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The official magazine of Indian Machine Tool Manufacturers' Association

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**PREVIEW**

TIMTOS 2015

**DR KAVITA GUPTA**

**IAS, Additional Director General of Foreign Trade (DGFT), Government of India, Ministry of Commerce & Industry, Department of Commerce**

"The machine tool sector plays a fundamental role in the country's GDP both directly and indirectly, as the products and technology it produces is also absorbed into various other industrial sectors."


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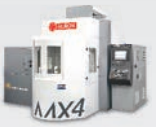


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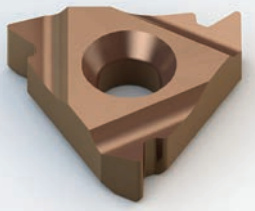

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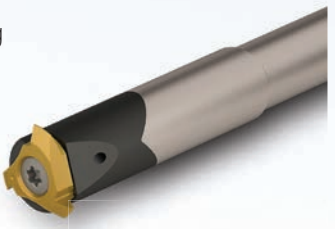

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**L Krishnan**
**President, Indian Machine Tool Manufacturers' Association (IMTMA) and Managing Director, TaeguTec India Pvt Ltd**

# Looking Forward to a Growth Year…

Wishing you a very happy 2015,

One could clearly notice that the recent policy reforms have seemingly turned industry sentiments positive. Growing PMI, rising industrial production index, hike in consumption numbers, along with improving auto sales coupled with improving trade enquiries for machine tools and accessories points that the Indian economy seems to be inching towards better days in 2015 and is gearing up to meet its challenges.

It has been a fairly successful year for the Indian Machine Tool Manufacturers' Association (IMTMA) wherein we saw some of the major events being held amidst great enthusiasm. An intense Machine Tool Summit 2014 concluded at Goa in the month of May, the eighth Productivity Summit was held in August at Chennai. Keeping the vision alive for 2020, the machine tool industry CEOs met near Chennai to analyse, rethink and refocus current and long term strategies. To help units grow and become efficient, the Business Excellence Programme was launched by IMTMA to promote all inclusive growth for the sector. In addition to this, IMTMA Technology Centre, Pune was formally inaugurated in December.

With the coming of the New Year, all of us like to hope for the better. Now will be a busy time for the industry as 'manufacturing' is the new buzzword and infrastructure and capital goods are in focus.

I positively believe, manufacturing will move towards regaining its due share in India's GDP and the Indian machine tool industry will have a big role to play in the times to come in order to make it possible.

On behalf of IMTMA, I wish you a Happy and Prosperous 2015!

IMTEX 2015 will see a congregation of manufacturers, suppliers, vendors, visitors, researchers and delegations from close to 50 countries at the Bangalore International Exhibition Centre this January.

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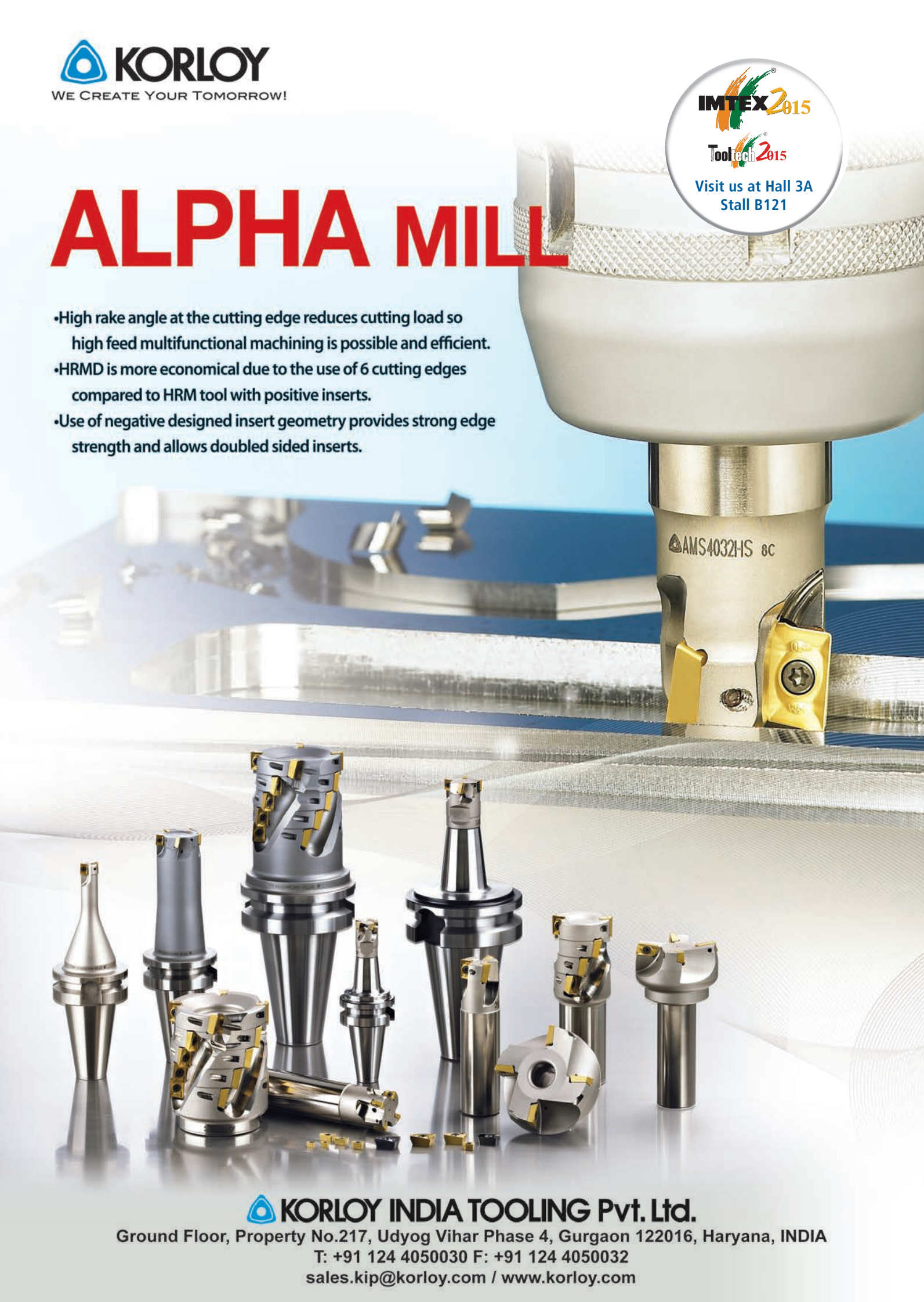


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# Riding into 2015… Rooting for Success!

Early last Sunday morning, during my ritualistic ride on my Aprilia Dorsoduro to Navsari, thoughts in my head were flying as quickly as the scenery was passing by. The ride instills in me a sense of freedom along with the constant rush of adrenalin. On that day, it didn't seem to matter that I was riding in sub 10°C. For the thoughts of our journey so far kept me warm. These I wish to share with you, my respected reader!

It's been two years since the launch of MMI, and though the time seems to have flown by, it is only with the constant support of IMTMA, Gardner Business Media, ETMM, my colleagues, and You—your encouragement—that we have made it so far!

**"India is definitely a country of the future, if not the definitive country of the future."**

*–Nobel-prize winning economist Paul Krugman*

Our aim with MMI is not only to be your first choice of industrial magazine but also to provide you with avenues to express your views, opinions and share technology know-how through different mediums.

Our latest endeavor in this regard was the recent launch of the online technology portal www.modernmanufacturing.in; through this we look to constantly support you in all the ways we can.

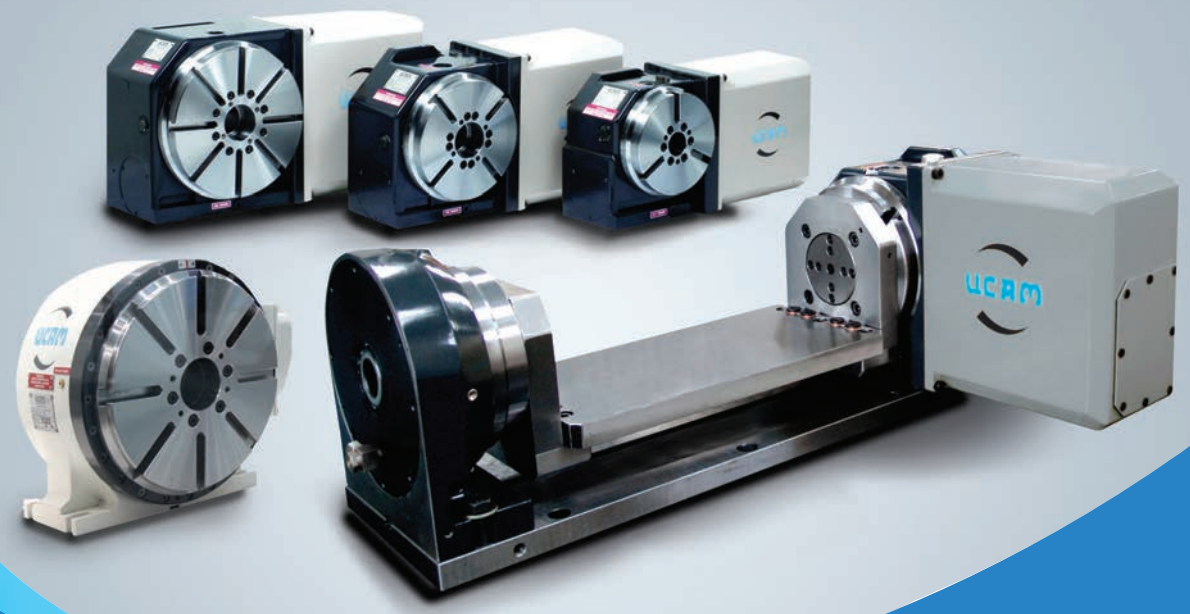
As we stand in unison with the aim of increasing awareness of the latest happenings and trends in the industry whilst maintaining the highest quality standards across all our processes, we are leaving footprints of MMI across the globe.

As the official magazine for IMTMA, we invite you to stand witness to India's consistent growth along with international prowess at IMTEX 2015!

We wish you a great show!

**PN**

# EVOLVING NEW PARADIGMS IN ROTARY WORK HOLDING SOLUTIONS

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UCAM's growth and transformation has also brought about the new UCAM logo. This logo is stylized to portray continuity to our past legacy and values. The circular mnemonic resembles a Rotary table which represents our core business and area of expertise. The new tagline - Engineering Excellence. Exactly is an outcome of our core values and expertise and we been identified as a company which is Technical, Trustful, Superior in what we do and precision in our area of business.

Diversification into full-solution, hi-tech OEM products and in-house R&D leading to newer, versatile product lines will be the focus of our energies.

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# Thrilled to be Unstoppable

It is a fantabulous feeling to reminisce MMI's travel since is its inception. With a firm belief that setting goals is the first step in turning the invisible into the visible, we launched the first issue of MMI two years ago during the exciting and exhilarating period of IMTEX. Treading on this belief, we realized that the key to reaching goals is to keep company with people who uplift us and whose presence calls forth the best.

It goes without saying that we have been blessed by being surrounded by the best of the best. It is a privilege to receive continuous support from 'You' our valuable readers, patrons, office bearers, association members, Indian Machine Tool Manufacturer's Association, our partners— Gardener Business Media Inc, ETMM … the list is endless.

**"So many people will tell you 'no', and you need to find something you believe in so hard that you just smile and tell them 'watch me'. Learn to take rejection as motivation to prove people wrong. Be unstoppable. Refuse to give up, no matter what. It's the best skill you can ever learn."**

*–Poet and Writer, Charlotte Eriksson*

The unceasing support and behind-the-scenes hard work of my teammates deserves a long round of applause. I am fortunate to work with such wonderful people who have become like family so quickly over this period. They are simply the best at what they do.

Without the continuous encouragement of our Publisher, we would not be where we are today. I am thankful to him for placing his faith in us and allowing us to take risks and leap ahead, believing that the net will appear. It always does! To him we all owe a special thanks—for infusing that it is important to set our goals high and not stop till we get there.

In this backdrop, we present the 2nd anniversary issue packed with technology articles and views from industry experts reinforcing how 'Made in India' and 'Make in India' makes the country one to watch out for. Or as coined by Nobel-prize winning economist Paul Krugman "India is definitely a country of the future, if not the definitive country of the future."

And why wouldn't it be, when our very own Prime Minister Narendra Modi also recently stressed on us dreaming of an India with a $20 trillion economy! Hopefully, his strong emphasis on the government's role to nurture an ecosystem where the economy is primed for growth—a growth promoting all-round development, IMTEX 2015 will play witness to this ongoing development!

On this note, I wish you all a great show!

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▶ **THE BIG INTERVIEW:** "We no longer call ourselves (DGFT) regulatory. We are friends of exporters, and we are facilitators. So the entire role or attitude with which we work is fundamental to facilitating exports and facilitating exporters." **44**

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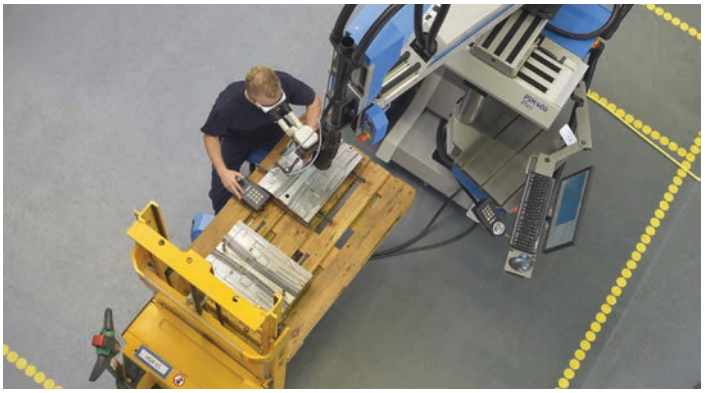
▶ **TITANIUM MACHINING:** Heavy duty cutting places particular requirements on the machine and working processes. A material such as titanium is hard to cut and specific know-how is necessary to deal with these requirements 62

▶ **DIGITAL MANUFACTURING:** Tool qualification and development are regarded as pivotal factors in further optimizing cutting technology in the case of machining difficult materials. 66

▶ **VERTICAL MACHINING CENTER:** The trunnion table enables Vertiflo Pump to machine as many as four parts at a time, cutting per-part cycle times in half. 70



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## REGULAR



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# Is Your Marketing Effective?

**"Effective machine tool marketing, holistically put, is about understanding customers, co-creating value; thereby, defining markets and enlarging the pie."**

CEO, Micromatic Machine Tools Pvt Ltd, TK Ramesh

Marketing is undertaken by all businesses at one point or another in time to help enhance and increase their market share. Usually, the first aspect that pops into people's minds when they hear the term 'marketing' is advertising. However, marketing, in actuality, takes on a varied range of forms right from online platforms to producing flyers, direct mails, networking to market research and, last but not the least, customer satisfaction.

Whatever the goal of your marketing strategy, it is important to define clear and concise goals and be able to be SMART (specific, measureable, attainable, relevant and time bound) about them.

## Is your marketing effective?

This is a question that frequently crosses the mind of most machine tool managements, and the answer that brings satisfaction or dissatisfaction depends on the quarterly or annual results that the company has just had. Unfortunately, market place effectiveness is simplistically understood and measured in terms of existing capacities and market share at that moment of time. This moves on from recession to boom times. Marketing effectiveness as perceived inside companies is like the story of the blind men and the elephant, wherein each man describes the elephant by feeling and describing the part that they touched.

The most important factor to consider when setting the marketing strategy is measurement. If you do not measure your performance how do you know if you have been effective? Action plans to improve marketing effectiveness or market share are pursued and at times left inconclusive without any true understanding.

## So how do we measure it?

The ability to measure and manage marketing effectiveness needs to be clearly defined, and although some companies have made some headway into it, most will agree that a lot more needs to be done. As a starting point, some basic measures of marketing such as enquiry count, enquiry to order conversion ratios and some basic tools or return on investment calculations to take care of costs, profits should be in place.

The next step is to use this data and dash board them into meaningful actionable outcomes like total life cycle income, revenue per marketing or service person, product, region, etc. These outcomes need careful experimentation and a matrix using them can be built to suit the specific needs of the company. Another very important activity and measure that is to be carefully nurtured, especially in machine tool companies, is forecasting market requirement and tracking it periodically to refine the forecast accuracy progressively.

## Identifying traceable marketing measures

It is important to understand that company performance measures that matter, like value per sale, profitability per sale, cost of sales, etc., are often outside of normal sales measures, and it is here that if a set of indicative traceable marketing measures are identified, they could be used to monitor and drive strategy. Indicative measures, for instance, guide the planning process and also help action taking, e.g., seasonal demand during year ends for investment allowances. Similarly, diagnostic measures that help improve performance, i.e., diagnosing leakage of sales, orders competed and lost, orders not competed and lost, orders not competed and won, etc.

## Making a plan that works for you

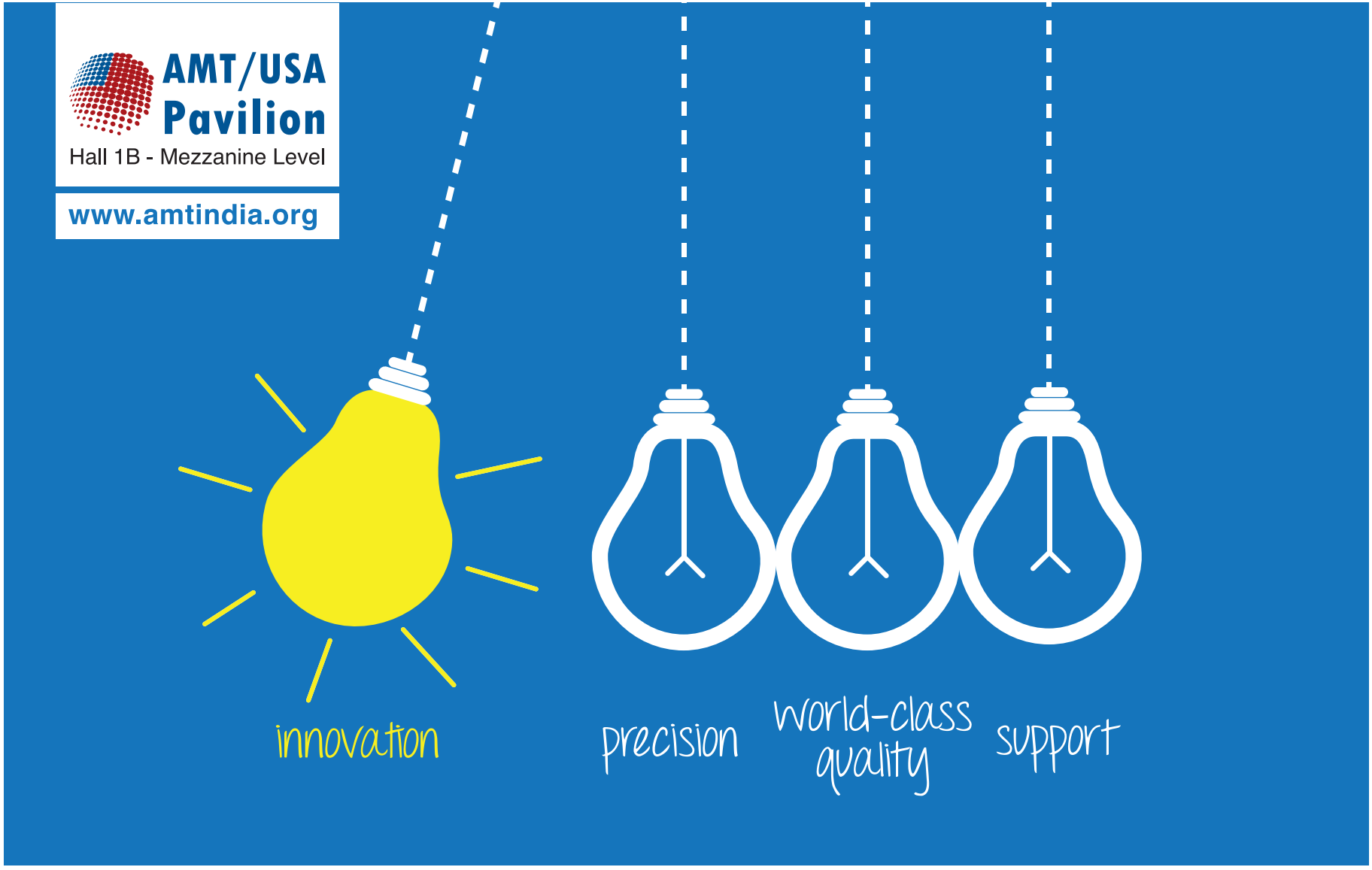
Marketing effectiveness requires measurements that provide actionable insight into what is working and what needs change. What you choose to measure and how you manage the measurement will determine how much marketing performance can be increased.

We can do this by real time experimenting and piloting schemes to understand actual problems such as:

- Are we spending too much or too little in a specific media, sales channel, or geographic area?
- Is our current offer effectively generating new customers or are we just giving discounts to existing customers?
- Can we motivate greater customer response and activity at specific points in the ordering stages?

Effective machine tool marketing, holistically put, is about understanding customers, co-creating value; thereby, defining markets and enlarging the pie. MMI

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

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# 2015 – Will it be the Year of Reckoning?

The world is noticing all the countries that have been able to push reforms for the economy and industry. Countries like Brazil, China, and the United Kingdom have undergone a painful reform process to turn their economies around. Assisted by falling crude prices and positive sentiments in financial and decision making circles, India too is passing through a transition where the focus has moved from shunning the ABCD culture to take the high ROAD to growth. IMTMA has also been active to improve industrial productivity, business excellence and technical know-how to take the Indian Machine Tool Industry onto the envisioned path.

In 2014-15, India is witnessing probably the largest number of reforms. Convening of Niti Aayog in place of the erstwhile Planning Commission is a step favoring federalism and a true partnership between states and centre. GST, FDI, land acquisition, and a string of other measures are forcing World Inc and India itself by large to believe that better times are in store for Indian economy. India could be well on its way to becoming a $2 trillion economy. A bigger push in policy reforms and an improved industrial performance have generated optimism. Improved macro-economic conditions have led to overall increase in consumption. Performance of two key sectors viz., capital goods and manufacturing showed positive growth during July - December 2014–15.

Source: IMTMA

**DIGITAL VERSION**

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2015 – Will It Be...


Source: IMTMA

**Aerial view of the visitors networking with industry leaders at the previous edition of IMTEX.**

Is Indian Machine Tool Industry ready to enter the most prominent machine tool producers club in 2015? The answer to this complex puzzle lies in bringing together coherent pieces that define the Indian Machine Tool Industry today. The pieces can be majorly defined as—meeting challenges of quality, improving productivity, resourcing skilled manpower and, bridging technology gap.

The Indian Machine Tools Manufacturers' Association has been playing a catalyst's role in supporting the industry since its inception. It has defined 'Vision 2020' to catapult Indian Machine Tool Industry to become a leading global player with strong fundamentals while ensuring a superior all round performance. To guide and facilitate this journey, IMTMA has taken upon itself to provide a framework and roadmap to bring intervention and inputs to members to embark on their journey towards Business Excellence.

## At par

In 2014, IMTMA rolled out its Business Excellence Programme to help member

companies attain higher levels of performance and productivity, match domestic and global benchmarks and emerge as lean, competitive business units to take on the competition on a larger arena.

Once the whole industry adheres to export norms and is capable of not only surviving the challenges but excelling in all the facets of business including manufacturing, quality, promotions and services, it would be ready to grow and move forward as a unit and would create a niche for its 'Made in India' brand across the world.

## Understanding the facts

Answering the second part of the puzzle on how to improve productivity across the service chain, IMTMA has been organizing a series of National Productivity Summits from 2006–2013. The eighth summit in the series was organized at the Chennai Convention Centre on August 20–21, 2014. The Productivity Summit has become a synonym to learn cross-functional productivity improvement ideas and works as a common platform for the entire metalworking industry to share and grow towards being more productive and profitable together. As in its previous editions, the event in Chennai showcased the best productivity practices in metalworking through live case study presentations, plant visits and keynote sessions. Over 400 participants from 134 companies listened to the keynote presentations from industry gurus, learnt innovative approaches to address productivity challenges, exchanged new ideas and concepts, and had an opportunity to network within the industry.

The third piece of the puzzle, the knowledge gap in work force has been addressed by IMTMA since the last half a decade by providing skill based hands-on training to young engineers who can confidently earn a profitable career in manufacturing today after attending finishing school programs in production engineering. Today IMTMA's technology centers in Bengaluru and Pune organize well over a 150 programs for the benefit of the metalworking industry and specifically for the machine tool builders in India. The courses provide both theoretical and practical knowledge and are conducted by specialized trainers along with audio-visual presentations, shop floor training and plant visits. The Bangalore Centre has clocked over 15,000 man days of technical training in the last two years.

Source: IMTMA

**Visitors having a close look at products displayed at the previous edition of IMTEX.**

As a next step to take the training initiative to the western region which is also known as the 'Detroit of India' IMTMA has recently launched its Pune Technology Centre in Chinchwad MIDC. The city continues to elicit investments despite competition from Gurgaon and Chennai.

"There was a need for opening a tech centre at Pune so that IMTMA's long-term training programs like finishing school and industrial seminars could also be extended to companies operating in this region", said President, IMTMA, L Krishnan on the inauguration of the technology centre at Pune. "The industry partnered centre will play a key role in implementing IMTMA's activities in the region," he added.

The final piece—technology transfer—is a major one that might be said to limit export of Indian machine tools to foreign shores. The answer to this lies in the upcoming IMTEX, the largest machine tool expo in South East Asia. IMTMA is organizing the concurrent shows IMTEX 2015 (exhibition of metal cutting machine tools) and Tooltech 2015 from January 22–28, 2015, wherein visitors will get to see live demonstrations of the latest technology and solutions and get the opportunity to interact with nearly 1,000 exhibitors from all over the world. Manufacturers, suppliers, vendors, visitors, researchers and delegations from as many as 50 countries have already confirmed their participation in IMTEX 2015 and Tooltech 2015.

## Global exposure

The list of exhibitors will also include group participations from various countries like China, Czech Republic, Germany, Italy, Japan, Spain, Taiwan and the US. Hoping to be the biggest IMTEX ever, it is estimated that over 1 lakh visitors will congregate and will benefit from the latest technology solutions available for manufacturing. Incidentally, IMTEX also harbours technology transfer by means of M&A activities and joint ventures.

Indian companies have already made their presence in Europe, South America and South East Asia. Indian machines are price competitive in their range making them suitable for exports. The Indian Machine Tool Industry showed positive growth in the second half of FY15. Data from April–September reveals that there was an overall increase in production, imports and consumption. The industry is growing and this trend is expected to continue during 2015.

## The way forward

IMTMA has always been in the forefront of championing the cause of Indian manufacturing sector. At the beginning of 2015, the industry can't help but feel a little nostalgic when it looks back at the journey in the past 12 months and what it brought for the industry. IMTMA wishes to thank its members for taking active part in IMTMA activities and reassures to continue its work with more rigor as 2015 unwinds. MMI

# IMTMA Workshop on Precision Grinding a Success

**Pune** – IMTMA recently organized an exclusive advanced level workshop 'The System Approach to Precision Manufacturing – Grinding Processes' at the Indian Machine Tool Manufacturers' Association (IMTMA) Tech centre, Chinchwad, Pune. The program was a unique one and was delivered by Industry Expert, Dr K Subramanian from the USA. The edition was the 3rd program in the series, after two previous successful programs organized in previous years—2012 and 2013.

About 27 managers and engineers from companies such as Bharat Forge Ltd, Bosch Ltd, Cummins Fuel Systems India, Danfoss Power Solutions India Pvt Ltd, Emerson Climate Technologies (India) Ltd, Greaves Cotton Ltd, etc., participated in the workshop. Dr Subbu stressed on the significance of grinding covering everything from the basics to the complexities of the subject. The four day workshop was not only and informative one but also a highly animated and interactive one.

In addition to the theoretical part of the course, participants were given hand-on experience at the IMTMA Tech Centre where laboratory exercises were conducted. Various industry stalwarts were also part of the faculty for this workshop. Director, Micromatic Grinding Technologies Ltd, Kapil Dhand; Manager Application Engineering – West Zone, Grindwell Norton Ltd, Prakash Patil; Assistant Manager, Micromatic Grinding Technologies Ltd, Anant Jain, and General Manager – R&D, TVS Motor Company Ltd, M Kannan.

As a part of the program, a CEO's conference was also organized by Director, Micromatic Grinding Technologies Ltd, Dhand. The conference was held at the Hotel Blue Diamond (Taj Vivanta), Pune. The talks ran along the topic of 'Higher Productivity and Lower Total Cost in Manufacturing Operations'. Several industry CEOs and senior executives participated in the conference.

The workshop ended with participants receiving not only niche information in the precision grinding field but were also being felicitated with certificates and awards.

Source: IMTMA

**Participants at the advanced level workshop.**

## Metal + Metallurgy China 2015 is now hot!

**China** – Asia's largest and the world's second largest exhibition in metal and metallurgical industry, Metal + Metallurgy China is held alternately in Beijing and Shanghai, China. The event focuses on market agglomeration and industrial integration across the globe. Scheduled to be held from March 31–April 3, 2015, at the newly built China Expo Complex in Shanghai Hongqiao CBD, registrations for the exhibitors are in full swing. Some of the leading names in the industry such as Kao, ABP, Inductotherm, DISA, Fanuc, Allied Mineral Products, Shanghai Xinyan, Siemens, etc., have already registered for participation and have also contacted the organizers for further arrangements. Majority of the exhibitors such as FANUC, KAO and Allied Mineral Products will increase their booth areas and also showcase the best of their products at the event. This year's show is jointly organized by China Iron and Steel Association, China Foundry Association, Chinese Mechanical Engineering Society (CMES), the Metallurgical Council of CCPIT, and the Industrial Furnace Institution of CMES, and Hannover Milano Fairs Shanghai Ltd.

