Brazed type Form Cutters gave LMTG the opportunity to increase the parameters and get a reduced cycle time on 4-axis machines. In addition to this, the application of a few advanced tooling like the High Feed Cutters and better coatings allowed the company to utilize higher parameters which, in turn, reduced the cycle time further.

Results

After the implementation of the improvements and other Kaizen initiatives, LMTG's YOY average has increased from 2,253 blades per month to 5,066 blades per month over a span of three years.

Environmental impact

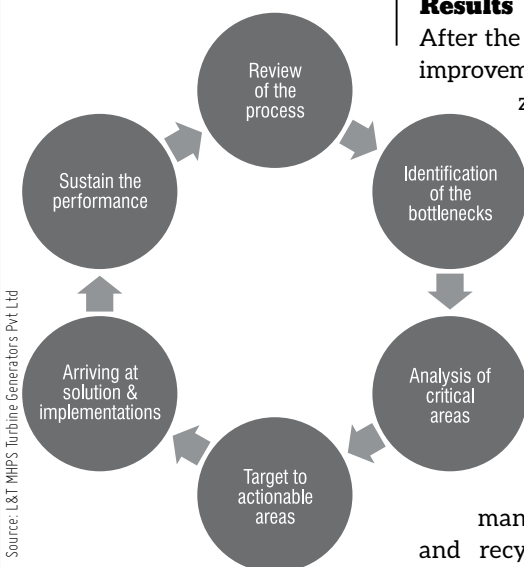
The life cycle of the product consists of three phases: manufacturing, service and recycling. The manufacturing phase alone accounts for one-fourth of global energy

usage. The leading consumer of energy within this sector is the production machinery. There are numerous reasons to reduce this energy consumption. The leading one for the operating company is the reduction of the Total Cost of Ownership (TCO) but the higher goal is a sustainable manufacturing of goods with minimal energy required with a smaller environmental footprint.

By reducing the overall cycle time of Blade manufacturing on machine, the company could reduce the energy use from 86 KWh to 36 KWh per manufactured blade. Secondly, reduction in the raw material requirement reduces the natural resources for the steel manufacturing and also the consumables required per number of blades.

Scope for horizontal deployment

Any system or improvement stands right only when it gives a sustainable scope. The trend of the current financial year, after all LMTG's improvements and implementations have shown a drastic improvement in the quantity of blade manufacturing from the previous financial years. The new process adopted is giving better output with improved norms in the quality of blades produced.



LMTG's approach towards implementation of the project

Source: L&T MHPs Turbine Generators Pvt Ltd

The Siemens logo is displayed in a white box in the top left corner. The background of the entire page is a photograph of a large industrial machine tool in a factory setting, overlaid with a blue digital grid and data visualization elements like a line graph and a gauge.

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Beckhoff Automation Pvt Ltd
E: info@beckhoff.co.in
W: www.beckhoff.co.in/c6015/



Source: Beckhoff Automation Pvt Ltd

Measuring just 82 x 82 x 40 mm, the C6015 IPC with its Intel Atom processor represents the ideal combination of compact design and high performance for use as an IoT edge device.

Measuring just 82 x 82 x 40 mm, the exceptionally compact C6015 IPC with multi-core technology can be flexibly installed even in highly confined spaces. Equipped with an Intel Atom processor offering up to four CPU cores, the C6015 provides sufficient processing power for simple collection, processing and provision of process data and for the more complex tasks required of a modern IoT gateway.

The Microsoft Azure certification of the C6015 underscores that the device is ideal for state-of-the-art Industry 4.0 applications.

The C6015 is predestined for such communication tasks especially when retrofitting and connecting legacy systems. Existing process technology systems can be easily equipped with additional IoT capabilities using this IoT edge device or they can be readied to meet future communication requirements. In this way, operators of process technology systems gain access to the full wealth of IoT and analytics solutions supported by Beckhoff technology, regardless of the automation technology used – be it PC-based control or third-party control platforms. This reduces production costs, optimizes product quality and improves the overview and transparency of all process workflows. In addition, system availability and productivity can be increased and cloud-based services used, for example, to implement predictive maintenance.

