

# TAGMA TIMES

NEWSLETTER

(Technical Info. on Die, Moulds & Toolroom)

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January 2020



Trends that will  
Dominate the  
Industry in

2020



## In Conversation With

Raghava Badhya T V,  
President, Makino India Pvt Ltd

## In Focus

Manufacturing & Tooling Trends 2020



Die Mould India: "TAGMA to promote 3D Printing @ DMI 2020" .....p45

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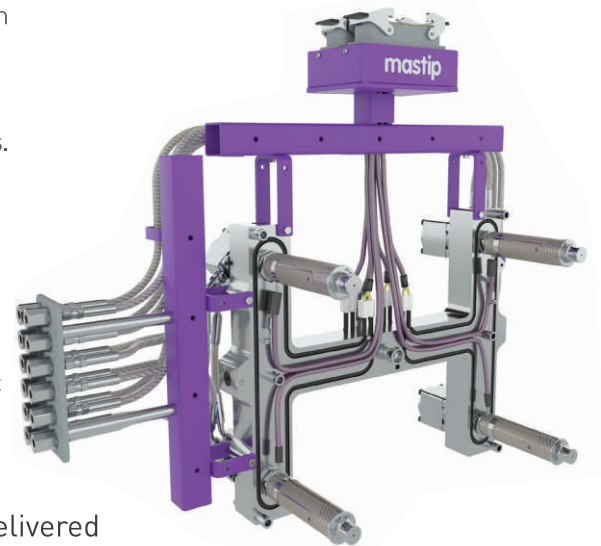
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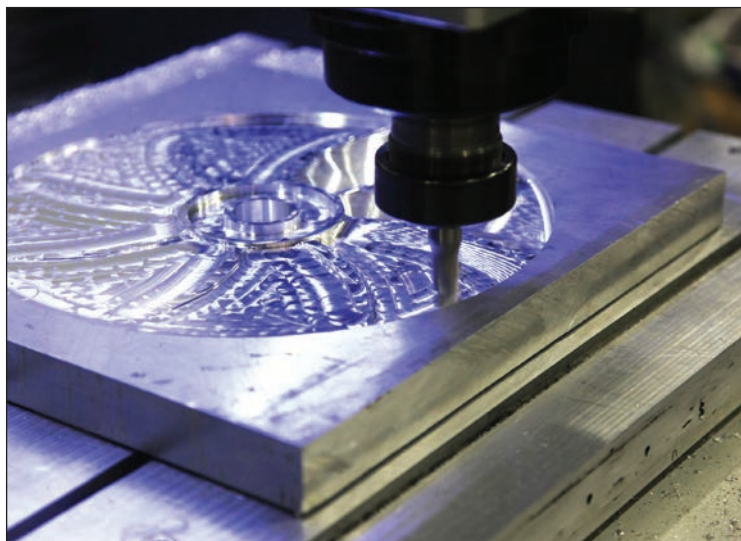
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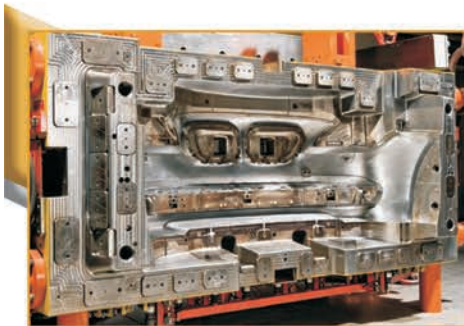
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# PRESIDENT'S MESSAGE



Dear All,

I wish you all a very Happy New Year!

**A**s we end 2019 with lots of uncertainties, I would like to still look at the positive side of 2019 and what 2020 has in store for all of us. Yes, 2019 was not the best year for us but it taught us some of the things that are important for our future. In 2019, we learnt that diversification is a must in order to survive, technology up-gradation and collaboration effort to be able to enhance our capacity.

In spite of lots of efforts by the Government to revive the condition of general economy and the Indian automotive, the mood among the SMEs is still not great. Till the time BS-VI stabilizes and OEMs are able to firm up as to which of their new models are selling, there will be uncertainties among the tool makers. With BS-IV, now more or less in place OEMs will have clarity on numbers over a period of time.

Toolmakers who are into exports are better off and those who are serving non-auto are also doing good. I see huge opportunities in sectors such as aerospace, railways, infrastructure, medical, amongst others. The challenge is how do we quickly align our resources to serve these industries as the skill sets and resources are different.