Source: Hannover Milano Fairs Shanghai Ltd

**Visitors at Metal + Metallurgy China 2014.**

## HANNOVER Goes Hi-tech

**Hannover, Germany** – Take innovative thinking, pair it with lightning agility and add a generous portion of boldness in the face of risk. Then harness it all to a common vision and focus on a new product while keeping a close eye on the costs. The startup scene made a big splash at last year's Hannover Messe—particularly at the Research & Technology show—and will again feature strongly this year. The world's leading trade fair for industrial technology is staged annually in Hannover, Germany. The next Hannover Messe will run from April 13–17, 2015 and will have India as its official partner country. The event will comprise ten flagship fairs namely Industrial Automation; Motion, Drive & Automation (MDA); Energy; Wind; MobiliTec; Digital Factory; ComVac; Industrial Supply; Surface Technology and Research & Technology. The upcoming event will place a strong emphasis on industrial automation and IT, power transmission and control, energy and environmental technologies, industrial subcontracting, production engineering and services, and research & development.

Source: Deutsche Messe AG

**Innovative technologies showcased at the event.**

# Enhancing Manufacturing Competitiveness

**Mumbai** – Frost & Sullivan's Industrial Automation & Process Control (IPC) Practice successfully hosted its Industrial Technologies Summit titled 'Enhancing Manufacturing Competitiveness: Reality of Adopting Global Trends and Technologies in the Indian Context' at Mumbai. In the Summit sidelines, the best companies in industrial technologies were felicitated for their outstanding performance, customer value, customer service and market share leadership at the '2014 Excellence in Industrial Technologies Awards, India'.


Source: Frost & Sullivan

**Director-Marketing, Siemens Industry Software, Gautam Dutta provides an insightful session at the event.**

Senior Vice President, Reliance Industries Ltd, BR Mehta, who was the Chief Guest at the summit, highlighted the changing practices and global trends that the manufacturing sector has to imbibe in order to remain relevant in this ever-changing world. Following Mehta's address, other esteemed speakers highlighted some of the key challenges faced by Indian manufacturers and deliberated on ways and means of addressing them. The summit witnessed participation of solution providers and solution adopters, who collectively deliberated on the key steps.

Post the summit, leading companies across different product and solution spaces were felicitated for their best practices in enhancing overall customer value addition at the '2014 Excellence in Industrial Technologies Awards, India'.

Amongst others, some of the companies that bagged the award were—Cognex Sensors India Pvt Ltd, C.R.I. Pumps Private Ltd, Emerson Process Management, Endress+Hauser (India) Pvt Ltd, Siemens Ltd, etc.

Cognex Sensors India Pvt Ltd received an award in the category of 'Market Share Leadership in Vision Sensors' while C.R.I. Pumps Pvt Ltd topped 'Customer Value Leadership in Centrifugal Pumps' category. On the other hand, Endress+Hauser (India) Pvt Ltd won the award in two categories—'Customer Value Leadership in Process Transmitters – Process Level Instrumentation' and 'Company of the Year in Flowmeters'. Emerson Process Management bagged an award in 'Customer Value Leadership in Process Transmitters - Pressure Transmitters' category.

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## PAL Robotics invests in Haas CNC Mini Mill

**Zaventem, Belgium** – PAL Robotics is a company, run by Italian CEO Francesco Ferro which is building a reputation for its cutting-edge, innovative humanoid robots used in service applications. Until now, all of the metal parts used to make a robot were sourced from various external subcontractors and suppliers in Spain and overseas. However, sourcing the parts externally can slow down the prototype process considerably. Ferro says, "The Haas Mini Mill is the perfect size and power for our workshop. The price and performance were exactly what we were looking for." The compact and popular Haas Mini Mill comes with a 5.6 kW, 6000 rpm, 40-taper spindle as standard, giving it plenty of performance for cutting steel or Al alloy. Its worktable of 914 x 305 mm is the perfect size for small to medium sized parts and can easily accommodate a Haas rotary table for multi-axis machining. Maximum load on the table is 227 kg!

Source: Haas Automation Europe NV

**The REEM: C by PAL is the third version of a full-sized, humanoid robot which has a battery life up to eight hours.**

## Hyundai reiterates innovation prowess at IMME 2014

**Kolkata** – At the inauguration of the 12th International Mining and Machinery Exhibition 2014 (IMME 2014), Hyundai Construction Equipment India, one of the leading excavator manufacturers in the country showcased their technological prowess with their latest R390LC-9 excavator for the mining segment. It also launched their new engine oil – HyGen Oil. This latest R390LC-9 excavator comes equipped with the first-of-its kind technology available in India, and is designed for handling granite blocks and mining OB with a lot more ease and efficiency. Backed with advanced programming, this nine series is also equipped with Hi Mate – machine tracking and a monitoring technology to map machine performance and geometric location. Speaking at the exhibition, General Manager, Sales & Marketing, Hyundai Construction Equipment India, Alok Jha, said, "Our latest R390LC-9 excavators are all set to revolutionize the Indian mining scenario and practices. With our new engine oil HyGen, along with our entire gamut of oils and greases, we aim to highlight the importance of genuine oils and are confident of delivering greater value to our customers."


Source: Hyundai Construction Equipment India

**General Manager, Sales & Marketing, Hyundai Construction Equipment India, Alok Jha.**

## IMTMA Inaugurates Technology Center in Pune

**Pune** – Hon'ble Prime Minister of India, Narendra Modi has laid great emphasis on skill development of work force to make 'Make-in-India' a reality. In line with this vision Indian Machine Tool Manufacturers' Association (IMTMA) has launched a state-of-the-art Technology Centre in Pune. The facility will upgrade knowledge and skills of engineers from the manufacturing industry across the country.

It will not only focus on the class training but also will offer practical hands-on training to machine tool users. To enable this, the Technology Centre intends to organize several training programs focusing on design, productivity, quality, maintenance, automation and so on. The other advantage is that the 'Finishing school in Production Engineering' makes fresh engineers 'Industry ready'.

Earlier, IMTMA has already established a Technology Centre in Bangalore in 2009 to focus on metal cutting machine tools, which has clocked over 15,000 man days of technical training in last two years.

The Pune Technology Centre is fully equipped with latest CNC machines and allied equipment to impart training in all aspects of production technology. Moreover, the facility includes CNC turning and machining centers, hydraulic and mechanical press, with all supporting equipment and accessories. The Technology Centre is set up with the active support of IMTMA members, which includes Batliboi, Lokesh Machines, ISGEC Heavy Engg, Hind Hydraulics, Fanuc India, Siemens, Miven Mayfran, Sandvik, Seco Tools, Renishaw, Yuken, Master Chemicals, Festo, Blum Novotest, HIWIN Tech Corp and DP Technology. Other companies are also expected to join this initiative.

Apart from the latest technology, the IMTMA also promises to bring industry experts with vast experience in their field as faculty members. This Centre in Pune will cater to the training needs of various industry segments such as automotive & auto components, die & mold, consumer durables, defense & railway units, aerospace, general engineering, etc. In addition to that, IMTMA Technology Centre will also organize customized training programs based on the industry needs.


Source: IMTMA

**LtoR: Director General, IMTMA, V Anbu; Vice President, IMTMA and CMD, Jyoti CNC Automation Ltd, PG Jadeja; Immediate Past President, IMTMA and Chairman & Managing Director, Miven Mayfran Conveyors Pvt Ltd; President, IMTMA and Managing Director, TaeguTec India Pvt Ltd, L Krishnan and other dignitaries at the inauguration event. .**

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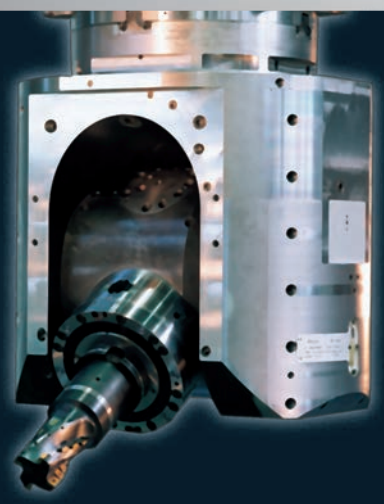

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# German Machine Tool Industry 2014

The German machine tool industry ranks amongst the five largest sectors in India's mechanical engineering segment. We take you through the predictions and industry sentiments of this vital industry.

The German machine tool industry supplies production technologies for metalworking applications to various manufacturer categories and makes a crucial contribution towards progressing innovation and productivity in the industrial sector. Owing to its absolutely key position for industrial production output, its development is also an important indicator for the economic vigor of the country's industrial sector as a whole. In 2013, the German machine tool industry produced machines and services worth around €14.6 billion, and was employing about 71,000 people (annual average for 2013, firms with more than a staff of 20). This corresponded to a growth of 3 per cent.

## Industry forecast

In 2013, according to a report by the German Machine Tool Builders' Association (VDW), production increased by 9 per cent. The experts also anticipate moderate growth in 2014. German manufacturers of machine tools were able to generate a total turnover of €14.1 billion in 2013. The Chinese market continues to be largely responsible for this success. A total turnover of €2.4 billion was achieved in the largest single market with an increase of 14 per cent compared to the year 2012. In other words, German manufacturers sold twice as many machines in China as in the USA, their second largest market.

German machine tools were still in demand during the first half of 2014, according to Executive Director, VDW, Dr Wilfried Schäfer. He added that the demand from the domestic market gained significance in reporting though the foreign new orders that fell behind in the year-to-year comparison.

According to a survey commissioned by the VDW, its primarily orders from America and parts of Europe are responsible for the upturn. The intensive reindustrialization efforts in the USA and high capital investment by the automotive industry in the NAFTA nations of Mexico and Canada, and in Eastern Europe, have ensured higher order volumes for the 'Made in Germany' production technology. As expected Russia exhibits a substantial fall in orders, with a minus of 40 per cent. Schäfer identifies the principal causes involved as rising prices for imports resulting from the rouble devaluation, the continuingly difficult financing situation, and the EU's tighter regulations on exports of dual-use goods. The rise in the European demand levels was thus only a slight one.

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German Machine Tool

## Industry sentiment

Business with Asia is also faltering potent markets such as China, South Korea and Thailand; these countries have still ordered fewer machine tools in Germany during the first half of 2014 as compared to the preceding year's equivalent period.

Nonetheless, the VDW continues to pin high hopes on China—the biggest sales market for German machine tools. It is true that the high double-figure growth rates in machine tool consumption and imports are presumptively a thing of the past, says Schäfer. However, Chinese companies require high-quality production technology for the quality enhancement thrust their politicians are demanding.

## On a recovery mode

Germany's machine tool builders are nurturing their recovery; this is evident through their second-quarter 2014 that witnessed new

Source: depositphotos.com

**In the first two quarters of 2014, the export of German machine tools to India was €75 million.**

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order volumes that were 1 per cent higher than their second-quarter, 2013. Also, in the first-half of 2014, new orders were up by 6 per cent over the comparable period of 2013. The results from VDW, the German Machine Tool Builders' Association along with recent reports by the machine tool trade association in Italy and the federation of trade groups from across the European Union indicate that the regional recession that set in during 2012 has been stanched.

"The general uncertainty due to numerous trouble-spots is causing foreign customers to hold back on new investment projects," Schäfer said, and this is being demonstrated in the 2014 second-quarter results. Those results have been caused by falling demand outside the European Union. Within the region, new orders increased 13 per cent year-on-year.

Regarding the sales of new machines during the first half of 2014, the VDW members finished with the past year's result. "For the production output, we are nonetheless staying with the growth forecast of 3 per cent in the ongoing year," Schäfer emphasized. He acknowledged this as an ambitious goal, one that will require a revival in demand from abroad.

In the first half of 2014, sales of machine tools shifted towards German customers, in parallel to the trend in new orders. By contrast, exports of German machine tools declined during the period, including deliveries to China, South Korea and India.

## Better results

For the machine tool market, worldwide growth is once again expected in 2015. The current forecasts of the VDW and the British economic research institute, Oxford Economics expect worldwide production capacity and market volume to grow in value terms by 5.0 per cent each. Growth in consumption of 4.4 per cent is expected for China, whereas for the USA and Japan at 8.1 per cent and 6.7 per cent, respectively, considerably higher rates of growth are forecasted. Russia (+ 6.8 per cent) will also most likely number among the strongest growth markets in 2014. For 2015, the VDW is forecasting a rise in consumption of 10.2 per cent (as on October 2014).

## Capital investments

Since two significantly down years after the financial collapse in the fall of 2008, machine tool consumption has been quite strong, performing at or above the historical average market. But 2015 looks to be the best post-recession year yet. According to the Gardner Research Capital Spending Survey and Forecast, machine tool consumption will increase 37 per cent next year. This dramatic jump in consumption comes after what is estimated to be a slightly down 2013 (-10 per cent) and flat 2014.

For the last two years, metal working facilities spent relatively more money on horizontal and/or larger machines. However, projections indicate that this trend will reverse itself in 2015. The machine types with the largest increases in spending will likely be either vertical machines or smaller machines of all types. Horizontal machining centers will still be the most preferred machine type, but the level of spending will be fairly flat compared to 2014. Machine types are forecasted to grow significantly in 2015 include vertical machining centers, vertical lathes, small horizontal turning centers, small horizontal lathes, and certain types of grinding machines. Also, the survey appears to indicate a much greater interest in machines for additive manufacturing in 2015.

The top five industries buying machine tools in 2015 are projected to be job shops, machinery or equipment manufacturers, automotive, pumps or valves or plumbing products and forming or fabricating (non-auto). Roughly one-third of the spending will be at facilities with more than 250 employees. According to the survey, these larger metal working facilities are growing at their fastest rate in nearly two years.

## German machine tool exports to India

In 2012, the export of German machine tools to India was €247 million and in 2013 it was €210 million which was a 15 per cent decrease as compared to 2012. The rank of India among the export countries was 11 in 2012, but in 2013 it became 14. In the first two quarters of 2014, the export of German machine tools to India was €75 million. MMI

**German Machine Tool Exports**
**Top 20 Customer Countries**

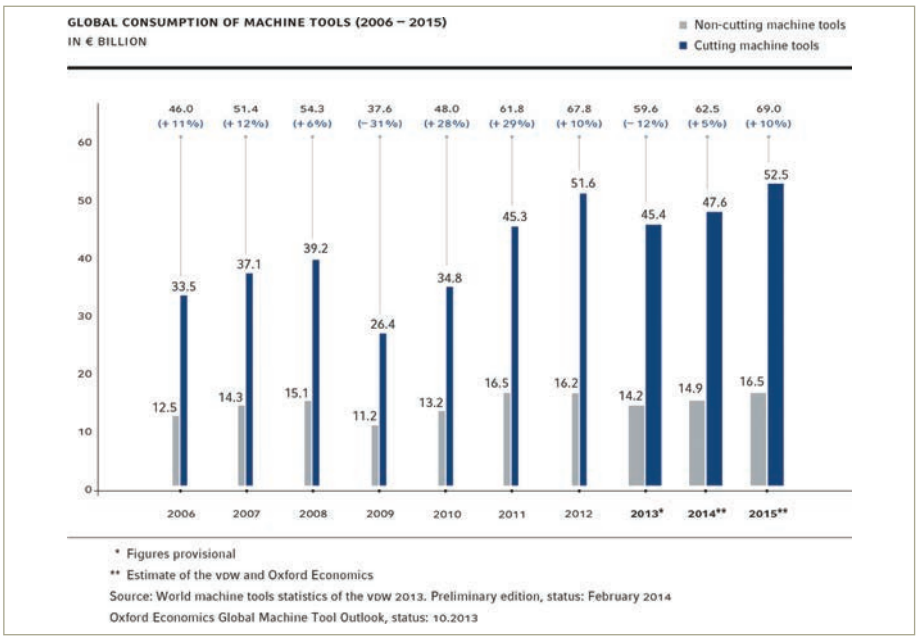
Source: VDMA

| | | Machine tools total (incl. parts, accessories) | | | | | | | | Machine tools | | | | | | Parts, accessories | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mill. EUR | | | | %-Change | | %-Share | | Mill. EUR | | | | %-Change | | Mill. EUR | | | | %-Change | |
| | | 2012 | 2013 | 1-2Q 2013 | 1-2Q 2014 | 2013 | 1-2Q 2014 | 2013 | 1-2Q 2014 | 2012 | 2013 | 1-2Q 2013 | 1-2Q 2014 | 2013 | 1-2Q 2014 | 2012 | 2013 | 1-2Q 2013 | 1-2Q 2014 | 2013 | 1-2Q 2014 |
| 1 | China | 2.613 | 2.287 | 1.212 | **1.118** | -12 | **-8** | 24,9 | **26,4** | 2.449 | 2.101 | 1.119 | **1.027** | -14 | **-8** | 164 | 186 | 93 | **91** | +14 | **-2** |
| 2 | USA | 1.026 | 938 | 476 | **382** | -9 | **-20** | 10,2 | **9,0** | 838 | 782 | 399 | **307** | -7 | **-23** | 188 | 155 | 77 | **75** | -18 | **-2** |
| 3 | Russian Fed. | 479 | 518 | 207 | **236** | +8 | **+14** | 5,7 | **5,6** | 428 | 468 | 183 | **205** | +9 | **+12** | 51 | 51 | 24 | **30** | -1 | **+24** |
| 4 | Switzerland | 328 | 350 | 170 | **173** | +7 | **+2** | 3,8 | **4,1** | 185 | 218 | 109 | **99** | +18 | **-9** | 143 | 132 | 61 | **74** | -8 | **+21** |
| 5 | France | 363 | 340 | 178 | **161** | -6 | **-9** | 3,7 | **3,8** | 298 | 283 | 149 | **136** | -5 | **-8** | 64 | 57 | 29 | **25** | -11 | **-14** |
| 6 | United Kingdom | 342 | 272 | 124 | **161** | -21 | **+30** | 3,0 | **3,8** | 276 | 234 | 106 | **141** | -15 | **+34** | 67 | 37 | 18 | **19** | -44 | **+8** |
| 7 | Austria | 341 | 396 | 191 | **157** | +16 | **-18** | 4,3 | **3,7** | 264 | 313 | 150 | **122** | +18 | **-19** | 76 | 83 | 41 | **35** | +9 | **-15** |
| 8 | Italy | 277 | 308 | 161 | **151** | +11 | **-6** | 3,4 | **3,6** | 219 | 257 | 135 | **126** | +18 | **-6** | 58 | 50 | 26 | **25** | -13 | **-7** |
| 9 | Czech Republic | 340 | 291 | 132 | **146** | -14 | **+10** | 3,2 | **3,4** | 272 | 225 | 99 | **118** | -17 | **+19** | 68 | 66 | 33 | **28** | -3 | **-14** |
| 10 | Poland | 253 | 254 | 121 | **129** | +0 | **+7** | 2,8 | **3,1** | 214 | 222 | 106 | **108** | +4 | **+1** | 38 | 32 | 14 | **22** | -18 | **+51** |
| 11 | Netherlands | 151 | 158 | 74 | **105** | +5 | **+42** | 1,7 | **2,5** | 98 | 100 | 43 | **66** | +2 | **+55** | 53 | 58 | 32 | **40** | +9 | **+25** |
| 12 | Mexico | 201 | 208 | 88 | **95** | +4 | **+7** | 2,3 | **2,2** | 174 | 183 | 77 | **83** | +5 | **+8** | 26 | 26 | 12 | **12** | -1 | **+3** |
| 13 | Rep. of Korea | 193 | 281 | 115 | **94** | +46 | **-18** | 3,1 | **2,2** | 171 | 261 | 105 | **83** | +53 | **-21** | 22 | 20 | 11 | **11** | -10 | **+2** |
| 14 | Turkey | 204 | 225 | 133 | **83** | +10 | **-38** | 2,5 | **2,0** | 182 | 203 | 122 | **74** | +12 | **-39** | 22 | 22 | 11 | **9** | -3 | **-21** |
| 15 | Spain | 106 | 124 | 63 | **75** | +18 | **+20** | 1,4 | **1,8** | 86 | 102 | 50 | **58** | +18 | **+15** | 19 | 22 | 12 | **17** | +16 | **+39** |
| 16 | India | 247 | 210 | 136 | **75** | -15 | **-45** | 2,3 | **1,8** | 218 | 189 | 123 | **65** | -13 | **-47** | 29 | 21 | 13 | **10** | -28 | **-25** |
| 17 | Japan | 143 | 142 | 58 | **65** | -1 | **+12** | 1,5 | **1,5** | 115 | 120 | 49 | **56** | +4 | **+15** | 27 | 21 | 9 | **9** | -22 | **-0** |
| 18 | Sweden | 175 | 190 | 106 | **65** | +8 | **-39** | 2,1 | **1,5** | 142 | 155 | 87 | **54** | +10 | **-38** | 33 | 34 | 19 | **11** | +3 | **-41** |
| 19 | Hungary | 201 | 211 | 139 | **64** | +5 | **-54** | 2,3 | **1,5** | 178 | 187 | 127 | **53** | +5 | **-58** | 23 | 25 | 13 | **11** | +7 | **-13** |
| 20 | Brazil | 193 | 163 | 73 | **62** | -16 | **-16** | 1,8 | **1,5** | 150 | 115 | 51 | **43** | -23 | **-17** | 44 | 48 | 22 | **19** | +11 | **-13** |
| | Others | 1.381 | 1.302 | 638 | **638** | -6 | **-0** | 14,2 | **15,1** | 1.188 | 1.097 | 533 | **541** | -8 | **+1** | 193 | 205 | 105 | **97** | +6 | **-8** |
| | Total | 9.555 | 9.168 | 4.595 | **4.235** | -4 | **-8** | 100,0 | **100,0** | 8.146 | 7.816 | 3.920 | **3.565** | -4 | **-9** | 1.409 | 1.351 | 675 | **670** | -4 | **-1** |

Statistical definition of machine tools:
Metal working machine tools: Due to official statistics this is the industry sector 28.41 resp. regarding foreign trade the codes 8456-8463 (metal working machine tools) and 8466 93/94 (parts and accessories for metal working machine tools).

Sources: Federal Statistical Office, VDMA, VDW
VDW, German Machine Tool Builders' Association, 28.08.2014

Source: VDMA




Source: VDMA

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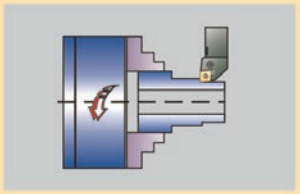
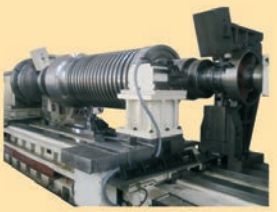


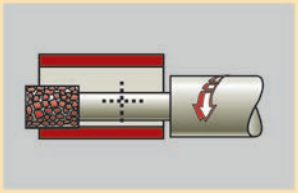
SC-8K
GANTRY LOADER

SC-14
PIPE TURNING



SC-25
CNC HEAVY DUTY LATHES

## CNC Internal Grinding

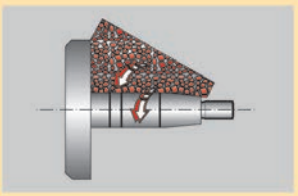


BRIG-450 CNC
BIG BORE GRINDER

FIGT-300 CNC
FOUR STATION TURRET

FIGE-150 CNC
ID / OD GRINDER

## CNC Cylindrical Grinding



AWH-1500 CNC
LONG SHAFT GRINDER

AWH-2000 CNC
HEAVY DUTY GRINDER

SWH-400 CNC
AUTO LOADING

## Surface Grinding

SG-106 CNC
CREEP FEED GRINDER

SGR-60
ROTARY GRINDER

SG-63
HYDRAULIC / PLC

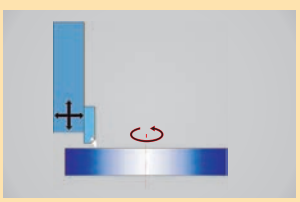
## Automats

A15/25

TD36

A42/60

## Vertical Turning Lathe



VC - 50C
1.25 M

VC - 60C
1.5 M

VC - 75C
Turnmill (2.5 M)

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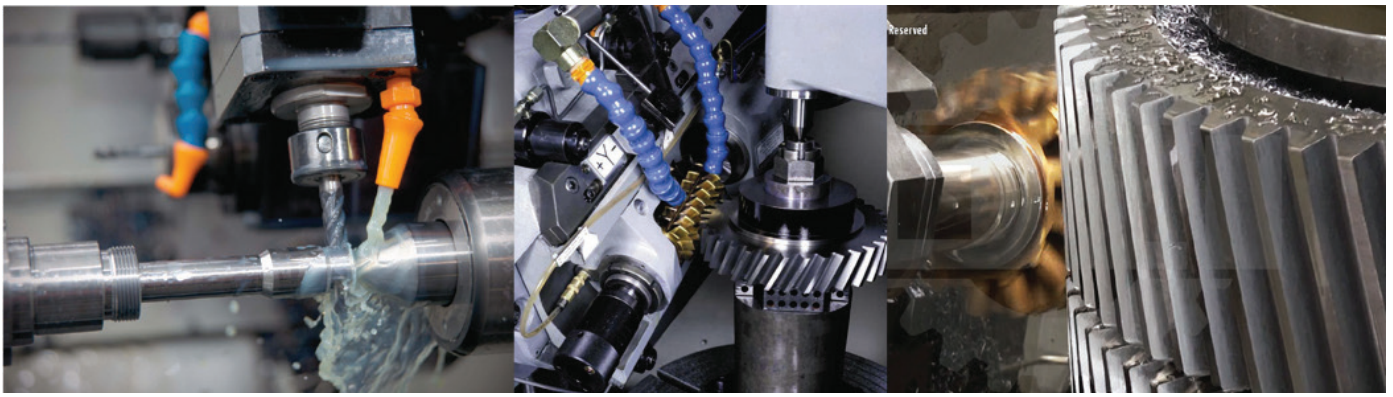
# Display of Finest Technology at IMTEX 2015

IMTEX 2015, one of the biggest shows for metal cutting and machine tools solutions, is scheduled to kick off on January 22, 2015, at Banglore International Exhibition Centre (BIEC), Bangaluru. For the same, Mitsubishi Electric is gearing up to show the best of its technologies at the venue. Here are some of the solutions that will be displayed at the exhibition.



**Variety of solutions that Mitsubishi Electric will present at the event.**

Source: Mitsubishi CNC

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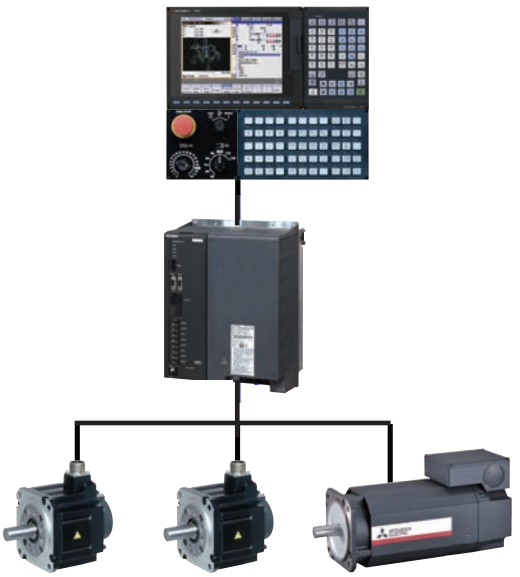
- Balance cut, 2 part system synchronous thread cutting etc.
- Higher performance multi hybrid MDS-DM2 series drives
- Low inertia spindle motor SJ-DJ series for faster Acc/Dcc.
- High speed HF series servo motors for faster Acc/Dcc.
- High speed tool spindle motor HF-SP Series.