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A GAME-CHANGER IN MANUFACTURING

To help Indian manufacturing companies understand the application and benefits of Automation in their production processes, Indian Machine Tool Manufacturers' Association (IMTMA) recently organized a symposium on 'Appropriate Automation in Indian Context'. A glimpse of how the industry took to it...

(L-R) Satish Sadasivan, Managing Director, Schunk Intec India Pvt Ltd and Pradeep David General Manager, South Asia, Universal Robots, in their session on 'Integrated Robotic Automation'



Source: IMTMA

Today, the global manufacturing landscape is undergoing a massive transition and getting highly automated and IT-enabled. To come at par with its global peers and achieve its aim to being the preferred manufacturing hub, it is highly crucial for India to embrace automation that comprises Industry 4.0 technologies and Industrial Internet of Things.

To drive home the point, IMTMA hosted a symposium that converged the Indian manufacturing fraternity to make them aware of the numerous benefits automation can bring to their manufacturing processes and the ways to implement it. The Industrial Automation Industry in India projected to grow at a CAGR of 10-12 percent during 2015-2020, is expected to touch \$3.49 billion by 2020.

A wholesome affair

Industry experts from renowned companies including Robert Bosch Engineering & Business Solutions Pvt Ltd, Ace Micromatic Group Ltd, Fanuc India Pvt Ltd, Grind Master Machines Pvt Ltd, Pepperl + Fuchs (India) Pvt Ltd, Titan Engineering & Automation Ltd, Schuler India Pvt Ltd, Schunk Intec India Pvt Ltd and Universal Robots addressed various aspects of automation relevant to Indian context

The symposium also comprised plant visits, technical presentations, application case studies, interactive sessions and panel discussion.

Factory tours to leading companies such as Bosch Chassis Systems India Ltd, Volkswagen India Pvt Ltd, Bajaj Auto Ltd and Mahindra Heavy Engines Pvt Ltd were organized a day be-