As I have always emphasized, tool makers must collaborate and work together to grab the big opportunities. Small tool makers alone may not be able to impress upon the large OEMs but joining hand with other tool makers they can showcase their enhanced capacity. It is a must for us to collaborate not only to grab the bigger orders but to learn from each other.

At TAGMA, we have lined up series of seminars and workshops to help tool makers venture into other industries. We will call subject experts to guide tool makers in developing skills and resources that are needed for the non-auto sectors.

At the end, I invite you all to the 12th edition of Die Mould India. I promise you will learn something new, develop fruitful contact and understand the technology trends. For any suggestions or registration, you may write to us at [tagma.diemould@tagmaindia.org](mailto:tagma.diemould@tagmaindia.org).

Best Wishes,

**D. K. Sharma**  
President

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## Embracing the future

wish you all a very Happy New Year, 2020!

Though the Indian economy and automotive industry were not at its best in 2019, I still believe that the year taught us a lot. Keeping those learnings in mind, let's make our way into a new decade.

Let's begin with good news. According to reports, India is expected to become the fifth largest manufacturing country in the world by the end of year 2020. Further, the government aims to achieve 25% GDP share and 100 million new jobs in the sector by 2022. This is also about digitalisation. As the 5G technology is widely adopted, we can already envision the changes it will bring. Smart manufacturing, cloud manufacturing, and the path to digitalisation look very smooth. Looking at the current state of the Indian manufacturing industry, we can say we are ready to embrace the change.

Having said this, as a backbone of the manufacturing industry, toolmakers will have to be ready to match the trends that are going to shape the future of the manufacturing industry. Many of these trends and technologies are poised to have a significant impact in 2020 and beyond, so it's critically important for manufacturers to develop a keen understanding of what they are, how they will grow over time, and how they will impact those within the industry.

In this edition, we highlight some of the trends that are going to shape the future of the Indian manufacturing industry and how the tooling industry can prepare itself for the changes.

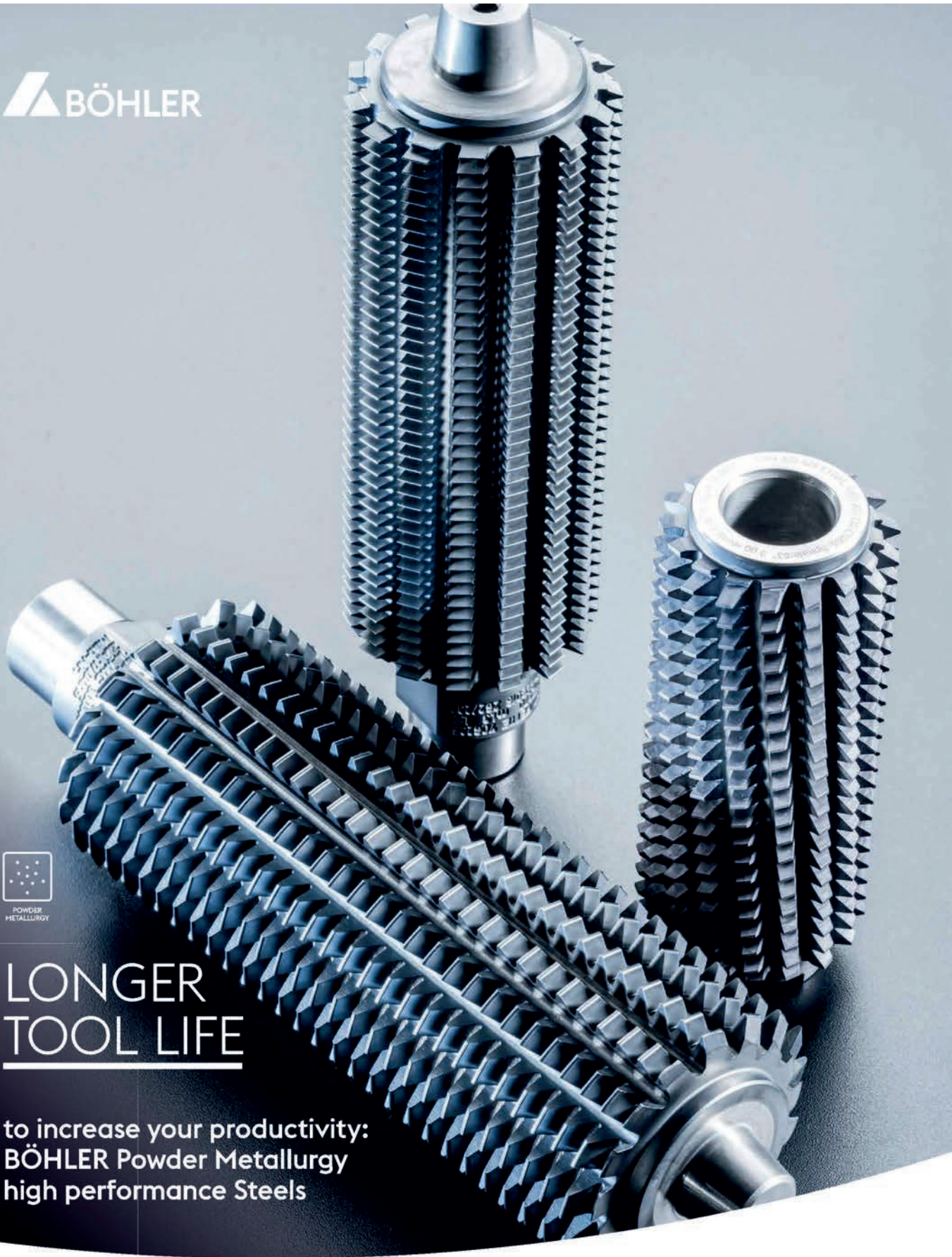
The new decade could be game-changer and disruptive in a way how we produce things, how we travel, and how we communicate. With the rapid evolution of technology, it would be wise to be thoroughly updated with new skills and knowledge.