## COMPACT TURNING CENTER WITH E70

- Standard CNC with high performance and high accuracy.
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- NAVI-MILL for easy programming for part production.
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- Ultra low inertia spindle motor provides faster Acc/Dcc time.
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- SJ-BG series built in spindle motor to improve spindle accuracy.
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## IQ PLATFORM CNC C70

- Compatible with the Mitsubishi FA integrated solution "IQ Platform".
- High performance CNC integrated with high speed PLC offers.
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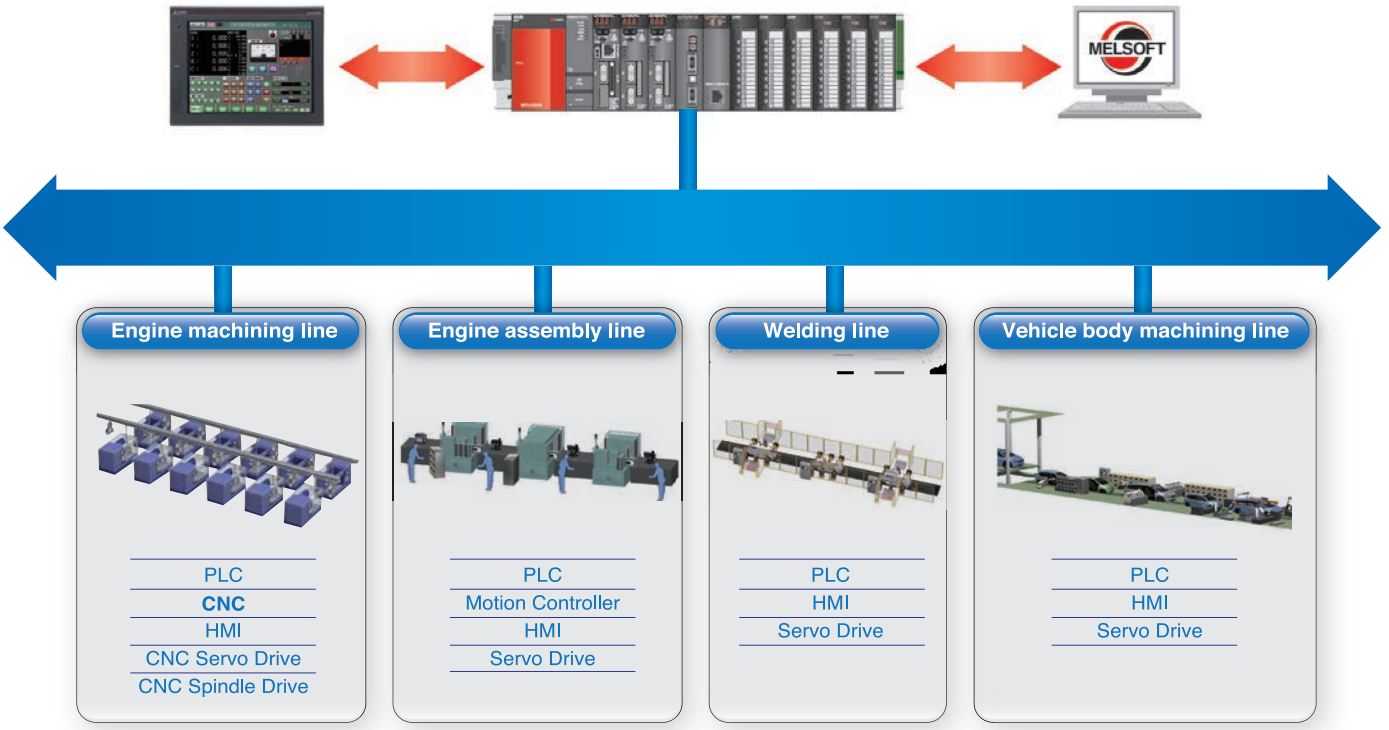

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# Vision in Manufacturing: 2015 Vs. 2030

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Vision in Manufacturing

Manufacturing is a field that is ever evolving. From its earliest form to now, the field has grown leaps and bounds, with the introduction of assembly lines, robotics and state-of-the art facilities. India is already slated to become the next manufacturing hub by 2020. However, technology upgradation and various other aspects need looking into if the country has to make a further impact on the global front.

India is as unique as the climate across its expanse, and her people just as distinctive. But the one thing that is clear is that the country's manufacturing sector is not running at its full potential. A recent industry report stated that if India's manufacturing sector reached its full potential it could attribute to around 25–30 per cent of the country's GDP compared to the approximate 16 per cent it currently does.

The questions of how and why a lag arises and also what steps are being taken to position the country in the light it deserves. Director – Automation and Electronics Practice, South Asia & Middle East, Frost & Sullivan, Niju V states, "Industrialized economies are measured by the level of innovation in them. Hence it is well understood that innovation is the key to long term success. India's

Nedra Pereira
Deputy Editor
Vogel Business Media India
nedra.pereira@vogel.de

Source: depositphotos.com

The future of manufacturing on the on-set of Industry 4.0.

aspirations to emerge as an economic powerhouse will only fructify when innovation becomes an integral part of the industrial movement. Local innovation will fetch the much needed respect for Indian manufactured goods and increase mind share and thereby market share."

Agreeing with this sentiment, Executive Vice President & Business Head – Tooling Division, Godrej & Boyce, DK Sharma comments, "Even though innovation has started figuring its place as the top priority in the list of most of the big companies, most managers feel a gap in their capability to innovate."

There is an urgent need for companies to succeed globally, but having only breakthrough innovation and incremental innovation will not help sustainability. This is owing to the fact that an increasing number of companies in India and other rapidly developing economies are able to generate new products, markets and revenue stream, leading to incremental sales to about 20–30 per cent.

**"We—this includes the government, infrastructure, logistics, policy companies, associations, etc.—should become extremely conscious of time as a resource and be action oriented in a process perspective."**

**CEO, Micromatic Machine Tools Pvt Ltd, TK Ramesh**

**"The very fact that most of the leading MNCs are setting up their R&D Shops in India, proves the point that we have the capability and minds to make the manufacturing industry competitive."**

**Executive Vice President & Business Head – Tooling Division, Godrej & Boyce, DK Sharma**

## Long-term smart innovation

Sharma insists, "Indian companies need to invest more in innovation programs. To be a successful innovative company, we need to build a culture of encouraging new ideas constantly—especially in the face of failures. This culture has to start from the top and has to be seen encouraging collaborations, rewarding new ideas and helping these turn into reality."

President – India Sales & Operation, United Grinding, Sreekanteshwar S expresses, "India is known for frugal engineering examples. Many examples are already prevalent, the most recent being the Mangalyaan mission. "The Mars orbiter mission has proved to the world our capability to successfully launch critical space projects at costs far less than those done by developed countries. There are many such examples of frugal engineering, which could be reproduced by our entrepreneurs in most of the fields and put India on the global map," continues Sreekanteshwar.

The Government of India declared 2010-2020 as the 'Decade of Innovation'. According to the Global Innovation Index (WIPO, 2014), India ranks 76th among 143 countries; thus, the functional goal of the Indian innovation ecosystem is to enable technology development and facilitate the smooth translation of innovations through various structures and mechanisms. Speaking on the necessity of innovation and how India can tread forward, Global Delivery Head, Blue Star Info Tech, Ramesh Subramanian adds, "The innovative potential of the young Indian population, if supported through an effective innovation ecosystem, holds potential for developing entrepreneurs and providing the growth and job opportunities that India needs. Innovation will also emphasize risk sharing which significantly increases private sector investment in R&D and technology development. These new financing mechanisms would be created for investing in enterprises that develop offerings for not only domestic markets but for global markets as well."

Owing to severalgovernment-led initiatives, India is rapidly becoming an important global innovation hub. With the increasing off shoring or outsourcing of corporate R&D activities to India, the country can develop more frugal, distributed, affordable innovation that is economical for products and services and affordable for people without compromising the safety, efficiency, and utility of the products.

## Automation and robotics

Although artificial intelligence (AI) has already begun to play a bigger role in the manufacturing industry, statistics show that apart from the big players only a very minute number of MSMEs and SMEs have been adopting the technology in India.

CEO, Micromatic Machine Tools Pvt Ltd, TK Ramesh expounds, "Smart machines or equipment also known as intelligent machines will be playing a bigger role in the industry. The coming years will first include machines with self-diagnostics capabilities—machines capable of informing potential failure, real failure, greasing requirements, etc. The next phase will include self-healing or mending machines that could be programmed for a routine maintenance procedure."

Niju, too, agrees with this opinion: "As manufacturing becomes increasingly automated, the use of tech assisted manufacturing and less human intervention will become the order of the day. Whether the intent is to increase quality or enhance productivity or ensure safety of the workforce and assets, artificial intelligence will work as the key enabler."

The advantages of this type of futuristic machines are immense. Machines that will be capable of loading and unloading parts, checking or measuring output and also being able to segregate good parts from bad parts, etc. Additionally, as resource shortages continue to be the norm within the manufacturing industry, it is essential for companies to operate in an environmentally sustainable way. Therefore, automation has to be placed at the forefront.

"Principles of zero waste and zero defects can be applied more robustly, to reduce or eliminate scrap, eliminate defects and minimize resource consumption. The technology has to combine human eye and judgment by camera," asserts Sharma.

Manufacturing in the 21st century faces several challenges such as shorter product life cycles, frequent design revisions and the need for the shortest time to market to meet the global competition. "Modern manufacturing technology is interdisciplinary in nature and allows the application of different knowledge from other scientific fields such as manufacturing, computer science, management, marketing and control systems," declares Subramanian.

## Industry 4.0

The manufacturing of tomorrow belongs to the smart world. Integration of different activities—at the shop floor or at the enterprise level—will be the new norm. Greater data acquisition and its analysis on a real

**"India faces considerable challenges when it comes to strengthening its innovative capacity. Thus, it is important to drive a true culture of innovation by encouraging ideas in all areas — not just the ones directly linked to product roadmap."**

**Global Delivery Head, Blue Star Info Tech, Ramesh Subramanian**

time basis will empower the manufacturing practitioners to bring about quick changes and thus become agile.

The impact of Industry 4.0 is a challenge to determine in terms of production and logistic processes. However, it has brought about certain visible changes to the sector such as digitalization of the whole product lifecycle.

Subramanian maintains, "Companies are becoming more flexible and responsive to business trends by reducing product life cycles, simplifying product complexity, and integrating global supply chains. Additionally, consumers are becoming the center of all activities as manufacturers are producing customized products without extra cost. Digitalization will lead to an easier crowd sourcing which will lead to a faster design process for the manufacturers."

There is no doubt that this is the future, but what is left to see is whether Indian manufacturers will dive in or adopt this technology at a fast pace. "The extent of Industry 4.0 success will depend on the preparedness of the organizations in becoming highly compliant with the technology platforms," conveys Niju.

According to Sreekanteshwar, changes in technology implementation will lead to a dramatic shift from mass standardization to mass customization. "It will lead to higher flexibility in production processes at lower marginal cost. Using IT, factories will be able to take inputs from the customer in real time which will be directly fed to the production system; the customer will get his customized product at the end of the line at no additional cost or time," he estimates.

## Government's contribution

Political leadership has set a new vision and aspiration and has already put it on a global pedestal. This vision needs to be translated into right policies. "Over 90 per cent of CEOs across the country have strong belief in the 'Make in India' campaign becoming a reality. Our industry views both policy as well as implementation reforms as the key drivers for growth.

Infrastructure, labor reforms and support to industry are our three top priorities. Manufacturing in India should grow at a nine per cent plus increment rate from now till 2020, discloses Sharma."

Emphasizing on the need of how the government should be helping companies in this avenue, Ramesh voices, "The government must strongly support and incentivize R&D in addition to enable making the process for applying for permits, schemes, etc., easier. Furthermore, the government should also actively participate and fund the development of 'Brand India' development across sectors."

Sreekanteshwar agreeing with Ramesh adds, "The government must encourage the availability of latest technologies to MSME's through formation of consortiums. Larger companies can afford to buy technology or to partner with global companies and acquire technologies for product development. But this is not possible for the huge chunk of companies in the MSME segment. The government could also encourage formation of clusters or consortiums of such smaller companies. These clusters can then act as a nodal agency to acquire latest technology and lend it to these smaller companies at affordable price."

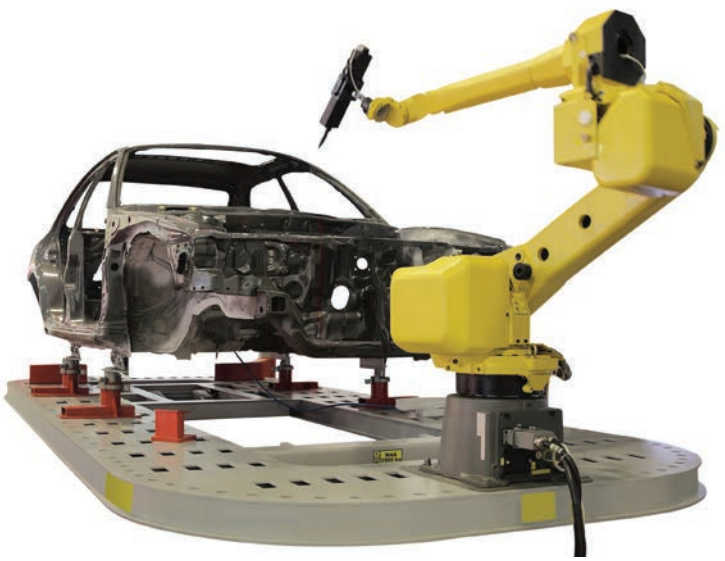
## Promoting 'Brand India'

The biggest factors going for India are the engineering talent and low-cost manufacturing. The government is making efforts to give manufacturing a boost. "These efforts need to be channelized properly to the advantage of the youth. I have always been obsessed with the thought as to how to motivate our younger generations in manufacturing. If we are able to showcase that, then manufacturing could be done in a way as glamorous as IT–we will cover half the ground. The very fact that most of the leading MNCs are setting up their R&D Shops in India, proves the point that we have the capability and minds to make the manufacturing industry competitive," affirms Sharma.

In order to make Brand India known, Ramesh recognizes two important issues. "The first is to identify, bench mark and evaluate the best technology in India, and the second is measures to be taken to showcase it properly. Competitive climate itself brings out winners but it is important that winners are sustainable."

The value proposition offered by Indian technology should be substantial not necessarily only in monetary terms but could be in other tangible terms. "From a manufacturing perspective Indian white collar productivity and lingual skills should play a big role. We—this includes the government, infrastructure, logistics, policy companies, associations, etc.—should become extremely conscious of time as a resource and be action oriented in a process perspective," he continues.

Niju too admits that with the campaigns 'Make in India' and 'Made in India', the sector has seen a positive growth: "The current government is focused on creating the right image for the country among the investors.



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**Manufacturing through intelligent machines.**

**"As manufacturing becomes increasingly automated, the use of tech assisted manufacturing will become the order of the day. Whether the intent is to increase quality or enhance productivity or ensure safety, artificial intelligence will work as the key enabler."**

**Director – Automation and Electronics Practice, South Asia & Middle East, Frost & Sullivan, Niju V**

Besides friendly policies, the government is trying its best to steer clear of any controversial moves which will create doubts in the mind of potential investors. Many of the archaic laws are being repealed so that the justice systems move fast and efficiently. Investment zones are being promoted along with easing of land and environment regulations. On top of all this, much needed reforms in key sectors are being pushed through the Parliament or through ordinances, exhibiting a strong intent on part of the government."

The government is proposing measures to make the process of land acquisition easier so that new investors do not have problems in setting up new green field ventures in India. Similarly, the government is pushing in reforms on the labor sector and is trying to do away with the bureaucracy to ease the formation of new business.

"Introduction of the much awaited GST is very much in sight, with many state governments coming on board and the government modifying it wherever required without diluting the essence," remarks Sreekanteshwar.

Additionally, foreign investments add a great deal to India's economy. Subramanian discloses, "FDI inflows to India increased 17 per cent in 2013 to reach $28 billion, as per a United Nations report, which clearly shows the faith that overseas investors have in the country's economy. Reforms in policies of Foreign Investment Promotion Board (FIPB) has promoted the government to approve 19 proposals of FDI amounting to about ₹2,326.72 crore ($380.25 million)."

## Conclusion

It is true that India's manufacturing industry is not at its full potential. However, saying that it is also true that the country is not idling away. New reforms and industry enthusiasm will not only pave the way for showcasing technology prowess but also create a number of jobs. Leveraging on the capabilities of the Industry it can be said that India in 2030 will not be a country that will compare itself to others but rather one that other countries will compare themselves to. MMI

**"Introduction of the much awaited GST is very much in sight, with many state governments coming on board and the government modifying it wherever required without diluting its essence."**

**President – India Sales & Operation, United Grinding, Sreekanteshwar S**

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# The Waning and Waxing of Trading Winds!

From the earliest examples of civilization in history, the one constant factor has always been trade. In order to bring out a win–win solution for both participants, especially countries, is not an easy task. IAS, Additional Director General of Foreign Trade (DGFT), Government of India, Ministry of Commerce & Industry, Department of Commerce, Dr Kavita Gupta candidly talks about the current initiatives the ministry has in place and the various ways in which they are trying to encourage exports.

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The Waning and Waxing

**What measures are being taken to increase India's trade exports?**

**Dr Kavita Gupta:** Various initiatives are in place that encourage trade. The Ministry of Commerce offers help to organize these events in India and abroad. The ministry provides eligible companies with monetary help and facilities as means to reaching out to other countries. In addition to that, the DGFT also has various incentive schemes to promote trade. Some of which also help in compensating costs of transportation, import duty for materials, etc. In addition to this, we have facilitating measures, such as the Export Promotion capital Goods (EPCG) Scheme. This facilitates companies to buy new technology that can be used to upgrade their processes: thereby, enabling them to manufacture goods that can be exported.

Furthermore, we also give some grants to state governments to improve the infrastructure in order to encourage exports. The DGFT has the initiative of the Niryat Bandhu for mentoring first generation entrepreneurs. Through this initiative, we are educating people, especially SMEs on various schemes and also on the international business arena. Guidance on how to go about it is given, and connecting them with various councils, industries, etc., is also done.

**India was not hit as hard this time by the recession as it did other countries. How has this affected our trade with foreign countries?**

**Dr Gupta:** The recession because of the contracting demand in the traditional market (the US and Europe) has not enabled the exports to rise as high as it was hoped to have risen, however, India has managed to maintain the stand. However, to help increase exports, the government of India through the DGFT introduced a scheme called Incremental Exports Promotion Scheme, wherein if the trade in these traditional markets increased, then incremental incentives are awarded to the companies that are increasing trade.

Now as far as affecting the trade with foreign countries because of recession, one of the primary things that has happened, is that there has been a fluctuation in the rupee and this did see exports becoming cheaper. This aspect helps exports. Whenever there is a devaluation of the rupee, the exports increase because then the products become cheaper for other countries to purchase.

**What measures are being taken to increase India's trade exports?**

**Dr Gupta:** The Indian government is undertaking various measures to leverage the Indian manufacturing space. The Served from India Scheme (SFIS) offers benefits and incentives to Indian companies that offer services and earn foreign exchange. This encourages foreign companies to invest under 'Brand India'. For the SME sector, a typical model like the Bajaj model can be implemented. Bajaj is a big company with ancillaries that can provide technical know-how, quality control, safety control, etc. Through this model, the big companies can bring in the smaller units and establish state-of-the-art ancillary units with the help of the six sigma technique.

The SME sector can standardize the products, provide quality control, technology and knowhow, they can also export their products for this kind of a model. Hence, instead of

"We no longer call ourselves (DGFT) regulatory. We are friends of exporters, and we are facilitators. So the entire role or attitude with which we work is fundamental to facilitating exports and facilitating exporters."

IAS, Additional Director General of Foreign Trade (DGFT), Government of India, Ministry of Commerce & Industry, Department of Commerce, Dr Kavita Gupta

importing small components, companies can possess ancillary industries which can create these components. Another scheme that serves import substitution—Status Holder Incentive Scheme (SHIS) is available to enable companies to get the same benefits that importers are entitled to.

**What policies or schemes is the government looking at introducing especially for the machine tool industry?**

**Dr Gupta:** In order to encourage growth, there is a scheme known as the Town of Export Excellence (TEE) where a number of towns in specific geographical locations have emerged as dynamic industrial clusters contributing handsomely to India's exports. It is necessary to grant recognition to these industrial clusters with a view to maximizing their potential and enabling them to move higher in the value chain and tap new markets. The department of industry also has a theme of making a common facility centre. A lot of the times small industries cannot create a facility. However, small units together could pull their resources and make a common facility for enhancing their businesses. Several schemes and information on them are available on http://dgft.gov.in/

**According to you what role does the machine tool sector currently play in India's GDP and what role will it play in the coming years?**

**Dr Gupta:** The machine tool sector plays a fundamental role in the country's GDP as everything is centered around this sector. Various innovations, machines that are manufactured have their use in other industrial sectors such as pharmaceuticals, textiles, food and beverage, chemicals, etc.

**PERSONAL**

The machine tool sector plays a fundamental role in the country's GDP both directly and indirectly, as the products and technology it produces is also absorbed into various other industrial sectors.

Dr Kavita Gupta

**Everyone talks about foreign trade policy for increasing the GDP of the country. And globalization has been looked at as a road to success. However, considering that India in itself is a growing economy, how will localization play a key role in helping businesses grow? Is the government introducing any schemes or measures to help localization too?**

**Dr Gupta:** The margin or profit is always more in the domestic market as compared to the exports side. Most of the people go into exports when they are saturated with the domestic capacity and then they want to expand because they have more to sell. This will always be the case. The domestic market naturally grows and as the country becomes more affluent, the capacity to afford will naturally grow and when it naturally grows it creates a vacuum and players will come automatically to fill this gap. All that is required is a facilitative environment, which again meets infrastructure, lesser bureaucratization and ease of doing business. MMI

The interview was conducted by:
Nedra Pereira, Deputy Editor,
Vogel Business Media India
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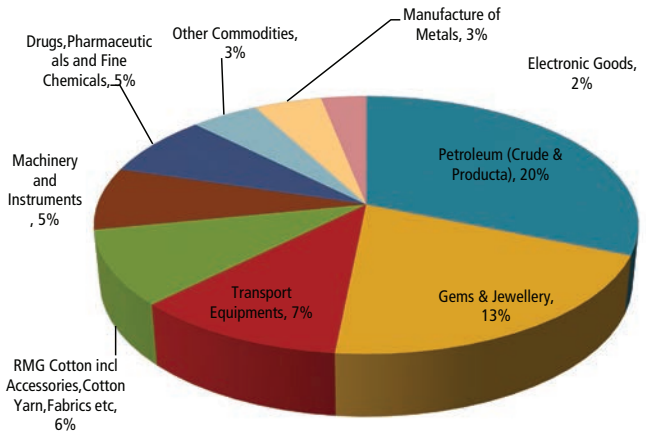
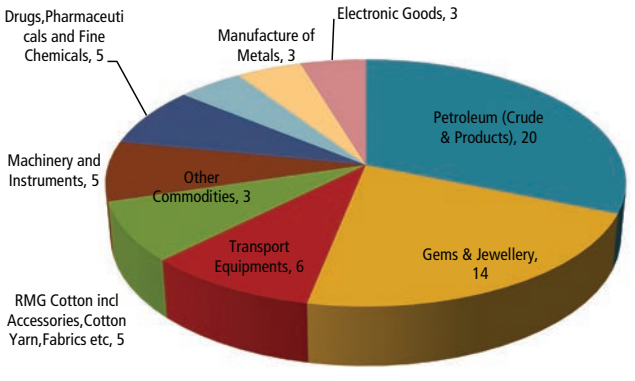
## RECENT TRENDS IN EXPORTS: TOP 7 COMMODITY GROUPS US $ Billion

Source: DGFT Mumbai

**Major Components of India's Export April to March 2014**




**Major Components of India's Exports April to March 2013**




| S. No. | Commodities | Apr'12-Mar13 | Apr'13- Mar' 14 | %age Growth |
|---|---|---|---|---|
| 1 | PETROLEUM (CRUDE & PRODUCTS) | 60,.86 | 63.18 | 3.81 |
| 2 | GEMS & JEWELLARY | 43.34 | 41,.69 | -3.81 |
| 3 | TRANSPORT EQUIPMENTS | 18.38 | 21.42 | 16.52 |
| 4 | RMG COTTON INCL ACCESSORIES,COTTON YARN,FABRICS,Made ups | 15.95 | 17.99 | 12.79 |
| 5 | MACHINERY AND INSTRUMENTS | 15.30 | 16,.18 | 5.71 |
| 6 | DRUGS,PHRMCUTES & FINE CHEMLS | 14,.67 | 15.24 | 3.92 |
| 7 | OTHER COMMODITIES | 10.06 | 10.10 | 0.46 |
| 8 | MANUFACTURES OF METALS | 10.05 | 9.69 | -3.54 |
| | **TOTAL** | **300.40** | **314.41** | **4.66** |

Source: Foreign Trade Performance Analysis, December 2014, DGFT Website

Source: TAL Manufacturing Solutions Ltd

**Aerial view of the Nagpur facility, which measures 1,21,408 m² is used to manufacture airborne components and assemblies.**

# Ready to Take-Off...

With its two state-of-the-art-facilities, TAL Manufacturing Solutions Ltd is serving customers in varied fields. Focusing on offering cost-effective and total solutions in the field of manufacturing engineering, TAL has commenced manufacture and supply of machined parts and advanced composite floor beam assemblies for the Boeing 787-Dreamliner; making it the only supplier outside the US to be doing so. This has not only enhanced India's stature in the global aerospace supply chain network but also demonstrates TAL's capability to absorb new technology and its commitment to be globally competitive.

TAL Manufacturing Solutions Ltd is the only Indian company to have gained necessary expertise and know-how to build advanced composite floor beams for Boeing's 787-9 Dreamliner. That's not it! The company has also developed a 5-axis machine based on a revolutionary technology that will help various industries. Today, the company's diverse client portfolio includes customers from industries such as aerospace, automobile, heavy engineering, power, defense, railways, etc.

## Looking back

TAL Manufacturing Solutions Ltd was formed in the year 2000 by the merger of Machine Tool and Growth Divisions of the Tata Engineering & Locomotive Company (TELCO). In 15 years, the company has achieved new heights, bringing advanced technologies to the field of aerospace and establishing new facilities.

"In 2007, Boeing approached Tata with a desire to partner with them to produce critical components in India for their new commercial aircraft. TAL emerged as a preferred choice within the Tata Group to develop and produce the required components. This was the genesis of the greenfield facility at Mihan SEZ, Nagpur, which is dedicated to the aerospace sector," recalled Executive Director and CEO, TAL Manufacturing Solutions Ltd, Rajesh Khatri. To elaborate on the same, Head – Aerospace Business, TAL Manufacturing Solutions Ltd, Lokesh Srivastava added, "Being the first dedicated aerospace manufacturing facility of the Tata Group, it is our responsibility and endeavor to continue to be torch-bearers of the trust associated with the Tatas and the 'Come Make in India' campaign. Towards this, we are working diligently to invest and grow our aerospace business to provide the global aerospace community with long-term sustainable value."

The company has two facilities—in Pune and Nagpur—that serve customers in the segments such as aerospace, railway, automotive, power, etc. Speaking about the facility in Nagpur, Khatri mentioned, "Today, it has emerged as a world-class, state-of-the-art facility, which is equipped with precision 3 and 5 axes machines, 1-lac class clean room, autoclave, CMM and critical surface treatment facilities to name a few. The facility has been developed to supply precision machined,

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Ready to Take-Off...

welded and sheet metal parts and assemblies for aero-structures and aero-engines. Moreover, the facility has a strength of 350 employees, which is expected to grow up to 500 in the next couple of years.

Apart from Boeing, Pratt & Whitney, RUAG, Alenia Aeronautica, JCB, John Deere, VECV, Bombardier, CNH, Tata Hitachi, International Tractors, Amul, FIAL, TASL, TLMAL, Jindal, etc., are some of TAL's key customers. "Also, about 25–30 per cent of our turnover comes from exports, primarily to aerospace OEMs," informed Khatri.

## Latest technology in traditional businesses

TAL continuously strives to offer products with the latest technology. TAL is the only Indian company to have introduced machines with PKM technology. In 'Parallel Kinematic Machine' (PKM) machines, the motions in X, Y and Z are performed by three or more parallel axes that give an outstanding stiffness and accuracy while maintaining flexibility and envelope. PKM provides the speed and flexibility of a robot along with accuracy and stiffness of a traditional machine."

Explaining the application of the new technology Khatri mentioned, "With less number of parts, the PKM is easy to construct and is well-suited for five or more axes applications. While the larger machines are targeted for the aerospace segment, smaller machines are finding preference in the automobile sector." Similarly, the technology can also be deployed in the power and defense sectors.

Yet again, TAL is launching its 3R (Rigid, Reliable, Rapid)—new series machines in this IMTEX. "TAL has also leveraged its mechatronics capabilities to provide low cost automation solutions. It is now all set to launch its indigenously developed cost effective articulated Robot. With its flexibility, reliability and low cost, we aspire to revolutionize automation in the MSME segment," informed COO – Industrials Division, TAL Manufacturing Solutions Ltd, Amit Bhigurde.

**"With less number of parts, the PKM is easy to construct and is well-suited for five or more axes applications. While the larger machines are targeted for the aerospace segment, smaller machines are finding preference in the automobile sector."**

**Executive Director and CEO,**
**TAL Manufacturing Solutions Ltd,**
**Rajesh Khatri**

**"Being the first dedicated aerospace manufacturing facility of the Tata Group, it is our responsibility and endeavor to continue to be torch-bearers of the trust associated with the Tatas and the 'Come Make in India' campaign"**

**Head – Aerospace Business,**
**TAL Manufacturing Solutions Ltd,**
**Lokesh Srivastava**

## Serving sensitive sectors

Apart from the aerospace segment, the company also serves to one of the most critical segment, i.e., Defense. "With its manufacturing capabilities in precision machining and fabrication, TAL has partnered with Tata Motors Ltd for manufacturing hull bodies for defense vehicles like MPV, WHAP, etc. Also, recently, the company has been working with establishments like Research & Development Establishment (Engineers), Dighi, and has designed and supplied Trailer Mounted Surface Launcher for Missiles to them," he averred.

Furthermore, Khatri is looking forward to enhance business in the same field. "With the hike in foreign direct investment (FDI) in the Defense and the impetus provided by the government, TAL is well poised to exploit the emerging opportunities in the sector," he explained.

## Vision defines future

Quality and on-time delivery being the prime requirements, TAL has adapted the global best practices in manufacturing aided by integrated systems and processes. Also, everyone employed at its Nagpur facility is a trained engineer; hence, quality and contract compliance is assured.

When a company is growing rapidly, it is important to have the right approach. In order to serve the customers better, the company is focusing on bringing excellence and customer satisfaction. Elaborating on the same Khatri said, "Being a company with a 40-year legacy, a cultural shift is necessary across the organization to affect the transformation and compete and thrive in the external market. Accountability, Customer and Product focus, Excellence and Speed (ACES) provide the framework for the culture shift."