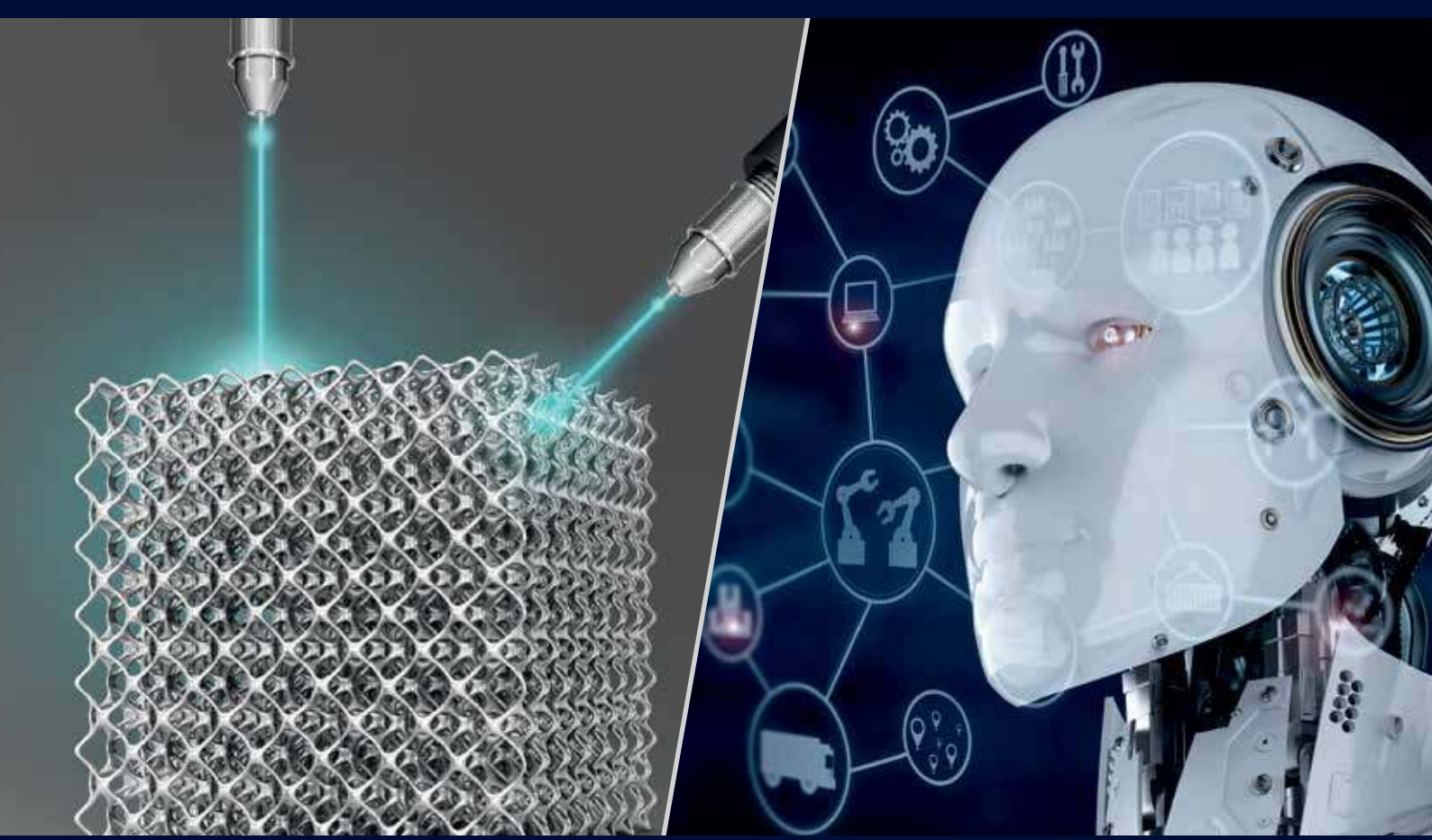
fore the symposium, providing a unique opportunity to closely witness how automation projects get implemented.

The initiative matters

Speaking on the importance of the symposium, V Anbu, Director General & CEO, IMTMA, stated, "The focus of this symposium is smart manufacturing, Industry 4.0 in general, which in simple words is the impact of the convergence of advanced technologies like Artificial Intelligence (AI), Augmented Reality (AR), Internet of Things (IoT), Cloud Computing, Data Analytics & Security. This is an emerging platform for people to network and understand Industry 4.0 and how to put it to use. This is a continuous journey and the platform provides the participants an opportunity to start the journey."

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Ravi Agarwal, Managing Director, Pepperl + Fuchs India Pvt Ltd (Factory Automation) speaking on 'Sensing and Vision Technology for Automation'



Industry leaders at the symposium brainstorming on making automation mainstream

The demands are growing and for reaching that level of production we need to look at how we can optimize manufacturing processes itself.

"Today the machines are working at an efficiency of 40-45 percent. This symposium focuses on how to reduce machine idle time and maximize machine utilization by adopting automation. It is an eye opener for many Industry 4.0 users of tomorrow," said P Ramadas, President, IMTMA.

According to Satish Sadasivan, Managing Director, Schunk Intec India Pvt Ltd, there is still a lot to do along with the Government's new initiation to increase the share of manufacturing in the country's GDP. "This cannot happen just by focussing on producing more parts. The demands are growing and for reaching that level of production we need to look at how we can optimize manufacturing processes itself. Automation is one area which can definitely help in this endeavor," he added.