With new technologies and a new approach, the company will grow at an accelerated pace. Speaking on it, Khatri said, "The investments are identified for capex needs of the new and growing businesses—namely, Aerospace and Robotics & Automation. A major portion of the investments will be done in aerospace to support the capex needs for the $170 million long term contract recently signed with an aerospace company to supply them precision parts and assemblies for the Airbus A320 family of aircraft."

With this, TAL offers a great value proposition to the leading aircraft OEMs. TAL aims to become a preferred supplier in the global aerospace supply chain and is committed to transforming the Nagpur facility as a Center of Excellence for aerospace parts and assemblies! It aims to be a pioneer in cost-effective automation! MMI

Source: TAL Manufacturing Solutions Ltd

**State-of-the-art machines in the facility and the qualified personnel meet the quality compliances.**

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India's manufacturing sector is expected to touch $1 trillion by 2025.

Source: Vogel Business Media India

# Let's Make in India!

With India's recent 'Make in India' initiative, investments for the SME and MSME sector from both domestic and international markets seem to be on an all time high!

Source, assemble, produce and sell– these words currently seem to dominate the Indian manufacturing industry in the background of the government's popular 'Make in India' initiative. According to a report by Mckinsey and Company, India's manufacturing sector could touch $1 trillion by 2025. Against these figures, there is potential for the sector to account for 25–30 per cent of the country's GDP and create up to 90 million domestic jobs, by 2025, states the report.

But the real question that one needs to ask is India ready to transform and become one of the leaders in this booming sector? What measures have to be undertaken to create 'Brand India' to attract foreign investors? What are the schemes or policies that the government should undertake to leverage this industry? Experts from the industry share their perspectives on this vital and lively subject.

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Let's Make in India!

## Creating 'Brand India'

One must have witnessed that various products available in the market are often embedded with the 'Made in China' mark. This mark has become popular as China has enabled its manufacturing industry to flourish and prosper. On these similar lines,

**"The Served from India Scheme (SFIS) offers benefits or incentives to Indian companies that offer services and earn foreign exchange. This encourages foreign companies to invest under 'Brand India."**

**IAS, Additional Director General, Foreign Trade, Mumbai, Dr Kavita Gupta**

**"The MSME sector contributes 8 per cent of the country's GDP, 45 per cent of the manufactured output and 40 per cent of its exports"**

**Managing Director, VDMA India, Rajesh Nath**

world. A nation of over 1.2 billion people with a median age of 24 years, today, 'Brand India' is very relevant for the growth of the global economy."

The Indian economy is expected to show further growth with the help of the 'Brand India' image. The role of SMEs will play a vital role in this transformation as President, MAG India, Eswari Prasad points out, "Building 'Brand India' is a challenging task that requires careful examination of the SME with the assistance of a SWOT analysis and careful selection of the right product and segment." Agreeing with this, General Manager, BDB India Pvt Ltd, Manish Kulkarni says, "SMEs undoubtedly are a major stakeholder in building Brand India and enhancing its image further."

## Attracting investments

it is high time that India also optimizes the unlimited opportunities which this sector has to offer by creating its own 'Brand India' image. National Sales Manager, TRUMPF (India) Pvt Ltd, Mohammed Hidayath agrees, he says, "The 'Make in India' campaign is a good initiative, but the main goal must be to create our own 'Made in India' brand."

Currently, foreign investors are closely examining the Indian market as it considers this country as a potential investment destination. Explaining the current economic scenario, Managing Director, VDMA India, Rajesh Nath says, "Being one of the fastest growing economies in the world, the Indian economy is at the centre stage of the changing economic order in the

SME's are the backbone of the manufacturing system comprising of more than 70 per cent of the industrial segment. Hence, players in the manufacturing industry are hopeful that the government will introduce positive and new policies for nurturing this growing sector. The current government is making the right decisions to ease conducting business, effective financial administration and attracting huge investments both locally and internationally. Prasad says, "The government is implementing the Goods and Service Tax (GST) to avoid multiple taxations and delays in goods movement. Also, the government has rightly been encouraging private industries to get into the fray. It has also enhanced FDI limits which are now a boon for SME's."

Technology is a vital aspect for 'Brand India'. If the government can create confidence among foreign investors, SMEs will get automatic access to high technology products for collaboration. Prasad adds, "Leading International companies look for any SME's track record, its capacity to assimilate and implement projects to get associated. This is the start in the right direction for healthy collaboration."

The recent move to revamp the questionable procurement system in Railways coupled with privatization will go a long way in creating opportunities for SME's in the infrastructure projects. The government also intends to change the bureaucratic ways of framing tender documents that discourages foreign participations.

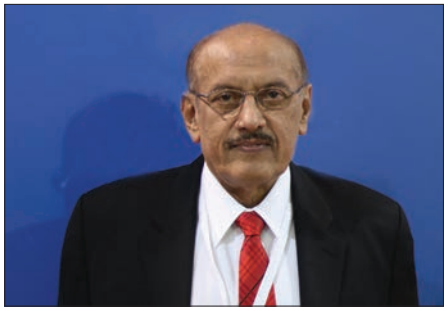
"The government has to have industrial zones created in major locations with proper infrastructure for establishing new SME's and introduce incentive schemes to encourage growth to meet the objectives of 'Brand India' and 'Make in India.' The top priority is to create the right infrastructure and reliable power," explains Prasad.

In addition to this, General Manager Integrated Marketing & Supply Chain, Walter Tools, Manas Majumder says, "It is expected that the new government will encourage foreign investment. New policies will be introduced to help reduce the entry barrier to enable the capital to flow in the country. Also, incentives should be provided to the companies for sustainability and additional incentives should be given for the purpose of exports."

The MSMEs provide employment to over 80 million persons through over 36 million

Source: depositphotos.com

**MSMEs have shown constant growth rate of over 10 per cent in recent years much ahead of the large-scale corporate sector.**



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**"The Make in India campaign is a good initiative, but the main goal must be to create our own 'Made in India' brand."**

**National Sales Manager,**
**TRUMPF (India) Pvt Ltd,**
**Mohammed Hidayath**

enterprises producing over six thousand products. MSMEs have shown constant growth rate of over 10 per cent in recent years much ahead of the large-scale corporate sector. Nath elaborates, "This sector contributes 8 per cent of the country's GDP, 45 per cent of the manufactured output and 40 per cent of its exports. The 'Make in India' campaign can attract foreign MNCs to bring in their investment, set up venture/angel funds to take advantage of the inherent depth of the MSME sector in terms of range of products and services, marketing networks and the ability to grow fast."

## Government take

With so much going around, the Indian government is undertaking various measures to leverage the Indian manufacturing space. IAS, Additional Director General of Foreign Trade (DGFT), Government of India, Ministry of Commerce & Industry, Department of Commerce, Dr Kavita Gupta says, "The Served from India Scheme (SFIS) offers benefits or incentives to Indian companies that offer services and earn foreign exchange. This encourages foreign companies to invest under 'Brand India'." For the SME sector, a typical model like the Bajaj model can be implemented. Bajaj is a big company with ancillaries that can provide technical knowhow, quality control, safety control, etc. Through this model, the big companies can bring in the smaller units and establish state-of-the-art ancillary units with the help of the six sigma technique.

The SME sector can standardize the products, provide quality control, technology and knowhow, they can also export their products for this kind of a model. Hence, instead of importing small components, companies can possess ancillary industries which can create these components. Gupta elaborates, "Also, for the purpose of import substitution, we

"The India market is growing and has a huge market for premium products in the consumer and B2B sector."

General Manager Integrated Marketing & Supply Chain, Walter Tools, Manas Majumder

"We do not require schemes but policies that should be designed in such a way that the global leading capability should develop in all segments of the market. The policies should be transparent, should apply for the long term and approval processes should be made easier."

Managing Director, Mark Enterprises, Prashant Bandewar

"SMEs undoubtedly are a major stakeholder in building Brand India and enhancing its image further."

General Manager, BDB India Pvt Ltd, Manish Kulkarni

have a scheme called Status Holder Incentive Scheme (SHIS) so that companies do not lose out on any benefits which the importers are entitled to." Some of the other schemes introduced by the government include the Vishesh Krishi and Gram Udyog Yojana (VKGUY), Focus Market Scheme (FMS), Focus Product Scheme (FPS) and Market Linked Focus Product Scheme (MLFPS).

In addition to this, if a company wants to immediately escalate its growth curve, it should purchase new technologies from abroad. Gupta explains, "To encourage upgradation of technologies and bring new technologies and knowhow from abroad, we have the Export Promotion Capital Goods (EPCG) scheme. In this, one brings in machinery which is used to produce products which are then exported. Hence, against the EPCG one gets a duty waiver and then creates an export obligation. The export obligation then has to be fulfilled by the additional exports. This typically encourages the growth of a country."

There are many schemes that have been introduced by the government for enhancing the growth of the manufacturing sector. However, Managing Director, Mark Enterprises, Prashant Bandewar has a different perspective, he says, "We do not require schemes but policies that should be designed in such a way that the global leading capability should develop in all segments of the market. The policies should be transparent, should apply for the long term and approval processes should be made easier."

## The local connect

To realize India's potential, multinationals must show a strong and visible commitment to the country, empower their local operations, and invest in local talent. They must pay closer attention to the needs of the Indian consumers by offering the customization which the local market requires. And multinational executives must think hard about the best way to enter the market.

Hidayath says, "In the last decade, mullti national companies have made considerable inroads into the Indian market. But many have failed to realize their potential: some have succeeded only in niches and not achieved large-scale market leadership, while others haven't maximized economies of scale or tapped into the country's breadth of talent." The key to reaching the next level will be learning to do business the Indian way, rather than simply imposing global business models and practices on the local market. Bandewar adds, "Our strength is natural resources, manpower, youth power, brain power, money, power but to club all these things, one requires good governance and monitoring authorities at every village to district, district to state and state to national level."

India has shown resilience during the last recession. Majumder says, "Shoddy export and low quality import substitution will not help to grow the economy. The India market is growing and has a huge market for premium products in the consumer and B2B sector." Hence, the internal requirement in India will fuel more growth in the next couple of years than that of external demand.

## Market challenges

The approval process for the industry often discourages foreign as well as Indian companies to make attractive investments in the sector. Hence, there is an urgent need for single window clearances. Kulkarni says, "It is imperative that the government needs to improve on the ease of doing business in India. Especially in the SME sector, by removing certain regulatory hurdles there would be marked improvement in their productivity and efficiency." Supporting this idea, Prasad agrees, "The government has the responsibility to filter out unwanted and wasteful activities in the selection and approval process to qualify the right SME to go forward effortlessly through single window clearances."

Apart from this, the foremost challenge for the Indian players is to gain confidence of foreign partners as a highly focused host with the right knowledge of doing business in India.

Hidayath offers three main aspects that the government should focus on. He elaborates, "Firstly, SMEs are keen in upgrading their technology and machines for manufacturing efficiently, their hands are tied with exorbitant interest rates from banks at 14 per cent, supposedly the highest in the world. No investor would make enough profits to sustain business with this kind of interest rates; Secondly, the government must take the initiative on establishing incubation centers for entrepreneurs. Only entrepreneurs can create wealth in the country and for the country and lastly, entrepreneurs have to go through a tedious task to establish and be able to manufacture and export goods." This is a big bottleneck that needs to be considered seriously.

With the manufacturing industry set to flourish and grow—it's time to make way for the SMEs and MSMEs! MMI

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Source: IMTMA

Glimpses of the previous edition of IMTEX.



# IMTEX 2015: Melting Pot of the Manufacturing Industry

Indian Machine Tool Manufacturers' Association (IMTMA) is hosting IMTEX 2015 and ToolTech 2015 at Bangalore International Exhibition Centre (BIEC). The event will be a melting pot for the metal cutting industry as companies from various countries will present their best of technologies at the show.

IMTEX, one of the largest series of exhibitions of metal-cutting machine tools and manufacturing solutions in South and South-East Asia, is set to kickoff on January 22, 2015, at the Bangalore International Exhibition Centre's (BIEC). The 17th edition of the show is expected to showcase advanced technologies in the sector, which is spread across five state-of-the-art air-conditioned halls 48,000 m$^2$. Along with IMTEX 2015, Indian Machine Tool Manufacturers' Association (IMTMA) has also organized Tooltech 2015, a concurrent exhibition for cutting tools, tooling systems, machine tool accessories, metrology and CAD/CAM software.

Talking about the response received by IMTEX 2015, Director General, IMTMA, V Anbu said, "This edition of the show will witness visitors from 50 countries and exhibits from 25 countries including eight group participations. Owing to the new enthusiasm in the market, IMTMA expects footfall of over 1,00,000 visitors during eight days of the show."

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IMTEX 2015

## Market conditions

Elaborating on the market conditions, President, IMTMA and Managing Director, TaeguTec India Pvt Ltd, L Krishnan noted, "The total market size of the metal working machines in India during 2013–14 was about ₹8,000 crore out of which around 81 per cent belonged to metal cutting machines."

He further forecasted, "The data for 2014-15 suggests that the consumption of machine tools in India from April to September 2014 rose by 20 per cent, while the production of machine tools during the same period increased by around 28 per cent. The orders for new machines have also been positive during the last and present quarter. This trend is expected to continue in 2015."

The momentum of growth that the Indian manufacturing industry has gained is expected to reflect on the show in terms of business generation. "Due to the revived enthusiasm and improving economic conditions along with added focus on manufacturing, the amount of trade enquiries and business generation at IMTEX 2015 is expected to surpass the previous editions," Anbu opined. On the other hand, exhibitors feel that the show gathers the whole industry under one roof, it is the best place to judge the market. "The exhibition is a key event for the industry, to exchange ideas, collect latest technology information and explore new chances," stated Director, EMAG India Pvt Ltd, Andreas Zieger.

For the same, exhibitors are looking forward to participate at IMTEX. Executive Vice President, Machine Tool Business group, Doosan Infracore, Jaeyoon Lee mentioned that it is a good opportunity for us to understand the needs of the global and Indian customers in particular.

Also, exhibitors and participants are gearing up for the show as they see a new enthusiasm in the market. "The 'Make in India' initiative has grabbed attention and provided a good marketing push for goods manufactured in India. There is an overall positive feeling in the industry and we can feel it too," noted Technical Director, East Coast Magnets Pvt Ltd, Amit Sarda. Director, Danobat Grupo Machine Tools India Pvt Ltd, SV Joshi is also optimistic about the market. He said, "It has been a long time since the machine tools industry has seen prosperous days. The new government has taken steps to make investors feel confident for better days to come. In short the coming times, after 2016, seem to be the time for the machine tools industry in India,"

**"Due to the revived enthusiasm and improving economic conditions along with added focus on manufacturing, the amount of trade enquiries and business generation at IMTEX 2015 is expected to surpass the previous editions."**

**Director General, IMTMA, V Anbu**

**"The data for 2014-15 suggests that the consumption of machine tools in India from April to September 2014 rose by 20 per cent, while the production of machine tools during the same period increased by around 28 per cent. The orders for new machines have also been positive during last and present quarter. This trend is expected to continue in 2015."**

**Managing Director, TaeguTec India Pvt Ltd, L Krishnan**

## Potpourri of metal cutting technologies

Apart from indigenous exhibits, the events will witness group participation from various countries like China, Czech Republic, Germany, Italy, Japan, Spain, Taiwan and the US. This immense participation from global companies indicates their level of interest in the Indian market and displaying the best of their product ranges. Speaking about the commitments towards the market, Group President, Haimer GmbH, Andreas Haimer mentioned, "By participating at IMTEX 2015 all exhibitors, especially those from abroad, are proving that they are committed to the Indian economy and want to expand their businesses." Seconding the same, Sales Manager, DVS India, Erwin Lefèvre said that the company wants to further strengthen their market presence in India.

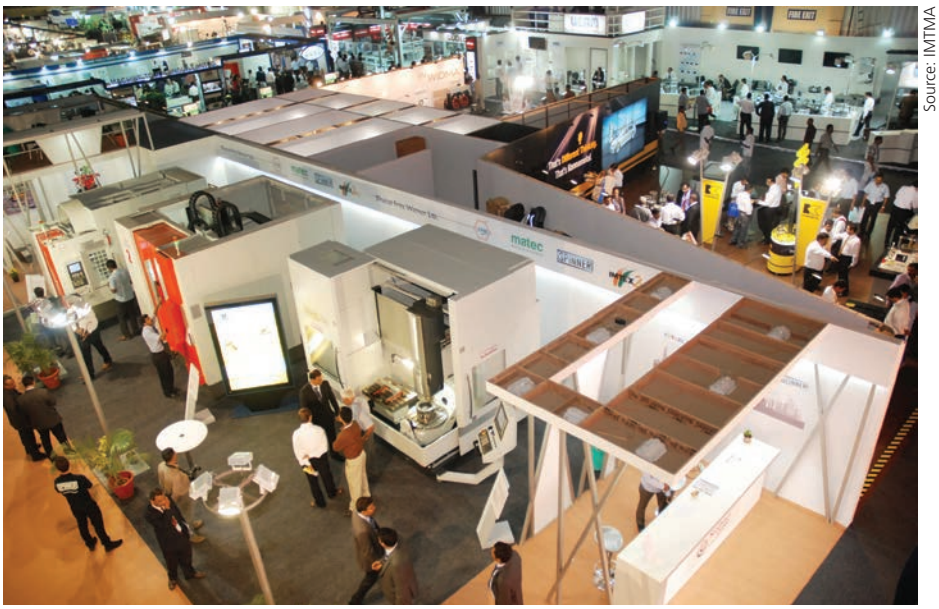
Alternatively, Managing Director, Fresmak SA, Ramon Cenarruzabeitia underlined the importance of the show by noting, "IMTEX is a very reliable meeting point to match the needs of the market and the products and solutions

Source: IMTMA


**Latest technologies displayed at the last edition of IMTEX.**

being offered by the exhibitor." On the other hand, Managing Director – India & Middle East, Delcam Ltd, UK and ASEAN Business Development Director, Delcam Professional Services Ltd, UK, Vineet Seth feels that this event is also a catalyst in exploring newer opportunities of growth—both in terms of market as well as technology. "We look forward to capitalize on this front. The event is a good platform to interact and engage with visitors at our booth," he added.

Taking the other approach, Head of Marketing, Asia Pacific, FARO Singapore, Quah Beng Chieh said, "This is a huge industrial cross technology forum, where big manufacturing products makers to mid and small enterprises come together under one roof to share their technologies. It is a win-win situation for all."



Source: IMTMA

Visitors networking in the exhibition halls at BIEC.

## The showcase

Also, companies find this opportunity for launching new products. UCAM Pvt Ltd will be introducing quite a few new innovations at the event. The star attraction would be the 600 Dia Direct Drive Tilting Rotary Table driven by 3 Torque Motors. While, WIKUS India Pvt Ltd will be showcasing its newest cutting solutions—two types of coated bandsaw blades—PROFLEX Premium M42 and DUROSET Premium.

Andreas Maier Workhloding Tech-nology Pvt Ltd, a subsidiary of German based company is displaying wide range of innovations from hydraulic clamping, zero point clamping, vacuum clamping, automations and marking & cleaning tools.

These exhibit and displays of the latest technologies give visitors a fair idea about new trends. According to the President, Sales Unit – India, Seco Tools India Pvt Ltd, "The show acts a knowledge sharing platform as well as one learns about new technologies and solutions being displayed."

## Academia Pavilion I-2

In addition to that, IMTMA has also offered space to various educational institutes at IMTEX 2015 to create 'Academia – Industry Pavilion'. By this way, institutes can present their research. The Academia Pavilion is an opportunity for the invited educational institutions to interact with renowned Indian experts and foreign professionals and network with leading players from the industry.

IMTMA takes special efforts to make this show a true learning platform. In other words, it is one of the platforms where academia meets the industry with their respective developments and capabilities. Apart from Academia Pavilion, IMTMA has also organized international seminars to throw light on new trends and technologies.


Source: IMTMA

The academia pavilion at IMTEX helping the industry liaise with colleges.

## International seminar

The 6th edition of the International Seminar on Machining Technologies will take place on January 21, 2015. Here, international experts will share their experiences and latest developments on specialized topics. Spread over two keynote and five concurrent sessions, this one day seminar will cover key technology areas related to machine tools and machining, workholding, tools and tooling, metrology and controls, CAD/CAM and grinding and finishing processes.

## Conclusion

With high expectations of exhibitors and organizers, visitors would be excited to see the displays at the event. With equal amount of enthusiasm from the visitors and delegates, this melting pot of new technologies and merging trends from across the globe will define the future of the manufacturing industry. MMI

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## Laser Welding Machine

With their ELC series of machines, the specialists at EMAG have developed integrated solutions for the application of processes with high output rates. It is an ideal solution for the automotive industry, as the joining of control gear and clutch body using the laser welding method forms the basis for a more compact and more efficient gearbox. The welding process from EMAG uses solid-state lasers of outstanding energy efficiency. Additionally, the complete joining+welding process for a gearwheel takes just 12 seconds. This ensures that the components for a differential are thus finish-welded within no more than 40 seconds.

▸ **EMAG INDIA Pvt Ltd**
Hall 2B / Stall A102

## Press Brake

The all new segment of press break system, from Sahajanand Laser Technology Ltd, is equipped with latest technology that offers a precise bend with the competitive rapidity. The Press Break system was launched under the family name OptiBend with various subcategories. A high-end hydraulic CNC sheet metal bending system is capable to work with sheet sizes of 3–4 m and thickness up to 8 mm (MS).

▸ **Sahajanand Laser Technology Ltd**
Hall 2A / Stall A101

## Ball Plunger sensor

The Ball Plunger sensor by Metrol Corporation India is one of the world's smallest sensors housed in a compact design starting with diameter 4x12 mm length and M5x19 mm length. The contact can be of straight, sliding, angled touch types. The sensor comes with a minimum required contact force of 1N. Mutual interference does not occur and several switches can be used with intervals as close as 5.5 mm. These sensors can be used for automation and on fixtures for positioning the work piece precisely.

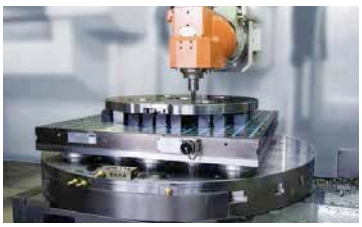
▸ **Metrol Corporation India**
Hall 3A / Stall A124

## Balancing Technology

The spindle speeds of modern machine tools have increased on a continuous basis recently in order to achieve higher cutting volumes and machine in a profitable manner. Only the high-precision balancing of tools and tool holders can make the complete capacity of the machines tool with regards to speed, cutting volume and produced surface finish accessible. Because balancing provides for fewer vibrations, it reduces wear of the spindle and tool, reduces the downtimes and increases process security. With the Tool Dynamic balancing machine series, HAIMER offers a comprehensive solution for the balancing of tool holders, grinding wheels and big rotors with diameters up to 800 mm.

▸ **Haimer India Pvt Ltd**
Hall 3A / Stall B130

## Square Pole Technology



At IMTEX 2015, Schunk will display MAGNOS square pole technology that can reduce set-up times by 30 to 50 per cent. When combined with moveable pole extensions, even thin rough parts that are susceptible to deformation can be clamped gently and without warping and be machined on five sides in a single operation. If MAGNOS square pole plates are equipped with an interface on their base side to the VERO-S quick-change pallet system, they can be changed on the machine table in just a few steps.

▸ **SCHUNK Intec India Pvt Ltd**
Hall 2B / Stall A106

## Ultra and Nano Precision CNC Machining Solutions


Francis Klein offers KERN's ultra and nano precision CNC machining solution. The KERN Evo, the ultra-precision machining center, is well-suited for medium to large production lot sizes. The digital direct drives cater for high acceleration speeds and feed rates. A polymer concrete mono-block base absorbs vibrations that result during accelerations. Additionally, the machine offers excellent surface quality of Ra <-0.1 µm.

▸ **Francis Klein**
Hall 3A / Stall B103

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## CAD/CAM Software

Delcam Plc offers the PowerSHAPE software that provides a complete solution for both product design and toolmakers. Whereas designers are primarily concerned with the design of a finished product, often ignoring the features required for manufacturing, mold and toolmakers require a complete model. For instance, some designers rarely fillet the sharp edges of a model or produce the necessary draft and split surfaces. These time consuming and expensive operations are often left to the toolmaker to produce. PowerSHAPE's powerful geometry creation tools ensure that the initial design can be completed quickly and efficiently.

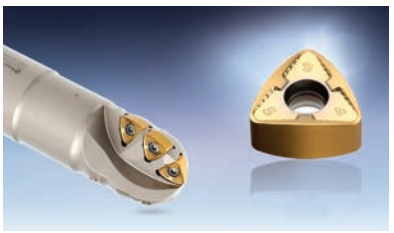
▸ **Delcam Plc**
Hall 3C / A103

## Turning Machine

A need to machine longer jobs with a small diameter inspired Jyoti CNC Automation Ltd to design the DX-200/12 turning machine model. The machine's step-up concept enables consistent machining performance because of the widely spaced guide ways. In today's competitive market, one needs to produce world class products quickly, accurately and with minimum non-productive time. This machine, with a unique feature of 'follower-rest' is able to turn longer jobs with small diameter.

▸ **Jyoti CNC Automation Ltd**
Hall 1A / Stall A110

## Double-sided Insert



TaeguTec's CHASE2BALL is one of the many new offerings on display at IMTEX 2015. Optimally suited for press and die items in the mold and die industry and profile milling in the heavy industry, the CHASE2BALL is a double-sided insert that easily handles roughing of complicated profiles. As a double sided insert—6 corners; 3 per side—economy is one of its key advantages. Another advantage is the low cutting resistance owing to its half-effective tool design.

▸ **TaeguTec India Pvt Ltd**
Hall 3A / Stall B109

## Multifunction Machine

Empire Machine Tools is presenting Goratu's multi-function machine at IMTEX 2015. It combines several functions such as lathing, milling, boring and grinding. By integrating the capacity to perform several machining processes in one machine, parts can be finished in one go without machine changes. As the machine has various advantages such as time saving and improved delivery times, cost-reduction, etc. Also, it saves the space on the shop floor and requires lesser staff.

▸ **Empire Machine Tools**
Hall 3A / Stall A110

## Robust Machining Center

Horizontal machining center KH50G/63G by Hyundai Wia features a 2-step gear main spindle structure for highly rigid and accurate mechanism to maximize productivity. By adopting all-in-one type structure on the X-Z axis, KH50G/63G has more rigidity, as they are designed and manufactured as an all-in-one type casting. Also, by adopting the 'air semi-rising sliding ways,' the load on the Z axis slide way is decreased. By dramatically decreasing the slide way load, the Z axis is able to hold tolerance and repeatability over longer cycle times. The most significant benefit of a moving column is its increased rigidity and reduction in heat. Hence, it retains accuracy and repeatability at the highest levels of machining.

▸ **Hyundai Wia**
Hall 4 / Stall B101

## Turning Bars

Seco Tools has expanded its Steadyline milling holders range with the launch of its turning bars. The new patented GL connection on these turning tools makes it possible to perform the rotating and static operations with the same bar. These highly rigid and stable turning bars effectively reduce unwanted vibrations in extreme cutting conditions via a 'dynamic passive system' inside the holder body. Here, a damping mass counter vibrates against the first flex vibration. These products can reduce cycle times by up to 50 per cent in typical long overhang applications, reduce spindle stress as well as offer high metal-removal rates, smooth part surface finishes and a long tool life.

▸ **Seco Tools India (P) Ltd**
Hall 3A / Stall A116

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# Machining Hard to Cut Materials for Demanding Industries

Heavy duty cutting places particular requirements on the machine and working processes. If a material such as titanium, which is particularly hard to cut, is involved, specific know-how is necessary to deal with these requirements. WFL Millturn Technologies GmbH & Co KG has shown its competence in this area by providing a machining solution for aircraft landing gears.

Titanium has always placed particular demands on tools and machines during the cutting process. In recent years titanium 3.7165 has become prevalent among lightweight materials as a material with outstanding properties, especially in the aviation and space industries and also in the medical sector. It is one of the most frequently used titanium alloys, and it contains 6 per cent aluminum and 4 per cent vanadium.

Source: WFL Millturn Technologies GmbH & Co KG

This alloy, normally referred to as $Ti_6Al_4V$, shows a good combination of strength, corrosion resistance and capacity to withstand stresses. Although this material does have good empirical values and cutting data, processing it still remains one of the supreme disciplines in machining.

New titanium alloys are constantly being developed for special applications, and these are often on the basis of firm customer requirements. This means that titanium 5553 from VSMPO, for example, is the desired material for landing gears in the aviation industry. This material stands out due to further improved properties with regard to strength and toughness. It is also less sensitive to structural changes on heating. It is indeed among the real titans in the field of machining, to invoke Greek mythology, from which this material takes its name.

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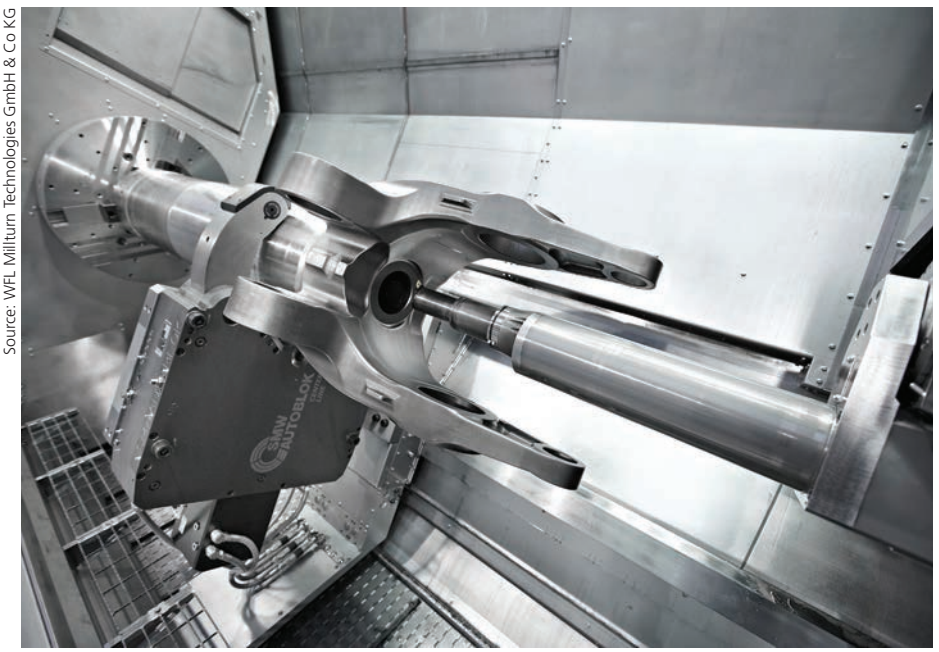
Machining Hard

Source: WFL Millturn Technologies GmbH & Co KG



**Heavy duty cutting places particular requirements on the machine and working processes. A material such as titanium is hard to cut and specific know-how is necessary to deal with these requirements.**

## Characteristics of Ti 5553

Ti 5553 is at present one of the hardest materials on the market to machine. A cutting speed of 45 m/min should not be exceeded when it is being processed as shear stresses of up to 2,780 N/mm² can develop at cutting speeds as low as 60 m/min.

Problems like point heat due to poor heat conduction and associated chemical changes in the material (embrittlement at higher temperatures) and the formation of built-up edges occur to a greater extent with this material than with other titanium alloys. Therefore, it is particularly important that cutting speed, feed rate and penetration depth are matched to one another accurately when working with Ti 5553. The use of suitable cooling lubricants is just as important as the correct cooling strategy. A quick and continuous removal of swarf must be guaranteed; the heat dissipation occurs to a much greater extent via the tool. Removal of the forging skin, referred to as 'elephant skin' by experts, is an additional challenge with this material. The upstream forging process and the resultant thermal and

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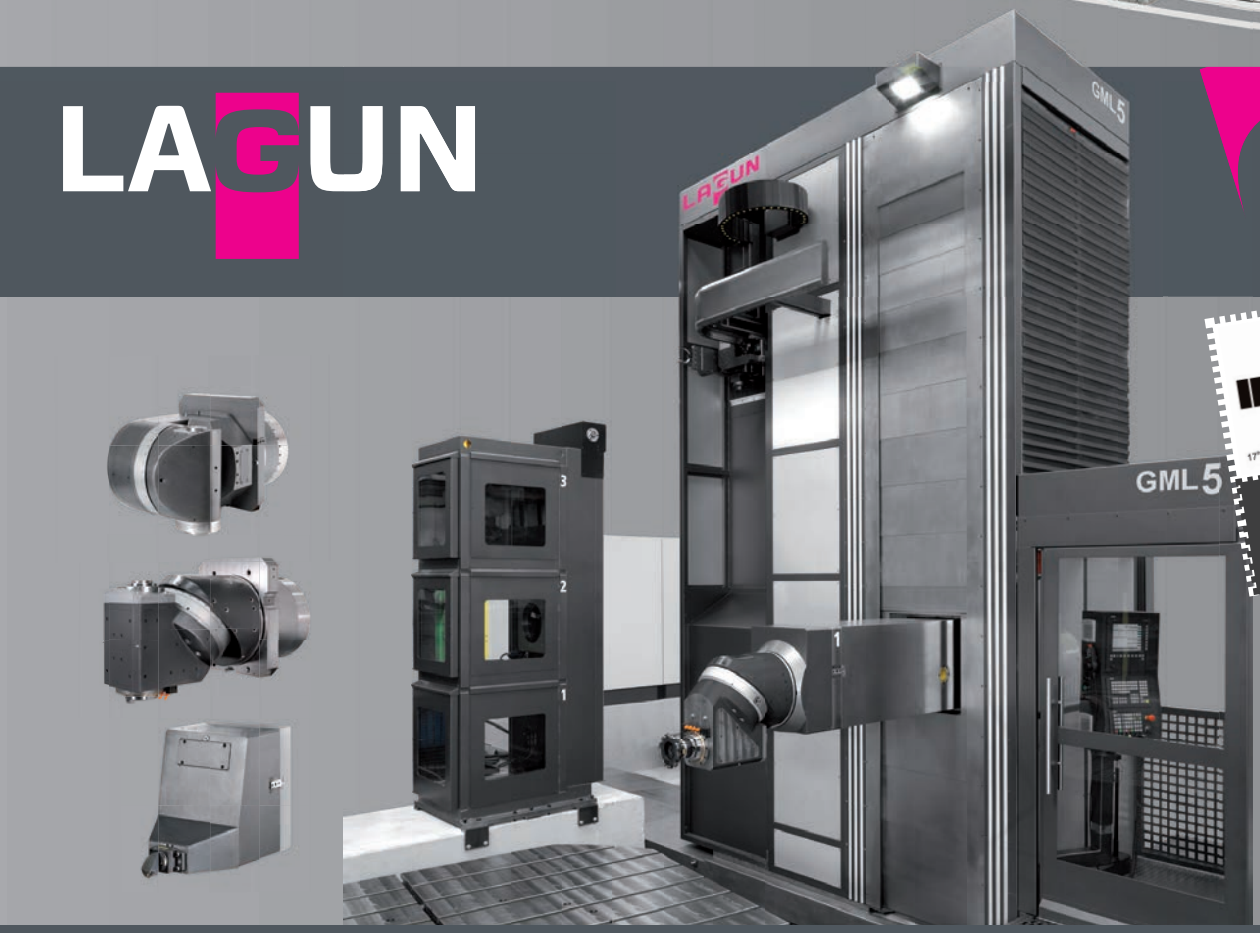


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metallurgical influences give this skin a very high level of surface hardness.

The low modulus of elasticity means that titanium tends to evade the pressure of the tool and fuses with the cutting edge. The machining should therefore, as already mentioned, occur at a low cutting speed but with a relatively high and even feed rate. Vibration free, fixed, sharp tools must in any case be ensured. High speed steels with a high cobalt content, carbide or stellite are used as cutting materials.

## This is how it works

For roughing and rough turning, the front rake angle should be between -6° and +6° and between 0–15° for final turning. The angle of clearance should always be around 7°. For carbide, the angle of inclination should be -4° and for HSS steels it should be 0–5°.

As titanium tends to fuse with the tool, climb milling is preferred to conventional milling. The wedge shaped swarf is thus separated at the thinnest point and damage to the milling cutter is reduced. For HSS steels, the front rake angle of the milling cutters should be 0–10° and for carbide and stellite it should be 0° with an angle of clearance of 12°.

The particular material properties of titanium become manifest especially during grinding. The relatively high friction coefficients mean that high temperatures occur during grinding which result in chemical reactions between the metal and the abrasive grain. This leads to burning and smearing of the workpiece surface. The abrasive grains become blunt fairly quickly as a result of local overheating and then just slides over the surface. Even if the ground surface is not visibly burnt, surface tensions may be present. This leads to grinding cracks that have an effect on the fatigue strength.

Water based solutions are normally used as cooling lubricants. Aqueous sodium nitride solutions or aqueous solutions of water soluble oil are used here. Sulphurated or chlorinated oil can also be used at temperatures below 200°C (in this case the work-piece must be cleaned following machining).

## Experience is the decisive factor

All the above pointers demonstrate that lots of experience in the selection and use of tools along with the right machining strategies are required.

A concrete WFL project involves the processing of landing gear parts for commercial aircrafts. In such cases, it is customary to demand a concept study from the supplier of the processing machines that include essential processing steps. The blanks for the components are usually large forged parts which are therefore very cost intensive.


Source: WFL Millturn Technologies GmbH & Co KG

**The WFL M120 Millturn machine has been developed for machining hard to cut materials such as titanium.**

It is essential that the ability to cater for critical aspects of machining during manufacturing is shown as early as the conceptual phase. For example, it is necessary to take into consideration the fact that different material thicknesses in the blank workpiece require modified machining strategies. Heat affected zones must also be taken into consideration together with cutting forces that occur. In the 'elephant skin', these are as a rule around 70–80 per cent higher than those of hardened steel.

Marketing Manager, WFL, Dieter Schatzl describes one of the core competences of the machine building firm from Linz by saying, "Materials that are hard to cut like titanium have influenced the development of the WFL machines. We provide individual solutions for these kind of demanding applications which also include topics like cooling and production strategy as well as the actual machine."

Furthermore, Applications Engineering Manager, WFL, Reinhard Koll explains, "We are in a position to adapt the Millturns precisely to the requirements of our customers–such as the emergency retraction for example which retracts the tool from the workpiece immediately if a power outage occurs, thus preventing damage to the workpiece."

## Harmonious overall concept

At WFL particular attention is paid to implementing customer requirements in such a way that they become an integrative part of the overall concept. For example, it is possible to respond to the particular requirements of customer projects through a special design for guides and spindles and to adapt the machine components to the respective loads.

The topic of cooling is especially important where titanium machining is concerned. As titanium burns at temperatures above 880°C, appropriate fire and explosion protection must be ensured. The advantage of the individual development of spindles is also visible in the coolant feed; the cooling lubricant can be fed directly to the cutting edge via the milling spindle with a pressure of up to 200 bar. An additional factor is that, it is also possible to measure the workpieces inside the machine when work is in progress in the WFL complete machining centres.

## Conclusion

"The customer wants a machine where processing is secure. This also involves support in the choice of tooling and above all in the machining strategy as just one rejected part represents a huge economic loss with workpieces of this size," states Schatzl, clarifying the complex customer requirements. MMI

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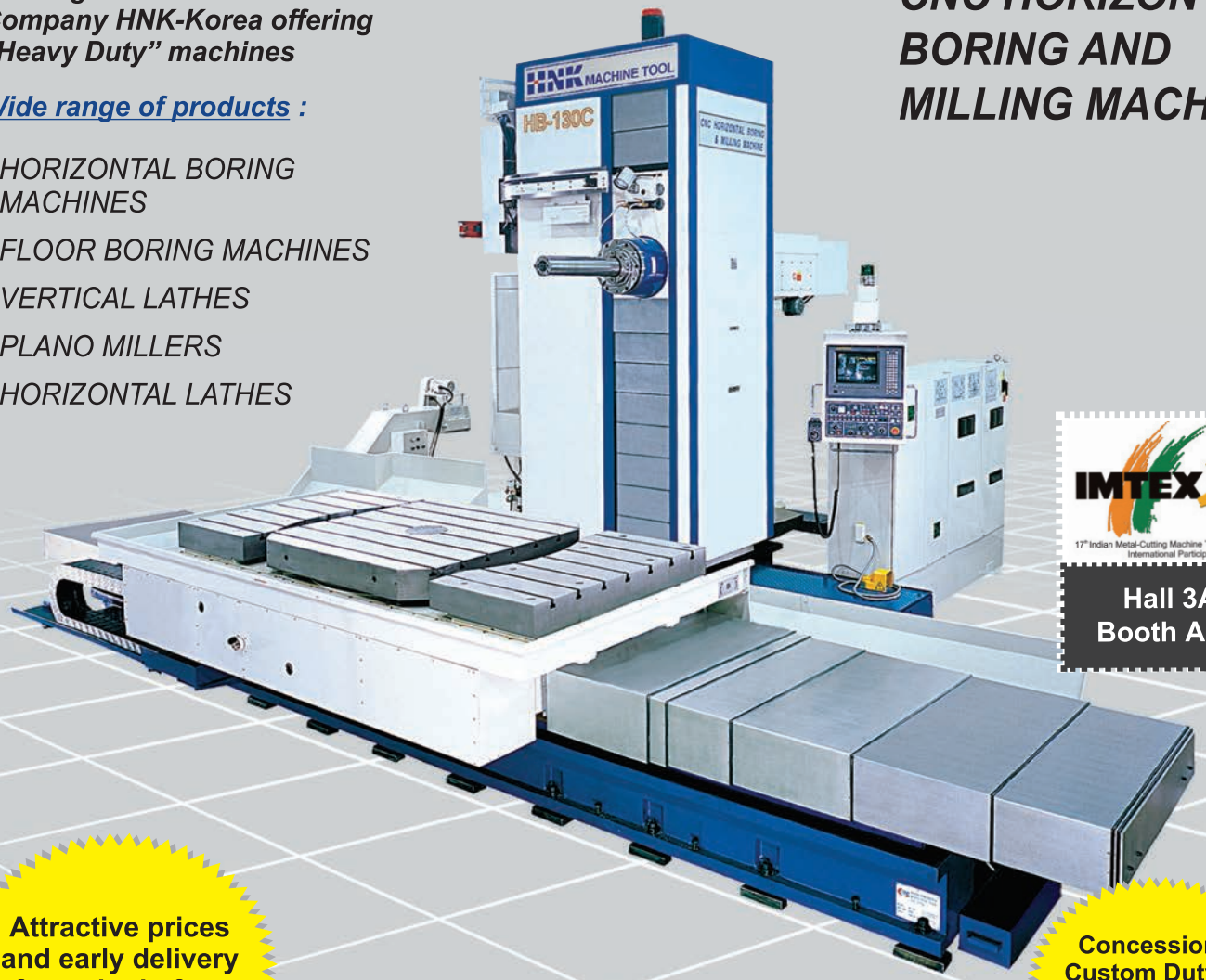


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# Users and Applications Should Drive Tool Engineering

A survey—jointly conducted by the Fraunhofer Institute for Production Technology and the Laboratory for Machine Tools at Aachen University—outlines requirements for improving cutting technologies.

Manufacturers using cutting technologies are confronted every day with the demands for shorter lead times and lower production costs while also maintaining or surpassing existing quality standards. This issue is of immense importance, especially with respect to materials that are difficult to machine, as these are often key to the development of high-performance product innovations. Cutting tools for drilling, turning and milling are exposed to high thermal and mechanical loads when used to machine high-temperature-resistant and extremely hard materials such as nickel-based and titanium alloys, titanium aluminides and powder-metallurgical steel. This results in short tool lifetimes, long processing times and poor-quality workpiece surfaces.

Jürgen Schreier
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Users and applications

Source: Fraunhofer IPT

**Tool qualification and development are regarded as pivotal factors in further optimising cutting technology in the case of machining difficult materials.**

The Fraunhofer Institute for Production Technology (IPT) and the Laboratory for Machine Tools and Production Engineering (WZL) of the RWTH Aachen jointly conducted a survey in response to this challenge. The survey asked details about the development trends in the toolmaking industry relating to drilling, turning and milling operations. The results provided an overview of the toolmaking industry from the perspective of manufacturing companies. The research institutes polled some 150 companies, most of them being users of cutting technologies, tool manufacturers or coaters. Others manufactured machine tools, materials, clamping systems or other systems. With its focus on companies directly confronting the new issues relating to machining, the survey promotes future development in tool engineering from the tool user's point of view.

## Tool qualification

Selecting the most appropriate tool for each machining task is vitally important for the ongoing optimisation of cutting processes. The Fraunhofer IPT and WZL survey highlights, among other things, trends in development towards tool

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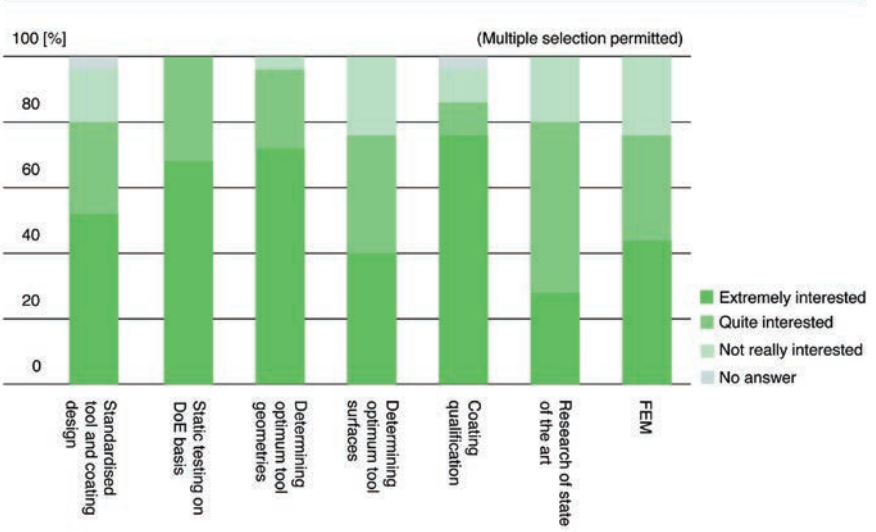
geometries and coatings that are tailored to the requirements of specific machining tasks, along with the importance of innovative cutting materials.

However, most companies reported that their own approach tended to be unsystematic. The selection process is rarely conducted methodically, and employee expertise is not always utilised or even documented. This can delay process design and result in substantial costs. When long-serving employees leave the company, they take considerable knowledge away with them. Most survey respondents thus felt that the need for standardisation of process- and tool-design methods and for information regarding optimised tool geometries and coatings was enormous (see chart).




Source: Vogel Business Media

**How toolmakers, tool users and other companies involved in cutting-tool manufacture reacted to survey questions relating to development trends in tool engineering is revealed in this chart from the Fraunhofer IPT.**

The tool geometry selected exerts a decisive influence on the tool life and on the properties of machined parts. Coordinating the rake and clearance angles or the cutting-edge chamfer with a milling tool, for example, can achieve a significant improvement in operational characteristics. However, it is vital to harmonise the tool's macro- and micro geometry with the requirements of the pertinent machining task, since this is the only way to ensure reliable improvement in process performance. In order to draw qualified conclusions in this context, the Fraunhofer IPT is researching on selecting optimal tool geometries for diverse machining tasks within the EU-funded QuickPro collaborative project.

Qualifying optimum conditions of cutting-tool applications is pivotal particularly in regard to the tool's substrate material and coatings. It is vital to ensure that the tool and its coating are tailored to each other when difficult-to-cut materials are being machined. This enables tool life to be prolonged and the machine tool to be used in applications with higher process parameters.

In industrial practice, however, users often encounter non-uniform or non-transparent coatings that fail to fulfil their potential for efficiency. Commonly, incorrect coating application is at fault. This can result in performance fluctuations that are difficult to explain. When coating properties are not tailored precisely to the application requirements, there is no reliable improvement in tool performance.

## Addressing issues

Several important questions then confront the user: What are the advantages of tool coating? Which coating is best suited, economically and technologically, to this application? How should the machining process be designed in order to exploit the coating's full benefits? Through the Fraunhofer Project Centre for Coatings in Manufacturing, the Fraunhofer IPT is researching the answers to these questions collaboratively with coating experts from the Centre for Research and Technology Hellas in Thessaloniki, Greece.

## Lubricant strategies

Almost all of the surveyed companies regard new cooling-lubricant strategies as important for driving improvement in the machining processes. This is because lubricant strategies achieve their full process-efficiency potential only when they are fine-tuned to meet perfectly the requirements of the cutting tools being used. The principle applies to dry machining, minimum-quantity lubrication (MQL), flood, and high-pressure cooling strategies, as well as to cryogenic cooling. (Survey respondents ranked these as the most important cooling strategies.) Each approach has specific advantages and disadvantages, which must be weighed carefully when selecting the appropriate strategy for the operation at hand, in order to optimise process performance and production costs.

## Process monitoring

As expected, around two-thirds of the companies questioned ranked robustness, operator-friendliness and flexibility as the most important selection criteria for process monitoring systems.

Surprisingly, however, 50 per cent of them could not envisage the ways modern process monitoring systems could help them check on the purity of the cooling lubricant or assess various tribological systems in terms of cooling-lubricant strategy or coating technology. Functions of this nature are always useful when difficult-to-machine new materials are involved.

Quite a few respondents (75 per cent) did not wish to spend more than €10,000 on a process monitoring system. Most of them expressed a preference for the system to be integrated within the machine control system.

## Conclusion

Tool qualification and development thus are regarded as pivotal factors in further optimising cutting technology, particularly in the case of machining difficult materials.

In addition, adapting the cooling-lubricant strategy to harmonise with the tool specification is rapidly gaining in importance. Finally, process monitoring systems will become more important for process design and control. They must, however, be robust, user-friendly and flexible. MMI

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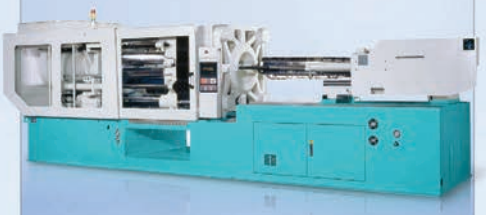

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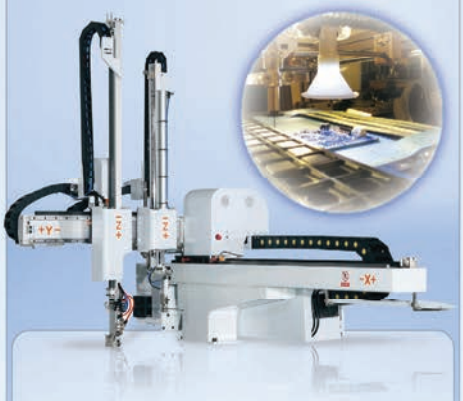

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# Trunnion Table Helps VMC Fill Utility Role for its Shop

Learn how a trunnion table brought horizontal versatility to a vertical machining center for custom pump production at Vertiflo Pump.

A machine tool's versatility is a valuable asset for machine shops. One of the options to improve a machine's capabilities is to add a trunnion table to it. For instance, when industrial pump specialist Vertiflo Pump Co of Cincinnati, Ohio, purchased a new vertical machining center; it made use of a trunnion table from TrunnionTable.com (Elsmere, Kentucky) on the machine's fourth axis in order to handle parts that were previously machined on a horizontal.

"Purchasing the vertical machine with the trunnion table saved us between $50,000–$60,000 on new machine costs alone," says Operations Manager, Vertiflo, Phil Eldridge. "In addition to that, we have cut per-part cycle times in half while freeing our operators to handle more than one machine."

Emily Probst
Associate Editor
Modern Machine Shop
eprobst@mmsonline.com

Source: mmsonline.com

**The trunnion table enables Vertiflo Pump to machine as many as four parts at a time, cutting per-part cycle times in half.**

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Trunnion Table Helps

## The background

Vertiflo Pump Co is a privately owned company and has served the industrial pump market since 1980. Its namesake vertical, horizontal and self-priming pumps are used in a variety of process control applications including agriculture and wastewater treatment. The company manufactures, assembles and ships hundreds of pumps every month which are then ready to pipe up. Pumps are primarily made of cast iron along with a stainless steel grade of 316, and the verticals range from 2–25 feet in length and weigh as much as 3,000 pounds. The castings are sourced from domestic foundries to help shorten delivery times.

"Every order is considered custom," Eldridge adds, "Typically, the variables include conditions of service, materials, pump length and size, drivers, plates, and discharge sizes. There are many common parts, but each pump comprises custom aspects based on its application."

## The new buy

In order to create a more versatile machine lineup, the industrial pump manufacturer purchased a new EC 1600 horizontal machining center to join two smaller Mazak verticals. "To complement the EC1600, the company investigated on purchasing a smaller HMC as many of the parts that it manufactures require a

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horizontal orientation and are too small for larger machines", he explains.

After talking with a sales engineer, the company decided to acquire a mid-sized Haas VF5 vertical machining center. Eldridge added, "The Haas VMC would provide more flexibility, fit well with the two smaller verticals and large horizontal, and could be equipped with a table from TrunnionTable.com. We realized we could go with the large, four-axis capability on the EC 1600, get the mid-sized vertical with a trunnion table and have all our bases covered while saving a lot of money."

While the company holds some pump assemblies and nearly all common parts in its inventory, pump orders generally originate with customers selecting a pump on the company's website. The company's 'BOB' software system enables its customers to select their pump design and sizes online, and its in-house Configurator software then creates a bill of material. From this, the company creates the parts, assembles the pump and ships it.

Source: mmsonline.com

**Pump parts that require milling and drilling at 90° can now be machined in a single setup instead of two.**

## Plus points

"The trunnion table has enabled the company to optimize this process. Typically industry turnaround times are anywhere from six to eight weeks, but Vertiflo can turn the finished pump around and ship it in one to three weeks," opines Eldridge, "Those orders account for about 85 per cent of our business, so productivity is a must, and we have received it with the trunnion table."

Machine shop supervisor Ron Davenport credits the trunnion table for boosting the shop's productivity in a couple of ways. According to Davenport, the parts that require milling and drilling at 90° can now be machined in one setup instead of multiple setups. The benefit of this is that the company can now machine as many as four parts at once with a 40-minute cycle time. Prior to acquiring the trunnion table, the one-part cycle time was about 20 minutes.

Davenport adds, "Now, we are obtaining more parts in a short time. Plus, the longer cycle time allows us to operate multiple machines at the same time, so we have also lowered manpower costs." He enjoys the flexibility he has in setting up different parts using fixtures which he has created in-house in conjunction with the trunnion table, as well as the table's ease-of-use.

"I made a couple of sub-plates that mount directly to the holes in the trunnion table, so we can set up six different part configurations," explains Davenport. This includes multiple part types with similar bases. He says, "The trunnion tables square themselves up almost automatically. It is really easy to set them up and they are solid and well-built."

The new VMC trunnion table has enabled Vertiflo to 'right-size' its operations—meaning it can process parts on more appropriately sized machines, thus extending the life of its machine tool assets. Eldridge elaborates, "Vertiflo was able to take many parts off the EC 1600 that were just too small for it. Conversely, it was also able to take parts off the smaller vertical machines that were almost too big and which pushed them to the edge of their capacity."

Now, the small verticals can process more size-appropriate parts, which will extend the life of those machines. Eldridge says that now the company is obtaining the most out of its large-part machine by actually machining large parts. On a concluding note, he says, "We feel we have the right machines processing the right parts, and it was all made possible by a $3,650 trunnion table." MMI

Source: mmsonline.com

**Vertiflo inventories most of its common pump parts; however, each order is custom, based on its application.**

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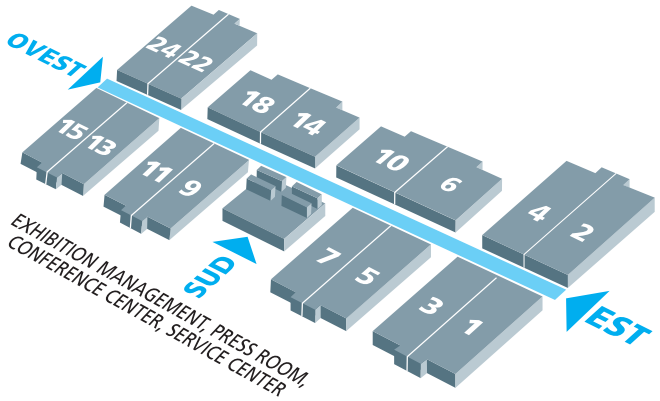


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# Internal Gearing Receives a Boost

The Siemens Drive Technologies division, with its site in Voerde, Germany, is considered a global player and worldwide technology leader in mechanical drive technology. Together with WALDRICH COBURG, Siemens has developed a new machine concept for the complete machining of internal gears, which are primarily used in wind turbines.

WALDRICH COBURG has a plant with a highly automated flexible manufacturing system comprising two MultiTurn machining centers each with two supports, two tool changers and attachment changers, a common pallet transport system with six round pallets and two precision set-up stations. Each machine is equipped with a turntable and an integrated pallet carrier. The hydrostatically supported table is used in turning or milling mode.

The two machining centers can be used for turning, drilling, milling and gear milling. The advantages are clear. The space required by the plant in production is approximately 40–50 per cent less than four separate conventional machines. Owing to the smaller number of clamping processes and minimum non-machining times, the workpieces are manufactured more quickly, accurately and cost-effectively. Quality and productivity always being placed in the foreground.

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Internal Gearing

## Behind the scene

The workpieces are clamped on the high-accuracy set-up stations and can be stored temporarily on three stations. The workpieces are loaded and unloaded from the machinery using these intermediate buffer stations.

A basic requirement of the company from Siemens was the automatic changing of the gear cutting tools to drastically reduce the non-machining times. In the past, this variant was not possible on the 'special gear milling machines'. Each MultiTurn is therefore equipped with two gear milling heads. The automatic tool change is realised by means of a complete milling head change.

On the machine, there is a service station in the attachment change area for inspecting and presetting the gear milling cutters. Here, the operating personnel have a clean working area for fitting the tools with new indexable inserts and then checking them. Non-machining times are saved due to insert replacement in the machine.

Source: WALDRICH COBURG

**A glimpse of the MultiTurn machining centers at the WALDRICH COBURG facility.**

## In detail...

The new clamping device is an innovative in-house development from Siemens AG. The previous 'chuck' has been replaced with eight separate clamping blocks that can be quickly adjusted pneumatically for mounting different size workpieces securely. The concept is extremely variable and permits set up while machining is in progress even with heavily fluctuating quantities and diameters. Owing to the shape of the clamping blocks, it is possible to flush the swarf off the pallet using two water nozzles during gear milling.

Each machine is equipped with two supports (M3 and TM2). This feature permits simultaneous turning, drilling and thread cutting operations as well as a reduction in the machining times. The turning processes (roughing and smoothing) are mostly undertaken simultaneously. The two supports work on different workpiece contours. During this process, the work sequence is continuously synchronised and checked by the Siemens

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CNC. The finishing operations are implemented with 'in-process measuring operations' so that the manual measurement is reduced to a minimum. During the automatic measuring operations in the machine, one support (TM2) carries the 'finishing turning tool' and the other support (M3) a measuring probe. The turning tool on TM2 undertakes a measuring cut and the measuring probe on M3 measures the actual diameter.