Dattatri Salagame, Vice President & Head of Digital Business, Robert Bosch Engineering and Business solutions Ltd, presented his keynote address on 'Automation - Key Driver for competitiveness in Indian manufacturing'.

He noted, "This cross fertilization of ideas will get the mindsets changed because digitalization is the topic where there is not too much of precedence and proof points. Such platforms help bring the players together for them to understand each other's initiatives and approaches so that they can customize it for their organisations and begin their journey of Industry 4.0."

Ideal platform for MSMEs

The symposium audience comprised of well-established players of the Indian industry, and also SMEs who are still lagging behind in the adoption of automation in their processes. Talking on its benefits to SMEs and what's holding them back, Sreekanteswar S, Vice President, Sales & Marketing, Felsomat India Pvt Ltd, pointed out, "They have their natural concerns about the cost, success and its feasibility in their plants. Seminars such as these help them gain confidence to integrate automation in their plants. This is a step in the right direction as it

addresses the need of tomorrow; just like CNC is today, automation will be an integral part of the industry going forward."

"It's said that you either automate or perish. Symposium of this nature can help provide SMEs the insight into how automation gets implemented and the various technologies available, and in doing away with the myth regarding the complexity of automation. I commend IMTMA for disseminating information through their seminar," said Naresh Kantoor, Managing Director, Encon Systems International.

Showing the way

IMTMA has always held the torch for the manufacturing industry, holding its hand and guiding it when needed. The symposium is one such nudge to the industry to buck up and be ahead of the game. As Ravi Agarwal, Managing Director, Pepperl + Fuchs India Pvt Ltd (Factory Automation), rightly put it, "I must complement IMTMA for being a wonderful association to be addressing the grass roots or the bottom of the pyramid in the Indian manufacturing which is actually its strength. The association has been promoting absorption of technologies among the tier II and III manufacturers which make up the large mass in India. Its efforts in the form of this symposium are worth applauding."



The symposium apprised the audience on the various benefits of automation



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SHOWCASING ADVANCEMENTS

Team MMI is honored to have received an exclusive invitation from the Taiwan Association of Machinery Industry (TAMI) and the Taiwan External Trade Development Council (TAITRA) to join in the Taipei International Machine Tool Show (TIMTOS) 2019 Pre-Show Press Conference in Taipei, Taiwan. Along with a fair amount of sneak peek into the fair, the team was also offered insightful visits to Taiwan's leading companies, making it an experience worth cherishing.

(L-R): Oscar Hsu, Deputy Sales Manager, FATEK, FEMCO Group; Alice Wu, CEO, Cosen Mechatronics Co., Ltd; Walter MS Yeh, President & CEO, TAITRA; CC Wang, President, TAMI; and Rebecca Hsieh, Vice President, Sales, Goodway Machine Corp



Source: TAITRA

Jointly organized by TAITRA and TAMI, the 27th edition of TIMTOS, to be held from March 04-09, 2019, is making all the right moves to create a new record in the show's history and emerge as the world's 3rd largest machine tool trade show.

The biennial trade event is to host a whopping 1,230 exhibitors from 26 countries in 7,000 booths sprawled over a 100,000 sq mt of gross area at Taipei World Trade Center's Hall 1 and 3, and Taipei Nangang Exhibition Center Hall 1 and 2. The estimated number of visitors stood at 52,700 at the time of the conference.

Towards a smart factory

Today's manufacturing technologies are undergoing an un-

precedented transition. To help businesses get familiar with the current trends of automation and data exchange in manufacturing, TIMTOS 2019 will spotlight 'Industry 4.0 & Smart Manufacturing' and 'AI Technologies'.

Pointing to this, Walter M S Yeh, President & CEO, Taiwan External Trade Development Council (TAITRA), stated, "TIMTOS 2019 aims to offer the visitors an opportunity to closely witness a number of digitalized solutions that integrate machine tools, industrial robots, sensors, IoT, big data analysis, machine learning and AI technologies for whole-plant operations. Adopting these will equip them with the flexibility and efficiency to respond to customers' needs for high-variety, low-volume production."

To further aid the visitors in comprehending the impact of these trends on their business and the best way to adopt them, a second TIMTOS Summit has been organized. Industry experts and top executives from firms such as DMG Mori; ABB; Heidenhain; Dassault Systèmes; and Siemens are to provide insight into topics such as 'Machine Intelligence and AIoT', 'Additive Manufacturing', 'Automotive Manufacturing Revolution' and 'Innovation in Aerospace Manufacturing'.

Showcasing Taiwan's strengths

TIMTOS 2019 will once again lay bare the country's competence in machine tools sector for which the country's export figures bears testimony to.

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Source: TAITRA

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Walter M S Yeh
President & CEO
TAITRA

“The total export value of Taiwan machine tools reached US\$3.034 billion in the period of January to October, 2018, an increase of 12.3 percent over the same period of last year,” reveals Yeh.

The exhibit profile at TIMTOS 2019 comprises Metal Cutting Machine Tools, Metal Forming Machinery, Casting and Forging Machinery, and auxiliary equipment including Laser Punching Machines, Welding, Vibration Grinding, Surface Treatment Equipment, Tube & Wire Processing, Machine Tool Parts/ Accessories, Tools, Controllers & Control Systems, Measuring, Measuring Instrument, Software, Design Engineering, Hydraulic & Pneumatic Components.

Enriching experience

In their pursuit for excellence, Taiwan machine tools and component producers continue to upgrade their skills and develop new technologies. TIMTOS exhibitors like CHMER EDM; HIWIN Corporation; Fair Friend Group (FFG); Tongtai Machine & Tool Co., Ltd; Chin Fong Machine Industrial Co., Ltd; POSA Machinery Co., Ltd; Cosen

Mechatronics Co., Ltd; Goodway; and FEMCO Group have won ‘Taiwan Excellence Awards’ based on their strong R&D capabilities and innovative ideas. The companies below played a gracious host to Team MMI. To visit them and closely observe their innovations and the best practices that set them apart was indeed an enriching experience.

Chin Fong Machine Industrial Co., Ltd

Chin Fong has its presence in Taiwan, China, and in the USA. “At TIMTOS 2019, we will be displaying the Smart Press OCP with Smart automation, Unmanned Production and Management. Our Quick Die Change System, and Automated Guided Vehicle for Presses will be other highlights. Besides Miniature Presses, KW2-400 High Precision Progressive Chuckle Press, WF2-6500 Warm Hot Forging Press and SE4T Straight Side 4-Point Transfer Presses having Smart Control Centre will also be displayed,” informs Simon Tseng, President, Chin Fong.

Cosen Mechatronics Co., Ltd

Founded in 1976, Cosen has business in countries such as India, Vietnam, Japan, Korea, and Singapore aside from other 80 countries including USA and Europe. It offers 140 models including Vertical, Horizontal, Miter-Cutting, NC and CNC automatic and



Source: TAITRA

“It is estimated that the export value of Taiwan machine tools will continue to increase while the global economy is still sluggish. This is an indicator that Taiwan machine tool producers have established an excellent reputation around the world and their investment in machine upgrading and smart manufacturing has paid off.”

CC Wang
President
TAMI

customized Band Saws with capacities ranging from 200 to 3200 mm, and cutting materials from steel to titanium, chromium and silicon. In 2016, the company launched the world’s first Industry 4.0 Sawing Performance and Health Prognosis App – positioning itself as the technology leader in band saw manufacturing. Alice Wu, CEO, Cosen, tells us about the C-Tech Series NC Fully Automatic Bandsaws that the company is to showcase this TIMTOS. “The fully-automatic bandsaws from the C-Tech Series have been designed for cutting solid materials in mass production around the clock. The well-known ‘built to last’ Cosen DNA is again visible in every part of these machines: from the over-

TIMTOS 2019 is to host an estimated 52,700 visitors and a whopping 1,230 exhibitors from 26 countries in 7,000 booths sprawled over a 100,000 sq mt of gross area.