The correction then required is undertaken automatically by the CNC control system and the diameter is fully turned using TM2. The milling power of the gear milling head is 63 kW at a nominal speed of 95 rpm. Furthermore, the head has an automatic pivoting plane in the range +/-10 degrees to adjust the helix angle of the gearing. The milling head is only used on the M3 masterhead support. The M3 support is guided hydrostatically and has optimal damping properties during milling.

During the milling process, the Z-axis position remains unchanged as a function of the workpiece. The vertical movement of the milling head is only undertaken using the machine's crossrail. The crossrail is also guided hydrostatically on the two machine

Source: WALDRICH COBURG

**The clamping device is an innovative in-house development from Siemens AG.**

bases and has an electronic position control by means of a 'gantry axis'. The complete system has very high stiffness. Profile milling cutters with indexable inserts are used as gear cutting tools; these tools are of single, duplex or triplex design. During the machining, two or three gaps are milled simultaneously using these tools. The tools are designed for dry or wet machining.

The complete system is protected against overload by the monitoring of the power consumption during milling. The system is taught-in specifically for each component. Tolerance bands define the range in which the power is allowed to fluctuate. If the value is exceeded or dropped below due to insert fracture, wear or variations in the blank etc., the milling process stops. This technology permits optimised reliable machining.

## Quality check

To check the quality of the gearing, a software application has been developed that permits the measurement of key features of the gearing (pitch, flank line, profile line and dimension over balls) already on the machine tool. These measurements are subsequently repeated on an external measuring machine and compared. In this way, the high accuracy requirements are checked even during the machining in the machine.

With the investment in this high-tech production plant, Siemens AG is demonstrating its high level of innovation in technologies of the future. **MMI**

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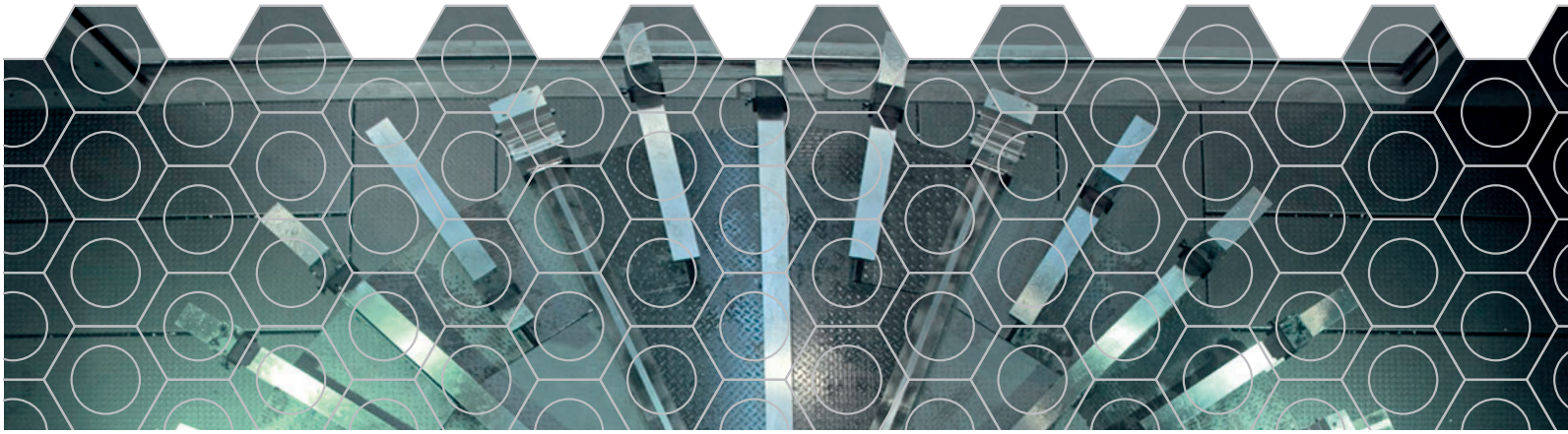

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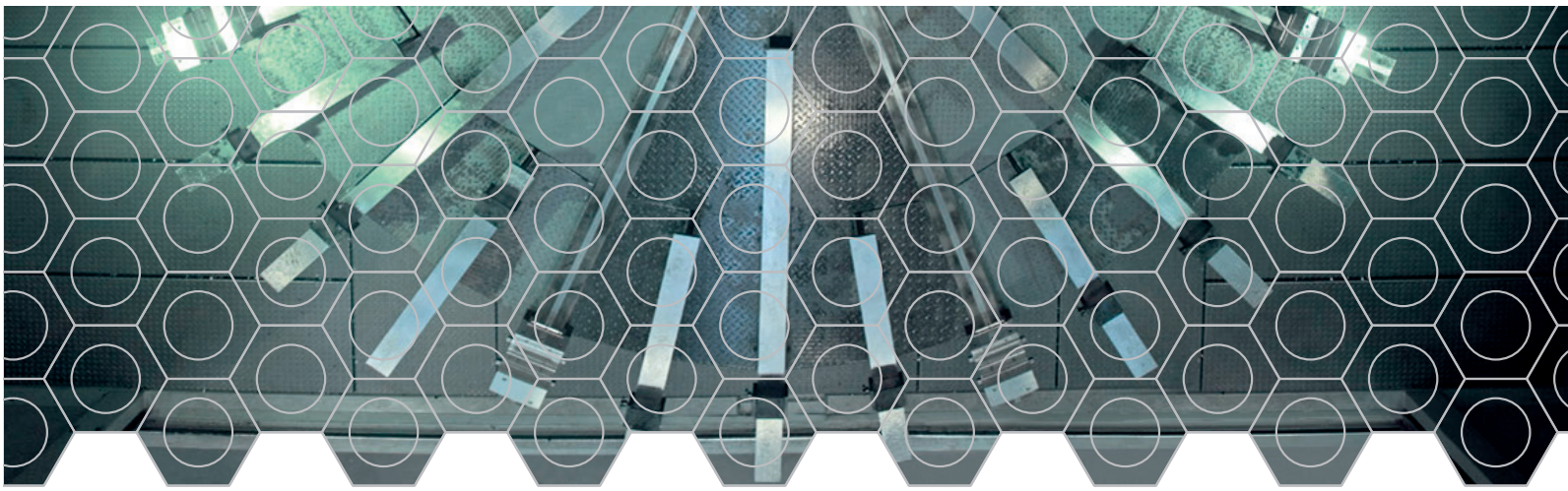

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Source: SCHUNK Intec India Pvt Ltd

Laser welding in three-dimensional space demands flexible machinery.

# Laser Welding in Three-dimensional Space

Whether in regard to gears, injection molds, medical instruments or turbine parts—when it comes to high quality welding, laser welding technology is unmatched. Using modern process strategies, even challenging jobs wherein two different kinds of materials can be welded together reliably and economically. Automated procedures also increase workpiece quality and machining efficiency.

Laser welding is mostly used when components need to be joined at high welding speeds, with slim weld seams and low thermal distortion. Compared to other types of welding, the energy of laser welding is directed into the material. Modern laser welders combine three central factors: a powerful, calibrated laser source, user-friendly and time-saving programming, and as much flexibility as possible to machine both small and large parts. Modular machine programs have a substantial advantage in this area: comparable to a modular system, the individual components can be selected and customized so process stability, productivity and cost effectiveness go hand in hand. When configuring optimal process solutions, users must focus on appropriate machine kinematics, user-friendly control and programming, and a robust laser source whose power is calibrated to the material being machined.

Source: SCHUNK Intec India Pvt Ltd

## From simple three-axis systems to a highly flexible five-axis machine

A core decision-making criterion when selecting a module program is variability in machine design. Ideally, machine programs cover a broad spectrum of axes, as well as pivoting and traversing options. Machines with CNC-controlled axes have the advantage that welding lines can be machined in semi-automated fashion regardless of operator experience. Also,

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Laser Welding

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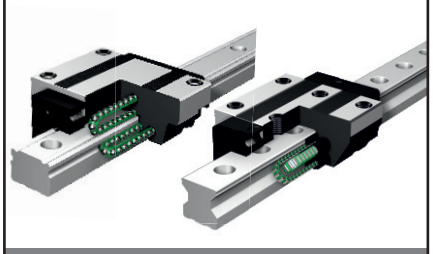

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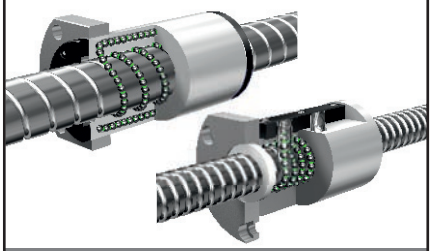

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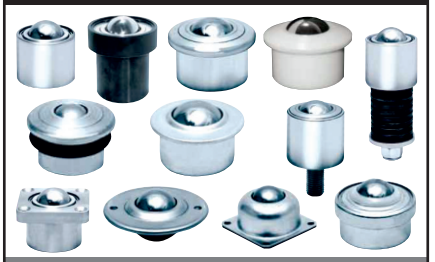

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multiple parts can be welded with the same quality. Whereas in classical toolmaking, three-axis machines with X-, Y- and Z-axis traverse paths of 400 mm each are usually sufficient, a fourth or fifth axis can be a valuable aid for more complex applications. Ideally, machine concepts offer the option of displacing, swiveling, or traversing individual axes. Therefore, it is beneficial when machining parts of various sizes if:

- The Y2-axis can be manually displaced and swiveled
- The Z3-axis can be vertically traversed and rotated
- The tool bench can be vertically adjusted and moved to the side

The more flexible the machine is designed to be, the more likely parts can be fed by, e.g., a fork lift. Swiveling laser optics ensure that the laser beam always hits the workpiece at the optimal angle, even if the contours are not easily accessible. 3D articulated stands help keep the gas nozzle in the right position and illuminate the work area as much as possible.

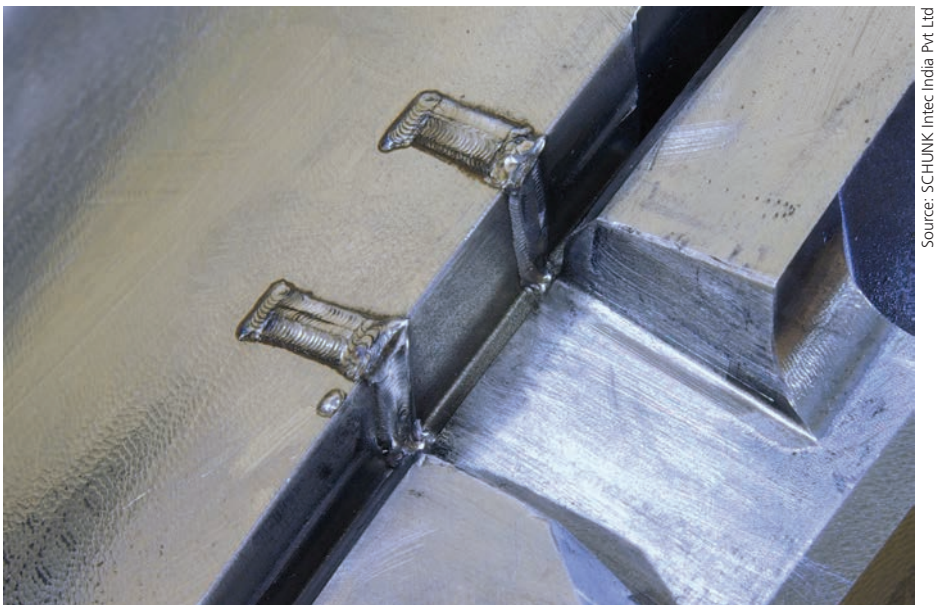
Ergonomic aspects also have to be considered when choosing a suitable machine: the operator must be able to comfortably access all machining, programming and control functions, regardless of the size of the component. Mobile control panels with joysticks or hand wheel consoles that enable precision positioning have proven themselves effective in these aspects. Swiveling binoculars with varying magnifications and a swiveling range between 10° and 50° allow work to be both relaxed but highly precise.

The potential efficiency of flexibly designed machines goes far beyond ergonomic and qualitative aspects. The setup time for such multi-functional machines can be reduced by up to 90 per cent, particularly when machining large plates or hard-to-reach areas. Highly flexible machine concepts are sometimes the only things that make it possible to even machine complex parts.

## Precise paths for individual parts – maximum serial productivity

To this day, users greatly underestimate the effects that can be achieved with laser welding in three-dimensional space with sophisticated control and programming. Look-ahead controls and intelligent teaching functions for line, arc, circle, and spline produce extremely even paths, regardless of the operator's fine motor skills and day-to-day condition. They reduce programming effort and minimize setup time. Trials have shown significant improvements in quality when using such programs for both two- and three-dimensional paths. And operating often could not be made simpler: the user only has to define the zero and end point. Within seconds, the program generates the welding line in three dimensions. Only three points are required to program an exact circle, which are automatically connected into a circle by a circle function. The user only has to enter the number of paths, the distance between paths and the distribution of the paths, and the machine follows the paths exactly. Only the wire has to be manually fed. Even free-form surfaces for which no geometry data is available can be swiftly measured with these programs. For fine calibration, the relevant points are simply connected together in spline mode. The rubber band function can be used to manipulate the harmonic course of three-dimensional curves.

Compared to machines that connect short straight lines together to form a curve, modern controls produce much finer, more fluid paths. Even parts that are complex, worn, or damaged on the surface can be quickly measured and precisely machined without time-consuming external programming. Once programmed, welding procedures can be replicated any number of times in a stable process. This applies to machining identical molds in die manufacturing, as well as to producing standard parts in job order manufacturing.



Source: SCHUNK Intec India Pvt Ltd

**Partial energy transfer and special pulse shaping prevent stress and cracks from forming in tools during repair welding.**

In semi-automatic mode, it pays when highly precise linear and rotary axes ensure that welding lines are offset with precision to produce extremely consistent material depositions. Combining a flexible machine concept with this kind of teaching function saves users from having to deal with tall machinery and manipulators, or with clumsy and time-consuming component adjustments on magnets.

## Laser sources offer versatile options

Without a doubt, the most important module when searching for a suitable laser machine tool is the laser itself. Lasers can be divided into two categories based on signal waveform: compared to the continuous beam of conventional continuous wave (CW) lasers, pulsed lasers deliver their energy in bursts. This provides significantly more process parameters for manipulating the material's solidification than CW lasers do. Pulsed lasers have since established themselves, particularly when machining challenging materials and combinations of materials. With pulsed neodymium-doped yttrium aluminum garnet (Nd:YAG) lasers, for example, the ratio between pulse and pulse pause, and thereby the material's setting behavior, can be carefully manipulated. Thermal pulse shaping can also adjust the pulse shape to the material's temperature-based absorption behavior. This allows the molten pool to be stabilized and the material to be specifically preheated and cooled. At the same time, the pulse shape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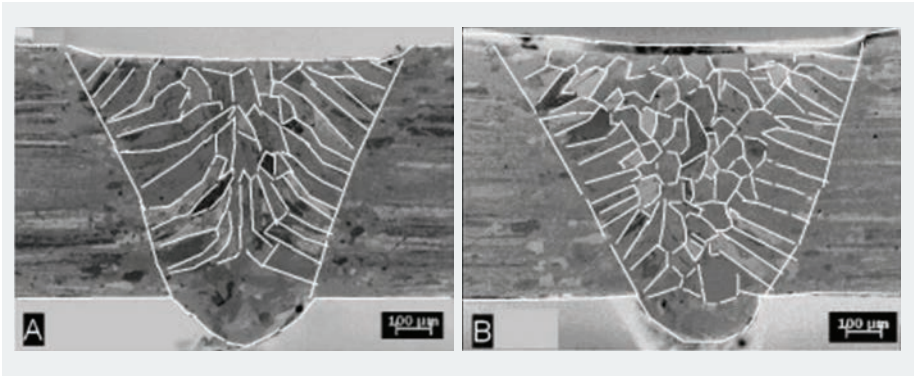


**Pulse modulation can be used to achieve a homogeneous structural distribution, as shown here in Al 99.9.**

can be modulated to specifically manipulate the mixing of the molten pool as well as crystal growth. Both pulse shaping variants considerably influence the welding result. This makes it worthwhile to know how pulse shaping works and how it can influence the weld, and to use these in optimal fashion, especially when working with challenging materials.

Unlike rectangular pulse laser welding, where the pulse's total power is always used, thermal pulse shaping allows the power to be specifically adjusted beyond the pulse shape. This prevents power overages and thus the molten pool from overheating. In turn, seam surface quality is improved. This also prevents splashes in, e.g., copper alloys, which would occur with a sudden phase transition. With materials such as copper and aluminum alloys, pre-pulse phases have proven effective in improving the injection of the laser beam into the material; thus, improving the reproducibility of the welds. In other materials, however, a pre-pulse phase can remove oxide layers or prevent pores from forming. Post-pulse phases, on the other hand, have a homogenizing effect. They can prevent pores from forming by improving the gas release of the material. It can also prevent hot cracks or, in materials with more carbon, hardening cracks.

Pulse modulation can, in turn, be used to specifically manipulate and stabilize the temperature of the molten pool. This is used during solidification to achieve the highest possible nucleation rate and thereby the finest grained and most homogeneous structure possible. Modulating laser power can also be used to manipulate molten pool dynamics and thus solidification morphology. This prevents cracks from forming when welding different types of materials, such as titanium and aluminum, by increasing the ductility of the joint. Combined pulse shaping and modulation is especially important when welding refractory metals, such as titanium, zirconium, tantalum or molybdenum alloys. Using pulse modulation with these metals to specifically cool the molten pool allows a fine-grained structure and thus outstanding weld seam quality can be achieved.

## Customized solutions

In order to achieve an optimal price-performance ratio, the laser source should always be calibrated as required. The PSM 400 series by SCHUNK offers a wide range of particularly robust laser sources with various performance features to help achieve this balance. Powerful and durably designed Nd:YAG laser sources by JK Lasers (GSI Group company) with outputs of 150 W to 450 W are available for tool steel machining. Their solid construction, high-quality ceramic cavities and thermally stable resonators ensure long-term high beam quality. Pulse stability is +/-0.5 per cent. With a maximum pulse output of 5–10 kW, the JK laser source reaches a pulse energy of 35–100 J. However, machining brittle materials such as cast-iron parts, steels with high carbon content, and super alloys is covered by the powerful laser sources from Lasag. MMI


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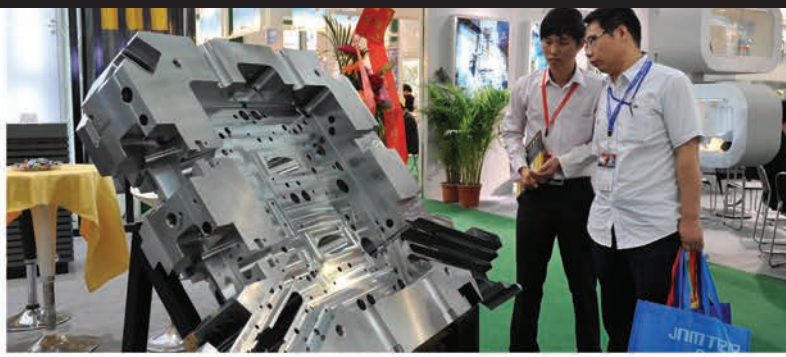

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# Virtual Design and Rapid Prototyping can Save the Day!

In today's day and age where small errors in the product development stage can increase the time to market and can lead to losses for businesses, it is very important to look at 3D design and prototyping options. Read on to know more on how 3D design technology and rapid prototyping can help enhance the entire product development cycle for businesses in the die and mold sector.

The fundamental success factors for companies engaged in product development or mechanical product engineering are shorter cycles of development, accuracy and quality of work, cost of product development and engineering processes.

Especially for the plastics industry, mold development is extremely critical and vital to product design, accuracy and robustness.

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A small error that goes unnoticed can lead to the development of a defective product that is either incapable of smooth functioning or lacks aesthetic appeal. In any case, the company has to reinitiate the mold design process, which is not only time consuming but also very burdening on financial and human resources. So the impending question remains on how to best get things right the very first time that will erase or significantly reduce the possibility of design errors by addressing key areas in mold designing.

## Challenge areas

Critical areas to watch out for in order to create accurate molds irrespective of the type of plastic product design methodology, for instance, injection molding, blow molding or extrusion, are:

- Proper filling of mold–the filling should be evenly spread across even the smallest and farthest corners of the mold
- Material selection, testing, temperature, state and viscosity
- Pressure required to fill the mold
- Adequate and proper cooling channels need to be developed for uniform cooling of the mold

If these areas are not addressed in the mold design and at flow analysis level, then a serious possibility of errors could occur while filling the mold that might lead to unsatisfactory quality of product development leading to defects such as sink marks, weld line formations, warping, parting line, runner marks on the aesthetic area, shrinkage and more. This will deteriorate the product quality, and even the look and feel of the product.

Today, when the bargaining power of customers is so high and with multiple alternatives, substitutes, or competitive products available in the market, when a company is unable to give customers a value for money product; it could be the beginning of its downfall. Also, if the company is late in the market by six months, or not innovative enough, or if the ratio of its

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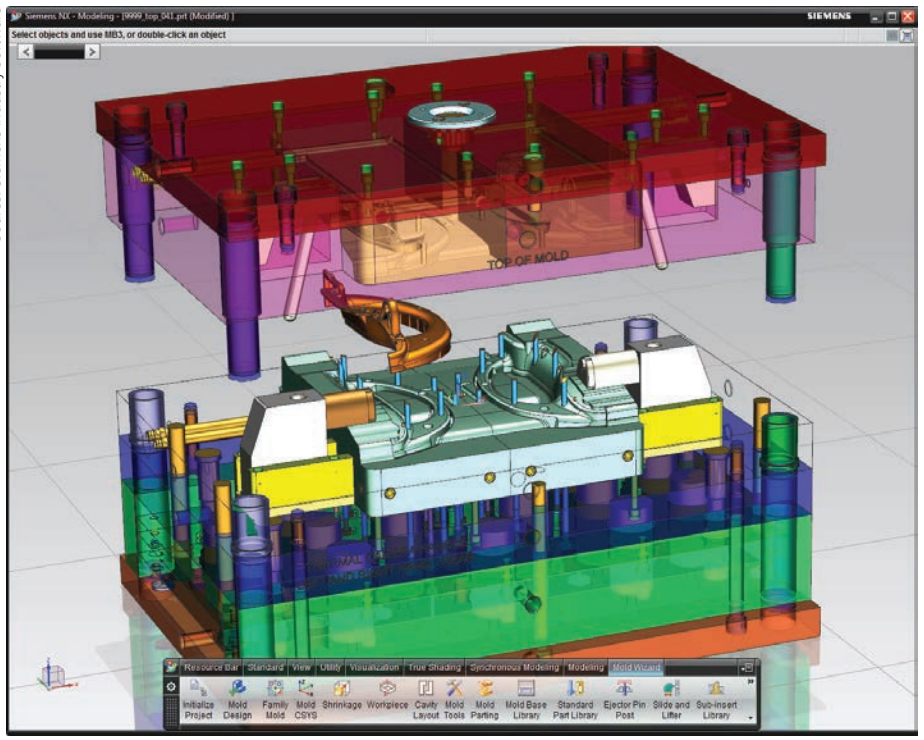
Virtual Design




Source: Siemens Industry Software

**Virtual design of a mold using 3D CAD software.**

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product functioning and looks to product pricing is not appealing enough to the customer, it has already lost out on at least 40 per cent of its profit margins.

Source: Stratasys

End product, using prototyping machines.

## Modeling solutions

3D modeling and CAD software, such as NX CAD from Siemens, minimize the occurrence of design errors while designing the mold and ensures that even the most complex shapes such as acute curves, contour shapes, niches are very accurately designed. There are some renowned software in the market that facilitate precise plastic flow simulation analysis that helps understand and gauge the required clamping pressure, injection pressure, temperature of the liquefied plastic, cooling circuit, cooling design, etc. The comprehension of these aspects using a software are critical and as they help enhance the mold design by identifying and rectifying the design errors well in advance, i.e., right at the designing stage itself. Rapid prototyping machines help create a physical prototype of the product or part in 3D; this helps in physically validating the product design. With the product in hand, the designer can easily test and validate if the product is functioning properly and if it is ergonomically convenient. There are certain design areas which cannot be tested through virtual simulation and analysis software, such as press fits, rotating fits, and ergonomics. These have to be tested with the physical product in hand. If a company produces a test batch and then identifies certain functioning fallacies, then it will have to redesign the product and repeat the manufacturing and production process, which of course delays product development and adds to the expenses. It is hence prudent to create a prototype and validate the product design physically, address design errors if any, rectify them, test it again and then go ahead with mass manufacturing. One of the companies globally reputed for prototyping machines is Stratasys offering FDM and Polyjet technologies for 3D printing.

## Used across manufacturing techniques

The same is applicable to the dies as well. Manufacturing dies are extremely costly, and an error in the die design will cost a company huge amounts of money to redesign and also adds immensely to the time of development. Just like molds, die design is extremely crucial for robust product quality and aesthetics, and the minutest error of any sort could lay a heavy burden on the company to bear.

Likewise, sheet metal press parts, however created—hydraulic, mechanical or electric, need to be designed very carefully. There are various analysis software solutions available in the market, such as Altair's HyperForm, which helps in thorough analysis of sheet metal forming. This software helps analyzing several aspects of design, including metal properties, spring back properties of the metal, how the sheet metal will develop cracks, how can a desired curve be achieved, and whether the metal will require single stage or incremental stage forming, etc. There are also certain add-on nesting tools available that help determine how a maximum number of parts can be fitted or accommodated in a sheet with minimum material wastage.

Prototype of the die used for manufacturing bottles.

Source: Stratasys

## Conclusion

Complex machining can be successfully handled with the help of CAM solutions that can efficiently handle 3-, 5- or even multi-axes machining. Furthermore, CAM software helps companies develop programs and codes that are fed into Vertical Machining Centers (VMC) and Horizontal Machining Centers (HMC) that enable it to successfully carry out complex machining requirements.

With the help of such technologies, companies that work in the development of plastic products, and the mold and die industry can hope to achieve all their objectives pertaining to product accuracy, quality, and time and costs of development.

To become ever competitive in the market, both domestic and global, companies have to invest, adopt and make the best use of these cutting-edge technologies to remain resilient and successful. MMI

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# Increasing Effectiveness for Better Productivity

Achieving best performance and maximum output for all equipment is of paramount importance for each machine operator. This can be achieved with the help of Overall Equipment Effectiveness (OEE) of machines with the help of service experts. One possibility consists in the analysis of the OEE key performance indicator, which is used to identify the potential for optimized production processes. Read on to know more about OEE…

Every business seeks to have efficient processes as far as possible. An evaluation of the machines' effectiveness helps to identify whether all 'pieces' of the production process are optimally interlocked. One such example is the Overall Equipment Effectiveness (OEE) key performance indicator. It provides information about the ratio of the actual to the theoretical output and hence, serves as basis for identifying potential for improvement. While having a thorough OEE analysis, experts assess the causes of the most frequent loss factors and, together with their customers, develop counteractions for better productivity.

Source: Bosch Packaging Services

## How to start?

The first step in determining the OEE key performance indicator lies in an actual-target comparison of three factors—availability, performance and quality. Availability refers to machinery and workers that enable production according to schedule. Its score is calculated by comparing planned with actual machine production times. To determine the performance factor, the actual machine's run time is compared with the run time, which is theoretically necessary to achieve the produced quantity. This shows whether the machine is running at the optimal speed

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Increasing Effectiveness

Source: Bosch Packaging Services

**OEE key performance indicator provides information about the ratio of the actual to the theoretical output and, hence, serves as basis for identifying potential for improvement.**


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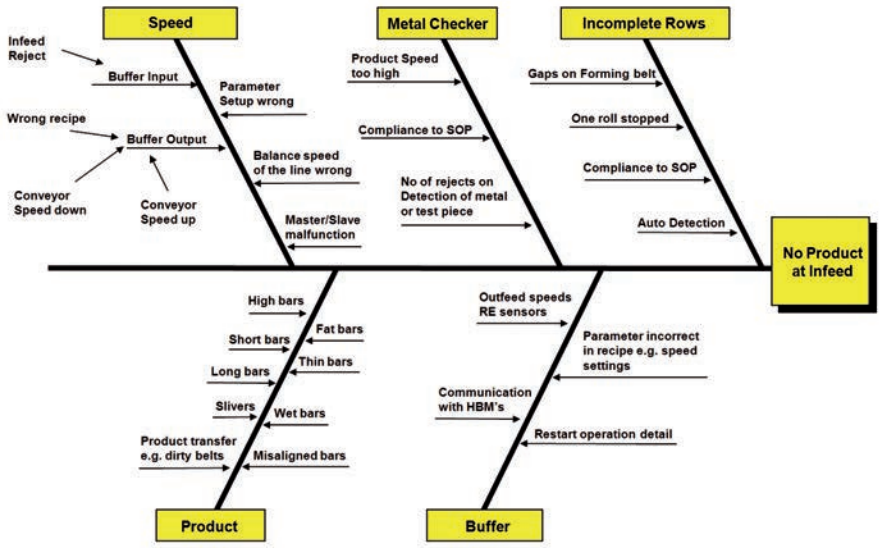
or if its potential is wasted. Finally, the quality factor is evaluated. The OEE experts measure the amount of rejected products that do not meet the required quality standards. The analysis of these three factors provides the starting points to counteract the causes for performance loss and consequently maximize the output. A holistic OEE approach makes it possible to evaluate and improve the OEE in detail.

When a customer encounters production losses, he has to start searching for its causes. This can be very time-consuming and labor-intensive, as the decline in effectiveness might have several different causes. A detailed OEE analysis helps to systematically approach the causes step by step.

Every OEE project begins by determining the actual production condition. The three performance figures—availability, performance and quality—are collected over a period of about four weeks. The measurements are then visualized in a time series diagram. The process curves indicate which key figures have a negative influence on the OEE. Expressed in percentages, the three factors serve as comparative values. If the availability rate, for instance, has the largest effect on the OEE key performance indicator, the next step consists in evaluating the decisive causes for low availability.




Source: Bosch Packaging Services

**An example of the fishbone diagram drawn for the OEE approach.**

## Small causes with large effect: the 80/20 rule

Regardless of which aspect is responsible for the unsatisfying equipment effectiveness, the OEE specialists evaluate the respective cause background together with their customers. The Pareto chart provides the first starting point. It shows which machine downtime notifications lead to availability losses and how often this occurs. In most cases, the 80/20 rule, known from the Pareto principle, is applicable. It shows that 80 per cent of a project's results are achieved in 20 per cent of the entire project period. The remaining 20 per cent of the results require 80 per cent of the overall time span and cause most of the work. When transferring this rule to OEE, 20 per cent of the measured machine notifications are responsible for 80 per cent of the machine downtimes—the loss of effectiveness is thus, caused by a few individual effects.

## Jointly searching for causes

As the goal of these OEE projects is to determine the causes of unsatisfying effectiveness, the first step of the OEE approach is to establish a joint project team with the customer in order to combine the specific knowledge of the machine operators with the machine and OEE expertise. For this reason, the team is made up of machine and product experts from the customer as well as OEE specialists and machine experts from Bosch. To identify the root causes for all effects, the project team collects possible reasons for the encountered effects in a brainstorming session, then bundles them into cause clusters.

For a better overview, the causes of each effect are depicted in the fishbone diagram following the Ishikawa method. The Ishikawa diagram serves as a visualization of the correlation between cause and effect. The head of the 'fish' correlates with the respective effect, whereas the fish bones correspond to potential reasons. For the specific effect 'no product', the diagram's fish bones consist of the different case clusters such as 'product' or 'speed'. The project team members subsequently assign these areas to the actual disruption factors, for instance 'wrong product size' or 'conveyor speed down', providing a clear assessment of the causes, which need to be rectified.

## Analyses, priorities and sustainable solutions

Once the project team has assessed the cause and effect relationship, the failure notifications are evaluated in a Failure Mode and Effects Analysis (FMEA). The causes are listed in a spreadsheet and are assigned to individual risk factors according to frequency, their influence on the production process and their recognizability. This allows the causes to be prioritized. The higher the risk factor, the more urgent it is to initiate counteractions. The team designates competent persons for each action and records the respective status of the actions, which can vary significantly depending on the field of application and machine specifications.

In the specific customer case and the causes 'wrong product size' and 'conveyor speed down', Bosch suggested, amongst others, an internal review of product specifications and the installation of an additional acceleration conveyor. In addition, the experts from Bosch determine in each OEE project whether and how customers can best identify the causes in the future. By detecting the 'wrong product size' at an early stage, for instance through targeted control of the process parameters, faulty products can be rejected in due time so that no gap occurs in the product feed. This puts customers in the position to sustainably increase his equipment effectiveness.

Bosch Packaging Services' many years of experience have shown that a sustainable improvement of equipment performance cannot be achieved by an individual action. It rather is the multitude of combined actions that lead to a long-term success. This is why the catalogue of measures usually consists of actions performed on-site and services from Bosch. The findings are continuously analyzed, reviewed and implemented in concrete actions. Bosch works hand in hand with its customers—until all pieces of the production process are effectively interlocked again. MMI

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Source: Godrej Tooling

Welding automation line for back plate of Defender Safe.

# Robotic Welding Solution Increases Productivity

To automate and modernise the manual processes and make it cost-effective, the Tooling Division of Godrej & Boyce Mfg Co Ltd, opted for robotic welding technology with touch probe features.

The two major business verticals of Godrej Tooling Division—designing and manufacturing a varied range of Sheet Metal Tooling & Die Casting Dies—cater to a wide spectrum of customer segments, from appliances to automotives.

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The third business vertical of Godrej Tooling—the Industrial Machines business segment—provides specialized solutions in automation and robotics, along with special purpose metal cutting machines and jigs & fixtures. In addition to meeting the captive requirements of its other business divisions, Godrej Tooling caters to the demands for automation solutions from external customers as well.

## Back Plate Welding

A case in particular is the Defender Safe, manufactured by the Security Solutions Division of Godrej & Boyce. All operations with regard to handling, placing and welding of the Back Plate for the Defender Safe, were being done manually. This resulted in a relatively huge bottleneck situation on the production line. Quality and machine shop functions were entirely dependent on human calibre as all processes involved manual intervention.

The need for automation, thus, gained prominence and impetus. To stay ahead of the competition in today's highly volatile market scenario, providing specialized solutions in automation and robotics was a key business strategy. Highly skilled engineers from Godrej Tooling's Industrial Machines section, studied the existing manual processes, and arrived at a suitable robotic solution, in consultation with the

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customer, i.e., Godrej Security Solutions Division, to automate the same.

Benefits of this automation, by way of significant improvements in production and quality and its cost-effectiveness, were immense.

## Robotic Welding – The automation solution

The biggest challenge in providing the Robotic solution was handling of the Defender Safe—weighing about 1.5 tons—and placing it accurately at the desired position. Even a small misalignment would lead to improper welding and aesthetic disorder.

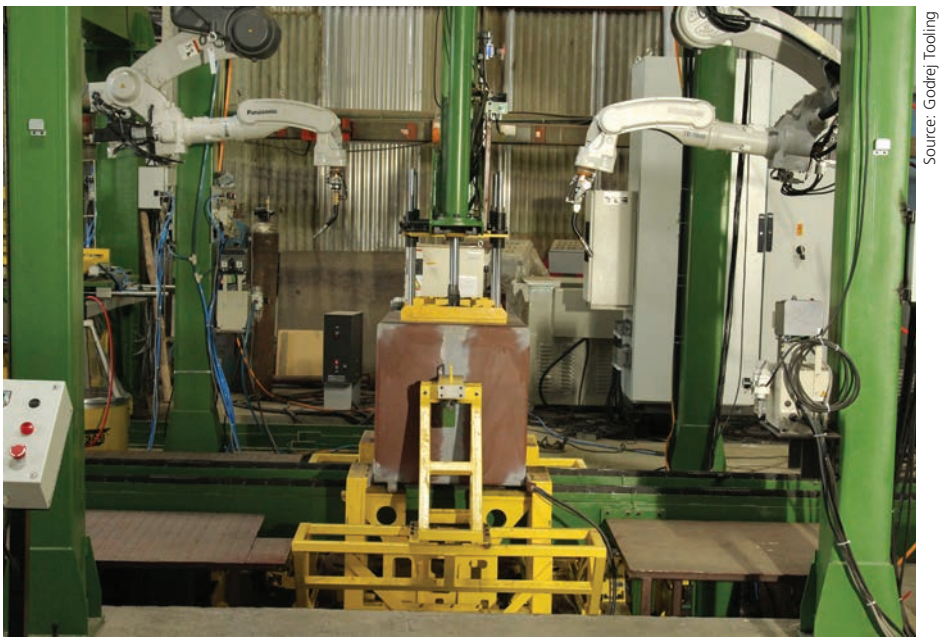
So, the team used a Servo-based 'Pick & Place' (P&P) system, for ensuring precise placement of the Back Plate that needs to be welded on the Defender Safe body. To enable user-friendliness and hassle-free use, the control system was simplified using the SSCNET device to control the Servo motor.

Now, it was time for the engineers to brain-storm over the Welding Automation solution. The welding requirement was A Continuous Fillet type, at the desired profile. Though they were using advanced Control systems, it was important to ensure that the components to be welded together are placed at their proper locations.

At the same time, it had to be flexible enough to accommodate all variants of the family of Defender Safes. All these factors pointed towards Robotics as the only solution.

## Touch Probe Sensors

Using Robots merely for welding would not have worked out as efficiently in obtaining desired results. Ensuring that the profile was followed accurately was quite vital to the overall process. Hence, the Touch Probe Sensing technology for Robots was used. This technology ensures that the desired path is traced all along by measuring the coordinates of the path and the same is followed while Robotic Welding.



Source: Godrej Tooling

Inverted welding robot being used at the facility.

## Integration of the system

In any automation, the most complex aspect is the final integration of the automated line designed and developed by the company, with the third-party bought-out equipment. The team successfully achieved this integration by using the CC-Link Device in their systems. The CC-Link Device acts as an interface between the master and slave devices, and facilitates communication and data exchange with the Robots used in their system. It also reduces field wiring hassle.

## Safety features

Introduction of the Human Machine Interface (HMI) program ensures de-skilling of the operators. Any fault that occurs at any station gets captured on HMI, which helps operators to address the problem. More significantly, the component will not proceed to the next station for further operation, unless the fault identified gets rectified and acknowledged.

The End Limit Interlocks are used in both manual and auto modes to ensure that the component remains on the conveyor line even if the operator accidentally operates the forward or reverse command. The Multiple Acknowledgement System is integrated with the main panel. This system will not operate unless all the acknowledgements are received by Robots from the operator. This ensures safety of the operator as well as the system.

## Future plans

The company's plan is to horizontally deploy automation solutions across all the business divisions of Godrej & Boyce in order to reduce manual intervention during critical operations. Automation will thus help them maintain their position in the competitive market—on both the fronts: Quality and cost. MMI

### Godrej & Boyce Mfg Co Ltd (Tooling Division)

**Challenges**

Automating the fillet welding process and material handling system for the Defender Safe.

**Solutions**

- Robotic welding solution with touch probe features
- Automated indexing conveyor & handling system

**Benefits**

- Significantly improved quality of welding
- Reduced human intervention
- Increased productivity

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# Additive Manufacturing Vs. Intellectual Property — The Acrimonious War Of The Future

3D printing just might be the next best thing since sliced bread. But there are pros and cons to every new field. Read on to find out the good, the bad and the ugly of additive manufacturing.

In the 2013 State of the Union address, US President Barack Obama reserved some space to talk about 3D printing stating that 'it has the potential to revolutionize the way we make almost everything'. This a huge endorsement for a very new field that many have not paid heed to. And indeed it is going to bring about a change to almost everything and probably in every field.

The technology has numerous challenges and if it can address them all and circumvent the stringent intellectual property questions, it is going to shape consumer demand in a manner one simply cannot describe. The phenomenon could be gradual, but is increasingly becoming a certainty. Let us address a few concerns including safety, reliability and the most detrimental of them all - intellectual property.

3D printing is at technological cross roads for manufacturers and end consumers. While manufacturers see its potential, they are also skeptical of its ability to eat into their profits. The government is concerned with its security risks and the inherent threats it poses. The uncertainty still exists with the technology's complications and its replicating vastness. With such an enormous upheaval at the brink, we are bound to have a dash of the good, bad and the ugly, similar to the lines of Sergio Leone's devious spaghetti western. 3D printing is after all, a drama waiting to break out.

Rakesh Pandey
Global BU Head
Manufacturing Vertical, Xchanging
info@xchanging.com

## 3D printer for makeup, an immediate market disruptor - the good

One of the TechCrunch Disrupt finalists made a splendid case for how beneficial 3D printing can be. Though she did not win the competition, her company, Mink, gave a glimpse of how 3D printing is taking on the world. Mink is a 3D printer that can print makeup like blush, eye shadow and lip gloss by choosing any color that is available on the internet. For retailers, it does not get more disruptive than this. The product can simply replicate the exact right shade you want in a matter of minutes. During her presentation, she took less than 50 seconds to print the final product.

The additive nature of 3D printing eliminates wastage and uses few raw materials. In this case, the chosen color is printed on a powder substrate; the dye is FDA compliant and has all the backing and the printer retails for about $200. It offers




**3D printing is continuing to revolutionize manufacturing in various industries.**

Source: depositphotos.com

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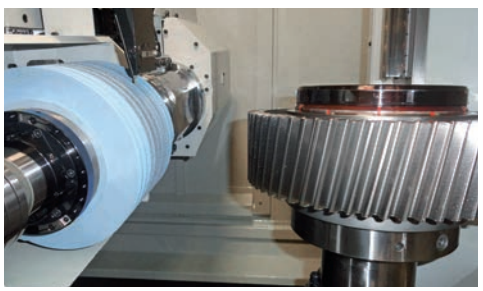

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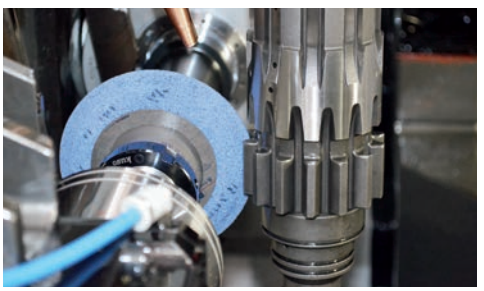

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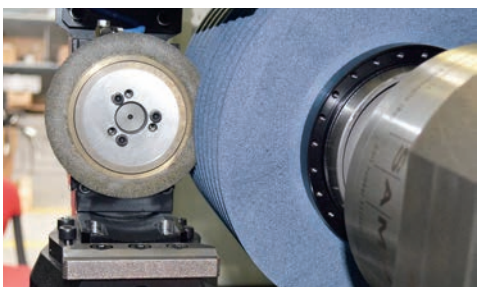

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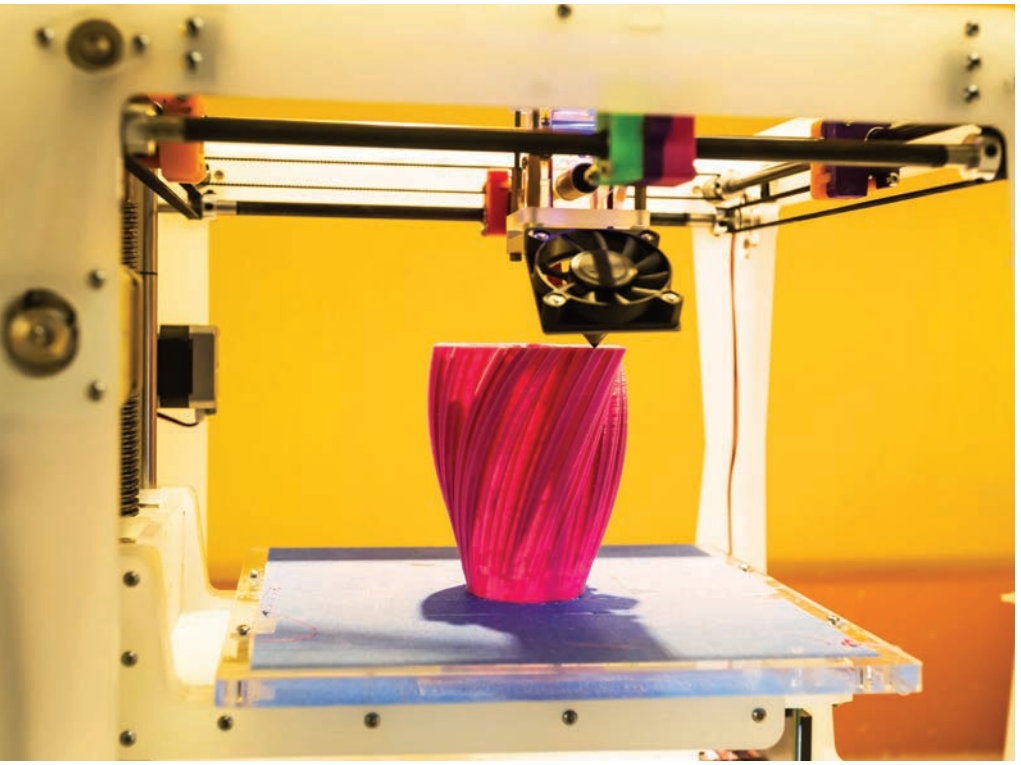

Source: depositphotos.com

**Customization can be easily carried out on each component manufactured using 3D printers in terms of color, size, material and texture.**

the kind of mass customization the 21st century absolutely should have. The cosmetic products market value is projected to grow at a CAGR of 6.3 per cent from 2012 to 2019 according to ReportsnReports.com. A $635.7 billion market is going to be disrupted by a $200 product.

And there is plenty of good; another noteworthy mention that has been touted often is the ability to help astronauts. A 3D printer can be used to print crucial objects in space, minimizing the risk of malfunctions.

## Making guns on the move - the bad

Not too long ago, a Texas based company successfully fired its first 3D printed gun. The company that made the gun is run by a 25 year old law student who was inspired by 19th century anarchists and believes that guns should be freely available. More than 100,000 people downloaded files on how to make the gun, in less than two days. The government had to step in and request the student to pull down the files from the internet.

If all that does not send you into a tizzy on the kind of dangers which 3D printing possesses, there is more to come. Fifteen of the 16 pieces for the gun can be made by buying the company's $8,000 printer. The only other piece needed is a simple nail, which acts as a bullet for the gun - something available in abundance. It is a veritable nightmare not only for the government but the end user too. Should someone buy the printer and make the gun, we are not sure if the plastic can withstand the power the gun generates. The gun might backfire, proving lethal to the person holding it and his surroundings.

Apart from all these humongous problems, imagine how potent the product would be in the wrong hands. The enormity of 3D printing's replication is one to be weary of and this is a simple example how dangerous it can be. Luckily, it is not too late for stringent laws to curb these evils. However, the process still remains a work in progress.

## Laying waste to years of R&D - the ugly

A company's intellectual property is one of its most valuable assets. Multinationals purchase smaller rivals primarily for gaining access to their patents and copyrights. To give a rough idea of the kind of investment that goes into a product, consider a brief explanation of how a drug is approved.

First, the drug is tested in preclinical trials - in animals such as rats to see if they are safe. After different stages, the regulatory body analyses the data presented and quizzes the company on processes involved and approves the drug for human trials. Following this, a company has to invest in three clinical trials. In each phase the company has to prove the efficacy and safety of the drug. The regulatory bodies take their time to evaluate the company's claims at each stage. To sum it up, on an average, a drug can take anything between 5-10 years to get approved. And at any stage if it does not prove complete safety and definitive efficacy, the investment is rendered useless and the company pulls the plug on trials. Imagine the scope of investment needed and the intellectual properties the company obtains in the process. It is no wonder that companies' patent methods, trademarks and processes involved - because it is expensive.

A 3D printer makes a mockery of these strategic investments. Innovation is built on the preservation of intellectual property rights. If and when 3D printers become easily available for end customers, how can a company or a governmental body track the kind of goods being printed? A corporation can be gagged, but one cannot measure the scope of intellectual property infringement without violating half a dozen privacy laws. Even if this is enforced, it is just not cost effective in supervising and building a case against each and every person with a 3D printer violating IP laws. The predicament is a tough one and there are no immediate answers.

## Conclusion

Since the industrial revolution, we have lived by the norms of mass production. Assembly line manufacturing dictated the terms and conditions of what we wear, what we eat and how we move, the products we use and more. In the 21st century, standardizations of products seem obsolete. Everyone is jostling for something catchy, something different, something unique and 3D printing is especially lucrative in that sense - mass customization. It allows end consumers to hand pick their products; a virtue of how humanity has progressed under technology's aegis.

Sure, it comes with a plethora of problems, but history suggests that suppressing a product has only ensured its proliferation. Luckily, the technology itself is at a nascent stage, allowing corporations and governments to modify the product to suit the greater good. We will need stringent enforcements and a comprehensive framework before 3D printers are up and running for the masses. MMI

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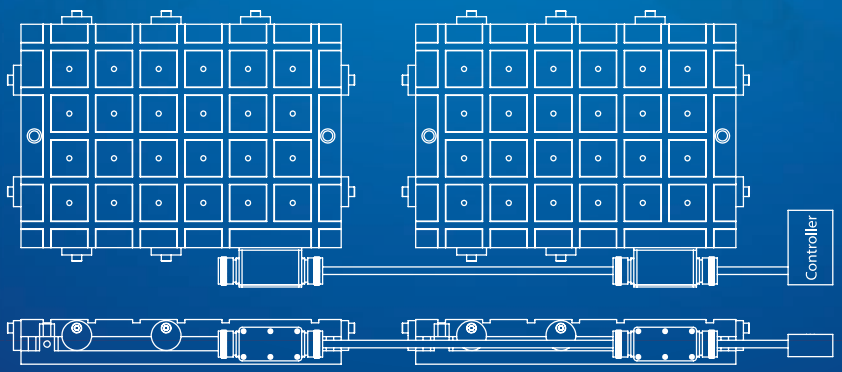


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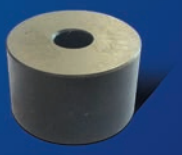

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### EVENT CALENDAR

| Event Name | Contact | Date & Venue |
|---|---|---|
| IMTEX 2015 | Balasubramanian Pillai<br>E: bala@imtma.in<br>www.imtex.in | January 22–28, 2015<br>BIEC, Bengaluru, India |
| SPS Automation India<br>Control India<br>Motek India | Anand Nair<br>T: +91 (11) 66762310<br>E: anand.nair@india.messefrankfurt.com<br>www.sps-automation-india.in | February 5–7, 2015<br>Mahatma Mandir Convention cum Exhibition Centre, Ahmedabad, India |
| ACMA Automechanika | Syed Mohd Javed<br>T: +91 (22) 61445900<br>E: syed.javed@india.messefrankfurt.com<br>www.acma-automechanika.in | Feb 26–Mar 1, 2015<br>Pragati Maidan, New Delhi, India |
| TIMTOS 2015 | Gin Yang<br>Tel: +886 (2) 2725 5200<br>E: timtos@taitra.org.tw<br>www.timtos.com.tw | March 3–8, 2015<br>Taipei World Trade Centre, Taipei, Taiwan |
| Metal+ Metallurgy China 2015 | Constance Chen<br>T: +86 (0) 2150456700281<br>E: constance.chen@hmf-china.com<br>www.mm-china.com | March 31–April 3, 2015<br>China Expo Complex (Shanghai Hongqiao), Shanghai, China |
| Shenzhen International Machinery Manufacturing Industry (SIMM) | T: +86 (0)75583458909 / 83459904 / 83459974<br>E: mkt33@simmexpo.com<br>www.simmexpo.com/MMI | March 30–April 2, 2015<br>Shenzhen Convention & Exhibition Center, Shenzhen |
| Northwest Machine Tool Expo | T: +1 (800) 5477377<br>E: info@cygnus.com<br>www.machinetoolexpos.com | April 1–2, 2015<br>Oregon Convention Center, Portland, US |
| INTEC 2015 | T: +91(422) 2222396<br>E: intec@codissia.com<br>www.intec.codissia.com | June 5–9, 2015<br>Codissia Trade Fair Complex, Coimbatore, India |
| IMTOS 2015 | Kamlesh Gohil<br>T: +91(0) 9328899503<br>www.kdclglobal.com | July 4–7, 2015<br>Pragati Maidan, New Delhi, India |
| Automotive Engineering Show (AES) | Sameer Khedkar<br>T: +91 (22) 61445900<br>E: sameer.khedkar@india.messefrankfurt.com<br>www.aes-show.com | July 7–9, 2015<br>Chennai Trade Centre, Chennai, India |
| Cambodia International Machinery Industrial Fair | Phnom Penh<br>T: +855 (235) 553219<br>E: service@chanchao.com.tw<br>www.camboexpo.com | August 21–24, 2015<br>Diamond Island Convention and Exhibition Centre, Cambodia |

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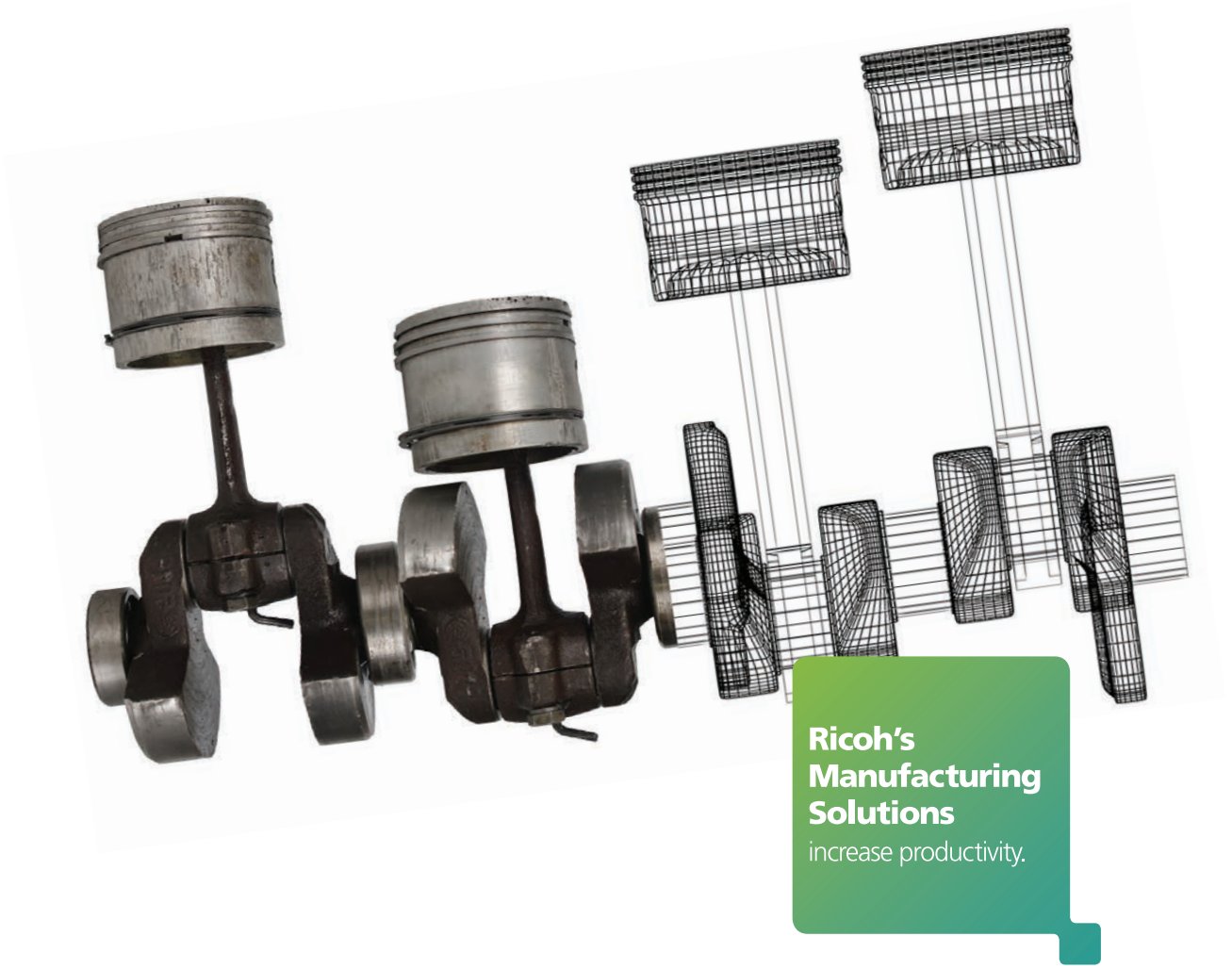

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# Spell bound with ALUCAST 2014

The event proved to be a successful one with the exhibition witnessing massive footfall.

The 6th edition of ALUCAST 2014 was held from December 4–6, 2014 at the Bangalore International Exhibition Centre, Bengaluru, India. The event witnessed cooperation for the first time between the Aluminium Casters Association of India and NürnbergMesse India. ALUCAST 2014 concluded on a successful note by recording a marked growth both in terms of exhibitors and visitor footfall.

The high profile exhibition attracted 107exhibitors and 2,686 focussed visitors, covering a total area of 4,200 m$^2$. International participation at the event attained new heights with the participation of overseas exhibitors such as Germany, Switzerland, Italy, Japan, China, Taiwan, Spain, etc.

## Dignitaries at the event

ALUCAST 2014 was inaugurated in the presence of President, ALUCAST & Managing Director, Force Motors, India, Prasan Firodia and Member Management Board, NürnbergMesse, Germany, Rolf Keller. The chief guest at the exhibition was Director BMW, IPO India, Hilmar Weber and the guests of honour included Member Executive Board and President of Division Advanced Materials, Buehler AG, Switzerland, Samuel Schaer and General Manager, Kolbenschmidt, Lothar Schneider. The inauguration ceremony was followed by the felicitation of Trustee & Former President, ALUCAST and former Vice President, Sunbeam Auto, Pran Sadhu.

## ALUCAST Foundry awards

The ALUCAST Foundry awards honour the best in the business and are selected on specific parameters on which the nominated die casting organizations are judged. In this segment, Jaya Hind Industries was awarded the Best Foundry in the large scale section, castall in the medium scale category and alubee die-casters in the small scale segment.

The exhibitor spectrum at the event included a range of different products and services such as aluminum die casting, aluminum recycling, automation of casting process, melting practices and metal treatment, post casting operations, etc.

## Networking opportunity

Speaking about ALUCAST 2014, Firodia said, "The event emerged as a perfect convergence platform for numerous stakeholders across the aluminum die casting industry and attracted exhibitors and visitors from across the globe. With the appointment of the new government, the industry now expects an environment that will revitalize the manufacturing sector, especially the automobile sector. One can already see encouraging signs with the Union budget supporting infrastructure and increased private investments. Also, the new foreign trade policy for 2014-2019 is designed with a long-term strategy to boost the manufacturing sector and to bring it in line with the 'Make in India' goal. With the goals of the new regime, ALUCAST 2014 provided the right platform for the aluminum castings industry to come together and carve a bright future."