Source: TAITRA



Source: TAITRA



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International Media during the TIMTOS 2019 Pre-Show tour in Taiwan.

Source: TAIIPA

To aid businesses in getting familiar with the current trends of automation and data exchange in manufacturing, TIMTOS 2019 will have its spotlight on 'Industry 4.0 & Smart Manufacturing' and 'AI Technologies'.

sized linear guideways, super sturdy saw frames, cast iron vises to the use of world-class PLC and components," she adds.

Factory Automation Technology Co., Ltd (FATEK) FEMCO Group

A subsidiary of FEMCO, FATEK designs, manufactures, sells, distributes a full line of CNC machine tools including CNC Lathes, CNC Vertical Lathes, CNC Horizontal Boring Mills, CNC Wheel Turning Machines, and CNC Housing Type Plano Mills. Its main markets include China, India, Thailand, Europe and the USA. At TIMTOS 2019, it is to present its automation production with AVM (Automatic Virtual Metrology) system,

a new online inspection system to transition the offline sampling method into instant online full inspection.

"FEMCO's other highlight would be the Exchangeable Facing Head that keeps the head speed same as spindle speed. The Facing Head and other general machining tools have the same exchange interface, so when the general machining tool is exchanged, the main shaft can be used for drilling, tapping, milling, boring and so on," explains Oscar Hsu, Deputy Sales Manager, International Sales & Marketing, FATEK, FEMCO Group.

Luren Precision Co., Ltd

Invested in the R&D of gear machining since 1994, Luren has extended the cutting tools technologies of mechanical and research laboratories such as the Industrial Technology Research Institute (ITRI) and integrated the research resources from the best universities, building the production lines of hobs and shaving cutters. For machine tools, its Gear Grinding product line includes CNC Gear Profile Grinding Machines, CNC Worm and Thread Grinding Machines and CNC Hob Sharpening Machines.

According to Shawn Sung, President, Luren, the company will be exhibiting its new GBC-4028 CNC

Bevel Gear Cutting Machine with higher efficiency and bigger module capacities. It has an Intelligent Dialogue Window-Based Software to enable machine operators to complete the whole processing procedures in one software. The software can automatically calculate the meshing position in the target area. This will improve productivity and efficiency.

SOCO Machinery Co., Ltd

SOCO is the leading global machinery manufacturer for the Tube, Pipe and Solid Bar industry. It manufactures Tube Bending machines, Laser Tube Cutting machines, Tube and Bar cutting machines and Chamfering machines. Headquartered in the Taichung's Technological Precision Machinery Park in Taiwan, the main machinery industrial area in Asia, the company has several production facilities around the world, 25 branch offices and over 40 active partners in all major continents. The company also has an agent in India. Kyle Lo, CEO & Managing Director, SOCO, notes, "You may find products produced by SOCO's Tube Benders, Fiber Laser Tube Cutting Machines And Tube Cutting Machines in our everyday living - transportation (cars, motorcycles, bicycles, ships), comfort furniture (home seating, office furniture), care (wheelchairs, hospital beds) and general (fitness equipment, gardening tools, playgrounds)."

Bigger and better

TIMTOS 2019 has all the things needed to surpass its previous editions. With an unprecedented number of exhibitors and visitors in its history and an unmatched spread of cutting-edge products and technologies, it is sure to lure tech enthusiasts from the manufacturing space from world over to help them move up another notch in their game.



Source: TAIIPA

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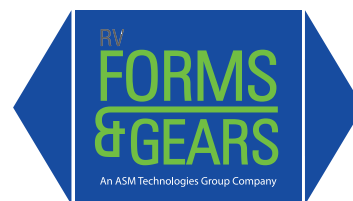
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