Speaking on the occasion, Managing Director, NürnbergMesse India, Sonia Prashar said, "ALUCAST 2014 perfectly fits the existing portfolio of NürnbergMesse Group's long-established die casting industry events in other regions. At this year's edition of ALUCAST, we had a record number of over 100 exhibitors and 3,000 visitors from more than 10 countries including China, Japan, Germany, Switzerland, Taiwan, Italy and Spain—a marked growth from the event in 2012. These impressive numbers correspond to the growing importance of the die casting industry in India. It has seen enormous growth over the last years, especially in its role as a supplier of the booming automotive sector. At ALUCAST, we offered a business platform which gave participants an opportunity to showcase the latest products and services on offer and network with the global audience."

The theme of this year's conference was 'Light weighting of Aluminium Castings.' Experts of international repute presented papers during the conference thus, sharing their knowledge and expertise. All the presentations provoked high levels of interactive Q & A sessions amongst the audience. MMI

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Source: NürnbergMesse India

**ALUCAST 2014 emerged as the perfect convergence platform for numerous stakeholders across the aluminum die casting industry.**

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# IESS IV: A Platform for Making New Alliances

This edition of India Engineering Sourcing Show (IESS), an annual event organized by Engineering Export Promotion Council (EEPC), India achieved new heights. With the parallel sessions of conferences, seminars and workshops, the event created an excellent platform for networking and making new alliances. Here is a report.

Thanks to the presence of foreign delegation and enthusiasm of Indian manufacturers, India Engineering Sourcing Show (IESS) IV was a grand success. The show, which was organized by EEPC India, was declared open on December 16, 2014. His Excellency Ambassador of the Republic of Poland to India, Tomaz Lukaszzuk; Secretary, Department of Commerce & Industry, Rajeev Kher; Chairman, EEPC India, Anupam Shah along with other dignitaries inaugurated the event.

Compiled by:
Swati Deshpande
Associate Editor
Vogel Business Media India
swati.deshpande@vogel.de

## Inauguration

With the aim of strengthening trade ties, Poland was chosen to be the partner country for this edition of IESS. Talking about it, Lukaszzuk said, "It is a great honor to be a partner country in the show like IESS. India and Poland have a long history of trade relationship. It will further be reinforced by such initiatives."

Realizing the need of marketing tools to take Indian engineering goods across the seas, Kher mentioned, "The engineering sector needs to be aided with the right promotional and branding activities. IESS is a platform for companies to brand and market themselves."

During the inauguration ceremony, EEPC India also celebrated a milestone of stepping into the 60th year by launching a new logo. Speaking on the occasion, Shah stated, "For the last 60 years, the council is working with the sole aim of promoting Indian engineering exports. IESS is a result of the same goal. This platform has been created for small and medium sized engineering companies to showcase best of its capabilities."


Source: EEPC India

**Dignitaries inaugurated IESS IV by cutting the ribbon.**

## Creating new ties

Along with the exhibition that displayed innovations and advanced technologies, EEPC India had also arranged various forums, meets and programs for participants. These initiatives helped SMEs create new ties with foreign collaborators. Two simultaneous tracks of global sourcing meets gave immense information to all the participants on various resources to bid for foreign projects and becoming suppliers. On the other hand, the India-UAE Business Forum and Indo-Polish Partnership Forum offered a platform to forge new associations and discuss business opportunities in the respective nations.

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IESS IV

Additionally, EEPC India had organized the CXO Forum, its annual interactive panel discussion among the industry leaders as panelists, to promote exports from the manufacturing sector in India. The panelists presented their thoughts and opinions on the topic of 'Manufacturing in Vibrant India'. On the other hand, a seminar on 'Skill Development in Manufacturing Sector' offered a platform for participants to discuss the need and know-how of the skills development in the manufacturing sector.

The other initiatives such as Branding Workshop, Conference on Smart Cities, Global Sourcing Meet, Innovation and Technology Summit, Reverse Buyer Seller Meet gave a new dimension to the manufacturers' approach towards foreign trade.


Source: EEPC India

**An animated discussion at the panel discussion on attracting investments organised by Modern Manufacturing Indian (MMI).**

## Attracting Investments: Make Your Business Grow

Modern Manufacturing India brought together leading names from the industry and government to talk about the importance of skill development, technology and knowledge transfers and global sourcing. During the seminar, panelists National Sales Manager, TRUMPF (India) Pvt Ltd, Mohammed Hidayath; General Manager, BDB India Pvt Ltd, Manish Kulkarni; Regional Chairman (SR), EEPC India, Mahesh K Desai; IAS, Additional Director General of Foreign Trade – Mumbai, Dr Kavita Gupta; General Manager Integrated Marketing & Supply Chain, Walter Tools, Manas Majumder; Working Committee Member, EEPC India, CS Shukla; President, MAG India, Eswari Prasad; Managing Director, Mark Enterprises, Prashant Bandewar and Vice President, Upasana Engineering Ltd, V Arumugam discussed various issues concerning trade, skill, and need gap to be addressed to grow their businesses further. Managing Director, VDMA India, Rajesh Nath moderated the discussion addressing various key points.

The informative discussion turned animated with outstanding participation from the audience.

The conclusion was that there are no shortcuts or magic spells to success. In order to attract investment key factors such as knowledge, skill, infrastructure and quality need to be up to the mark. If only one aspect is concentrated upon or on the other hand if even one is missed out, leveraging on opportunities will be difficult.


Source: EEPC India

**Panelists discussing various issues during the conference organised by Modern Manufacturing Indian (MMI).**

## Vision in manufacturing – 2015 Vs. 2030

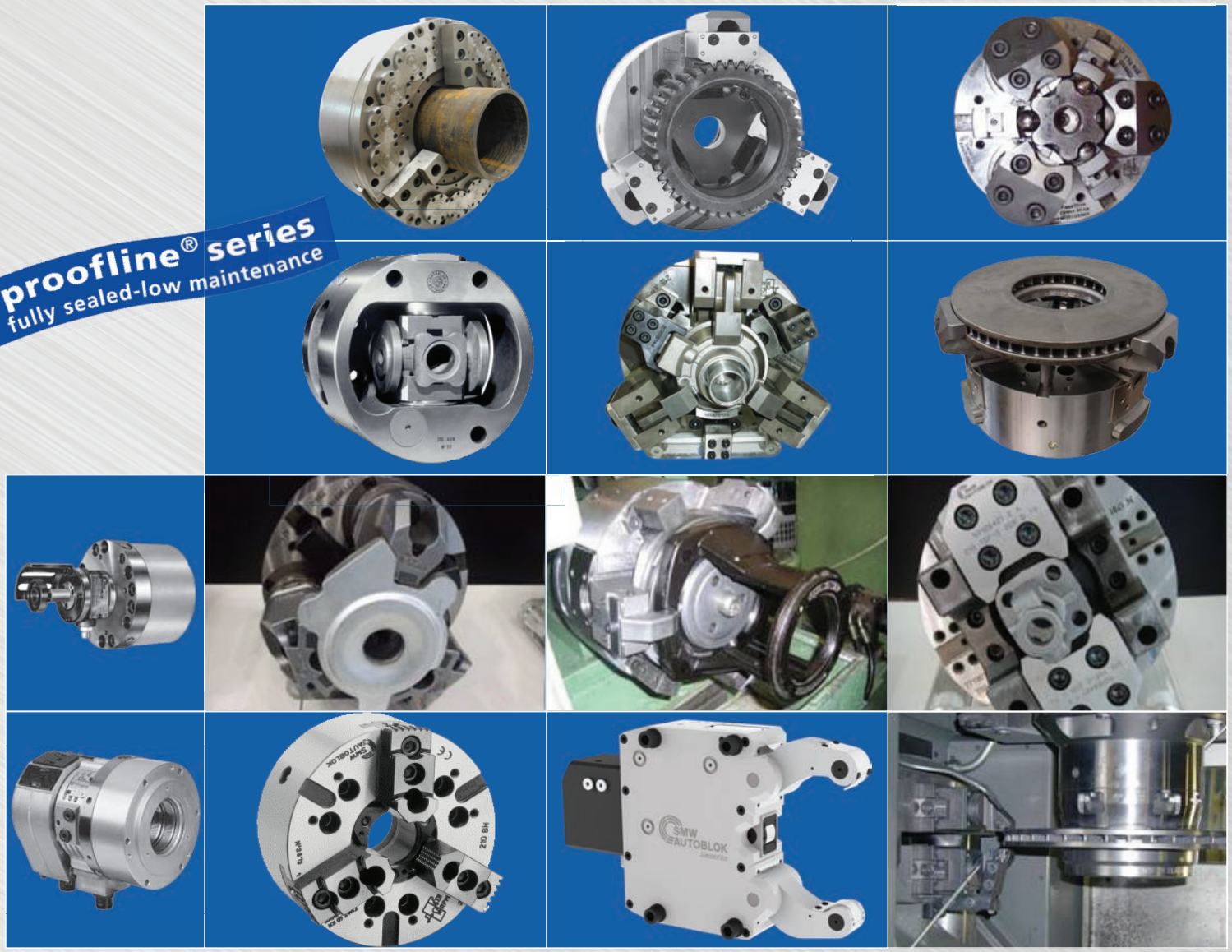
The second conference that Modern Manufacturing India organized was on the topic of 'Vision in manufacturing – 2015 Vs 2030'. This discussion was moderated by Director – Automation and Electronics Practice, South Asia & Middle East, Frost & Sullivan, Niju V. Eminent personalities in the industry such as CEO, Micromatic Machine Tools Pvt Ltd, TK Ramesh; President – India Sales & Operation, United Grinding, Sreekanteshwar S; Executive Vice President – Tooling Division, Godrej & Boyce, DK Sharma, President, Nickunj Eximp Entp P Ltd, Robindra Nath Som; Global Delivery Head, Blue Star Info Tech, Ramesh Subramanian; Regional Director, EEPC India, Anoop Marwah shared their thoughts on the future of the industry.

This discussion brought out various challenges that the Indian manufacturing industry faces. Additionally, active participation from the audience provided food for panelist's thought. The talk took an interesting turn when solutions to conquer the challenges and goals for 2030 were discussed.

## Conclusion

Charting the path for the future, such healthy discussions gave a definite direction to the industry players to move forward. Additionally, it initiated trade relationships with the foreign companies.

The event ended on a positive note with the promise to bring various opportunities with it next year. MMI

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[6 Days] Schedule : May | September | February

Source: Messe Frankfurt Trade Fairs India Pvt Ltd

An exhibitor explains features of the displayed products to the visitor at the previous edition of SPS IPC Drives.

# Control India, Motek India and SPS Automation India 2015

Together, Control India, Motek India and SPS Automation India will showcase their innovative technologies at a unique platform which addresses the technology requirements of the Indian market. This event will present top-of-the-line automation, assembly line and quality control solutions from February 5–7, 2015, at the Mahatma Mandir Exhibition and Convention Centre, Gandhinagar in Ahmedabad, Gujarat.

Post the Indian Government's popular 'Swachh Bharat' campaign, the other major initiative undertaken by the government is the 'Make in India' initiative. In order to promote this idea further, Messe Frankfurt Trade Fairs India Pvt Ltd has announced three of the world's most premier fairs—Control India, Motek India and SPS Automation India—to take place simultaneously so that the industry leaders stay updated on the latest technologies in the market.

Compiled by:
Ahlam Rais
Senior Sub Editor
Vogel Business Media India
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## Debut performance

Control India and Motek India will enter the Indian market for the first time between February 5–7, 2015, together with SPS Automation India which is derived from Europe's premier event for electrical automation SPS IPC Drives. Control India is a specialist trade fair dedicated to quality control, R&D, instrumentation and inspection technology while Motek India will showcase technologies for material handling in the form of automation solutions, pneumatics and applied robotics.

Centered in one of India's highly industrialised state of Gujarat, this mega trade fair will prove beneficial in bringing about innovations in the field of material handling in production, assembly line, quality control and optoelectronics technology, all under one roof and thus, pave the path to provide Indian manufacturers access to more competitive and cutting-edge solutions.

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Control India

## The number game

Encouraged by the government's initiatives, Indian companies and industrial houses are looking forward to invest in quality automation processes in order to maximise their operational efficiency. Apart from this, some other interesting

facts such as the Indian manufacturing sector is projected to touch $1 trillion by 2025 and will also open up invaluable opportunities for automation and inspection technology solution providers eyeing this market has left the industry leaders asking for more.

## Perfect platform

As Messe Frankfurt Trade Fairs India Pvt Ltd has a strong presence through their mega trade fairs in India and also specializes across varied sectors such as automotive, textile, lighting, security and environmental technology, the co-joint fairs are expected to attract attention from the crème of various industries. This event will be the perfect opportunity for sector players to strengthen their linkages within the end user sectors such as pharmaceuticals, gems and jewellery, oil and gas, petrochemical, etc.

## Exhibitors speak

Enthusiastic about the event, Director, Pepperl+Fuchs Pvt Ltd, Ravi Agarwal mentioned, "SPS Drives & Automation debut show 2015 in India happens at a very opportune time when our country is in the cusp of the next and an expanded phase of automation and manufacturing. We believe that not only it shall introduce the best and latest technologies and products for automation but also create the very necessary network and community in this domain in our country. We are proud to participate in this show and look forward to the success of this highly awaited event".

In addition to this, Managing Director, SICK India Pvt Ltd, Atul Dave added, "We for sure feel that SPS Automation India 2015 will offer all the visitors a new and perfect platform to source the right solutions for their automation tasks. To compliment that, SICK is offering a combination of various evolving technologies."

Source: Messe Frankfurt Trade Fairs India Pvt Ltd

**Visitors at SPS IPC Drives discuss the mobile solutions.**

On a positive note, Managing Director (Marketing and Sales), Micro Epsilon, Johann Salzberger said, "SPS Automation India is important for our company as the country is a growing economy with different industries, which will need precise sensors for their machines and devices to optimize the production processes in the future."

## On a growth mode

The Indian manufacturing sector is booming and how! This segment has become very competitive at the global level and has also proved its mettle as a manufacturing and supply hub in several verticals. A sophisticated trade and networking platform such as this will bring together stalwarts from various segments such as sector players, technology experts and professionals from the design, manufacturing, production, analysis and consultation sides together to network and experience new technology and innovations.

## In the know

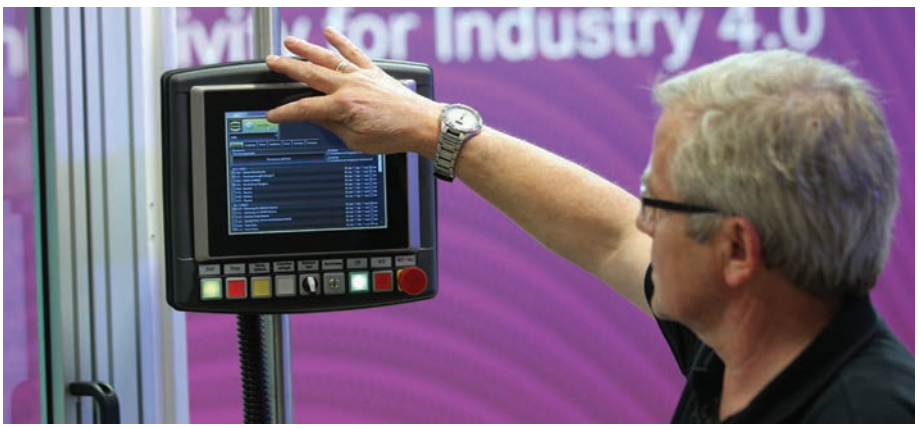
Captains and frontrunners in providing automation solutions, Pepperl+Fuchs, SICK India Pvt Ltd, Baumer Technologies India Pvt Ltd, Delta Electronics India Pvt Ltd, Endress+Hauser India Pvt Ltd, Geissel India Pvt Ltd, Harting India Pvt Ltd, IFM Electronic India Pvt Ltd, Micro-Epsilon, Omron India, Themis Automation (Murr Electronik), Nikon India Pvt Ltd, Vipa Automation India Pvt Ltd and many others have confirmed their participation for SPS Automation India 2015 which is dedicated to automation and applied solutions.

## Supporting role

A technical conference has also been planned alongside the three fairs to provide sector professionals an understanding of new processes and technology trends, making a head way in the manufacturing sector. The conference is supported by Frost and Sullivan and AMA Association for Sensors and Measurement, Germany and will invite delegates from all sectors of inspection and manufacturing.

## Conclusion

One must attend this technology driven mega fair to stay tuned to what's in and what's new in the technology zone. It's time to widen our 'Make in India' initiative and make it count by implementing it in the Indian context. So come join us to make it count! MMI




Source: Messe Frankfurt Trade Fairs India Pvt Ltd

**Visitor having a close look at the solution displayed by the exhibitor at the previous edition of SPS IPC Drives.**

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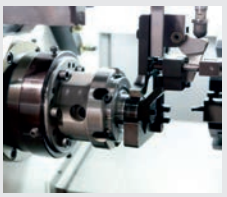
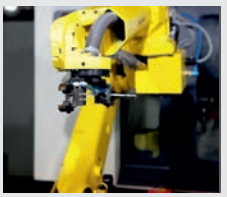


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# Driving in...

ACMA Automechanika New Delhi 2015 gears up to present a reliable platform to identify and source genuine aftermarket products.

As vehicle manufacturers rapidly embrace safety standards, battling the burgeoning counterfeit business has become even more important. Concerned with the growing number of spurious auto parts, roughly estimated to be 36 per cent of the automotive aftermarket in India, the Automotive Component Manufacturers Association of India (ACMA) together with Messe Frankfurt has taken a strong initiative to address the rising concerns on counterfeit products sold in the replacement market at the second edition of ACMA Automechanika New Delhi to be held from February 26–March 1, 2015, at Pragati Maidan, New Delhi.

"The recent thrust by the government on vehicular safety is indeed very critical towards the future development of the Indian automotive industry and aftermarket. Mobilising participation from the biggest players of auto parts and components, ACMA Automechanika New Delhi will present a reliable platform to source aftermarket products, apart from educating the industry and consumers through Messe Frankfurt's global initiative 'Messe Frankfurt Against Copying', ACMA's 'Asli Naqli campaign' and the various conferences at the trade fair," Executive Director and Board Member of Messe Frankfurt Asia Holding Ltd, Raj Manek said.

Compiled by:
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## Huge participation

Over 400 companies from Brazil, China, Germany, India, Indonesia, Italy, Korea, Malaysia, Spain, Taiwan, Thailand and the UK will showcase their latest auto parts and accessories at ACMA Automechanika New Delhi 2015, this February. Leading players in the auto component and vehicle accessory space such as ANG Industries, Luk India, Setco Automotive Ltd, Shriram Pistons & Rings Ltd and ZF India have confirmed their participation as a gold partner for the second edition of the fair while others such as Ample Auto Tech Pvt Ltd, Elofic Industries, Mayur Uniquoters, Mansons International Pvt Ltd, Sigma Corporation India Ltd, Delphi Automotive Systems Pvt Ltd and many others are geared up to showcase the latest in auto parts and accessories that will keep the Indian aftermarket players on the road to business success.

With a 60 per cent increase in the number of exhibitors, the occupied space marks a 90 per cent increase compared to the launch edition of the show in 2013. Leading auto component supplier, Mansons International Pvt Ltd intends to bring anti-vibration, axle and suspension components, body parts, steering components and repair kits and fifth wheel components and repair kits while Setco Automotive Ltd will showcase clutches for medium and heavy vehicles. TVS RUBBER, one of the leading companies for Automotive and Industrial Moulded Rubber Products in India, will also bring a host of rubber parts, suspension and mounting products to the show.



## Industry concerns

Some of the most critical auto parts required for the safe operation of vehicles are among the most commonly counterfeited products available in the market with grave implications with respect to public safety and revenue losses to the government. These losses stood at around Rs 2,200 crore (USD 3.56 million) per annum to the exchequer in 2011. Commenting on the importance of the show to the automotive industry, Director General, ACMA, Vinnie Mehta says, "A strong effort to combat counterfeiting starts with helping the sector to evolve into an organised one, ensuring genuine-product availability by deepening the distribution chain and devising strategies to bridge the price gap is the need of the hour."

## In conclusion

A burgeoning middle class with spending power and upward mobility along with India's growing focus on vehicle safety assessments is set to stimulate demand for auto parts business and safety technologies. With Indian car buyers getting younger and used car market gaining momentum, demand in the automotive aftermarket is expected to gain further traction in 2015. Focusing purely on the needs of the growing aftermarket sector, ACMA Automechanika New Delhi will thus make an important sourcing destination for new ideas, tools and industry insights. MMI

Source: Messe Frankfurt

**Exhibitor and visitors at the last edition of ACMA Automechanika.**

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Source: TAITRA


**TIMTOS is one of the top five machine tool exhibitions held in Asia.**

# Platform for Product Excellence

They say if you want to know the true nature of a place, one must visit the locals. The first thing you notice when you meet the people of Taiwan is their eagerness to help and the quality with which all their work is done. This practice follows suit even in the way they conduct their business. The Taiwan External Trade Development Council (TAITRA) recently arranged for five journalists from across the world to visit Taiwanese machine tool companies and get a small glimpse of what the Taipei International Machine Tool Show (TIMTOS) 2015 has in store.

The Taiwan External Trade Development Council (TAITRA) founded in 1970, is a non-profit trade promotion organization in Taiwan. TAITRA assists Taiwan businesses and manufacturers with reinforcing their international competitiveness and in coping with the challenges they face in foreign markets.

In lieu of the forthcoming Taipei International Machine Tool Show (TIMTOS), the organization arranged for five journalists to visit the country and gain a glimpse into the caliber of what Taiwanese machine tool companies have to offer.

## The press conference

The five day journey began with a press conference, wherein Deputy Executive Director, Exhibition Department, TAITRA, Brian Lee and Vice Chairman, Machine Tool Committee, Taiwan Association of Machinery Industry (TAMI), David Chuang spoke various local and international journalists about Taiwan, TIMTOS and its offerings.

Lee welcomed the audience and thanked the industry for its support in making TIMTOS successful. Speaking on this year's theme—High efficiency automated production—Lee commented, "The expo's theme is to promote upgraded industrial manufacturing technology that decreases labor while boosting output through intelligent, automated production technology."

Various companies will display the best solutions they have to offer the industry to help increase productivity.

Taiwan's machine tool industry is one of the most competitive industries; highlighting this, Lee shared some recent statistics of the country: "Taiwan ranks 4th in the global list of machine tool exporters, with its exports amounting to $3.5 billion in 2013. Export value of Taiwan's machine tool from January–August 2014 reached $2.4 billion, a 5.2 per cent growth compared to the same period last year. Export growth in emerging markets is also promising, which showed a growth of 11.1 per cent for Malaysia, 17.8 per cent for Vietnam and 19.3 per cent for Turkey."

Chuang also added to this: "The total export value of Taiwan machine tool industry from January to September in 2014 edged up by reaching $2.8 billion, a 6.6 per cent growth

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Platform for Product

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compared to the same period last year. In the ranking list of the countries Taiwan exports to, from January to September in 2014, Mainland China ranked the first with the export value of $925 million, accounting for 33 per cent of the total exports, an increase of 8.8 per cent compared to the same period last year. The USA came in second with the export value of $303 million, making up 10.8 per cent of the total, a 4 per cent increase compared to the same period last year. Turkey ranked the third with the export value of $158 million, an increase of 19.3 per cent compared to the same period last year."


Source: TAITRA

**Winners of the Excellency awards at TIMTOS 2013.**

## The Facility Visits

Among five publications Modern Manufacturing India was invited to visit Taiwanese companies. This included seven companies in total were visited, namely, WELE Mechatronic Co Ltd, Systec Technology Co Ltd, Ching Hung Machinery & Electric Industrial Co Ltd (CHMER), HIWIN Technologies Corp, Shuz Tung Machinery Industrial Co Ltd, Chin Fong Machine Industrial Co Ltd, Yang Iron Precision Corp (YIPC).

Each of these companies is launching new technology and models at TIMTOS. The other common factor between all these companies is the importance they place on being the best by investing in processes and people. A walk in each facility showcased the caliber of Taiwanese tool makers; their ability to make their vision a reality is seen through the unending innovations the companies bring out.

Also, it is clear that these companies have a flexible manufacturing clout and resilience that offers customized and highly tailored products as per customer requirements and quality at reasonable prices.

If these products are anything to go by, TIMTOS 2015 will definitely be a one-stop-shop for everyone who wants to get access to the best of the best.

## Why TIMTOS

Taiwan's flagship biennial show, TIMTOS, is co-organized by TAITRA and TAMI. The 25th edition will cover every inch of the 100,000 $m^2$ space at the Nangang Exhibition Hall, TWTC Halls 1 & 3, and for the first time this year at the Yuanshan EXPO Dome.

The event is projected to smash a full slate of its own records by attracting a huge turnout of domestic and international buyers. Around 1,010 companies from 18 countries have already signed up to exhibit at the event utilizing 5,400 booths, which is a record number for this event.

Behind the growth of Taiwan's machine tool industry is the nation's agile industry cluster syndicate that easily allows producers to flex with the punches to alter production and even customize service for individual orders.


Source: TAITRA

**The foreign press delegation visiting HIWIN Technologies Corp.**

## The who's who of the industry

Taiwanese exhibitors present at this year's edition include a full line-up of all-star manufacturers that include well-known makers like Hartford, Victor Taichung, Goodway, YCM, Tongtai, QUASER, AWEA, CHEVALIER, CHMER, HIWIN, FFG and many more.

Foreign exhibitors are also setting records with 260 foreign manufacturers from 17 countries including Germany, Italy, Japan, Switzerland, Spain and the United States. Trade Office of Swiss Industries in Taipei (TOSI), which organized the Swiss Pavilion for 12 times is again organizing a total of 20 exhibitors using 105 booths. Among these is the German Trade Office, Taipei, with its German Pavilion, a joint operation with the German Federal Ministry for Economic Affairs and Energy (BMWi) and the German Machine Tools Builders´ Association (VDW). Association of Economy and Trade across Taiwan Straits (AETATS) will also be organizing the China Pavilion that joins machine tool stars like Mazak, DMG Mori, Yasda, Jtekt, Sodick, Mitsubishi, Trumpf, Kuka, Fanuc, Siemens, Bosch, Citizen, Igus and Blum.

The expo is expected to cater to 7,000 foreign buyers and more than 200 one-on-one procurement meetings that are expected to generate business opportunities exceeding $30 million.

## Conclusion

This year's edition already boasts of having more than 1,000 exhibitors, with approximately 5,400 booths. The expo along with its concurrent events will be one to look out for in Asia, as Taiwan has a lot to offer. See you at TIMTOS 2015! For more information on the same visit: www.timtos.com.tw MMI

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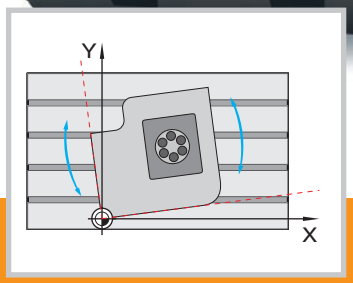


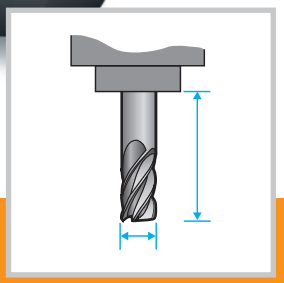

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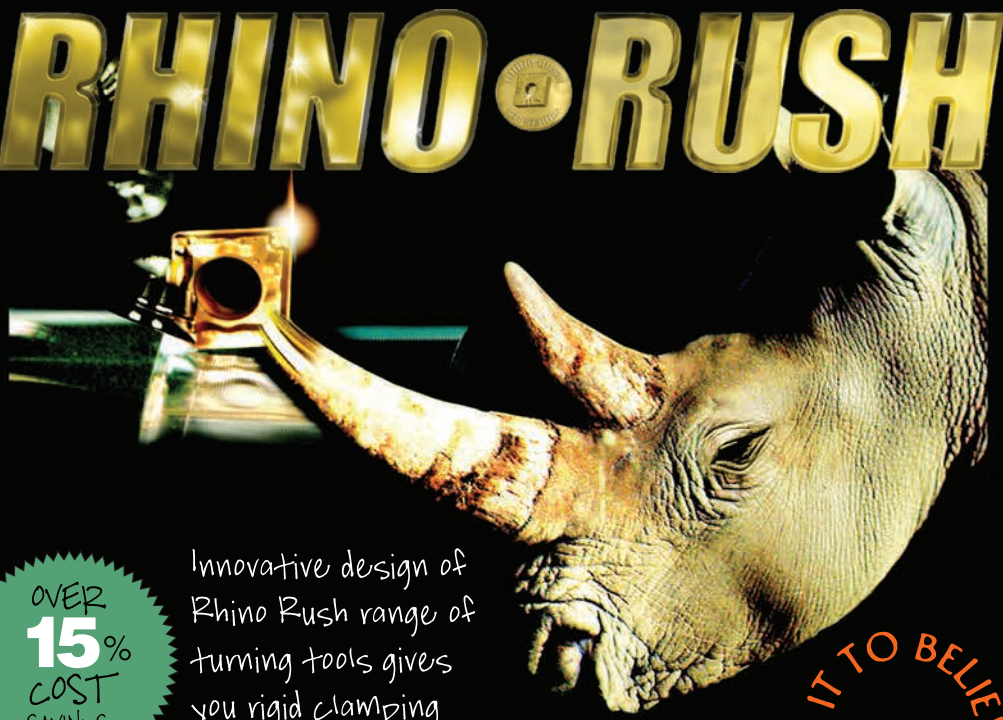

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