We expect several technological changes across the manufacturing industry. Whether it leads to more opportunities or has an adverse effect, it depends on how we decide to invest our time and energy today.

On this note, I welcome you to a new era of the Indian manufacturing industry and wish you all a very successful and prosperous 2020!

**Nishant Kashyap**  
Editor  
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## Indian Railways Aims Big Transformation with Automation

**CONFEDERATION** of Indian Industry in association with Railway Board, Government of India organised a seminar on Indian Railways titled -Industrial Automation in a connected world- Technology in Transformation of Trains.

Indian Railways last year has already set key milestones towards growth, achieving significant growth in manufacturing and producing record number coaches to meet the domestic requirements as well as to make the industry export-ready. It has also achieved the Nationally Determined Contributions (NDCs) that are set under Paris Agreement for making long-term environmental impact.

"The year 2019 brought defining change in five areas of the Indian Railways, including passenger experience, bringing in various trend-sets, freight logistics, manufacturing and in maintaining environment. However, Technology is going to be the growth driver in 2020 and the country looks forward to international technology platforms like Innotrans 2020", said Mr. Rajesh Agrawal, Member Rolling Stock, Railway Board. The growth is expected not in exponential terms but in terms of transformation of technology trends, he said.

Prof Ashutosh Sharma, Secretary, Department of Science & Technology talked about the 'Five Ms' of Mechanics, materials,



Machine, Manufacturing and Men, which make the 'Society 5.0' in lines of Industry 4.0. Although machines have been the elements of growth in manufacturing, the interconnected aspects of machine, man and new insights becomes important while working with technology.

Parthsarathi Trivedi, Member, CII National Committee on Space and CEO and Co-Founder, Skylo Technologies said that several industries, from agriculture to railways are being transformed with data and need connectivity in geographies which are yet unconnected. Skylo has created a new satellite-based network to connect more than a billion global IoT devices which are yet unconnected, at 95% lower cost than any existing solution.

## Henkel opens new manufacturing facility near Pune

**HENKEL** Adhesives Technologies inaugurated its new production facility in Kurkumbh, India, near Pune. With a total investment of about 50 million Euro, the business unit aims to serve the growing demand of Indian industries for high-performance solutions



in adhesives, sealants and surface treatment products. Designed as a smart factory the new plant enables a wide range of Industry 4.0 operations and meets the highest standards for sustainability.

The state-of-the-art facility

admeasures 100,000 square meters and has a built-up area of 51,000 square meters which makes it India's largest adhesive manufacturing site. It will further increase Henkel's capabilities to serve customers across various markets including flexible packaging, automotive, agriculture and construction equipment, general industry and metals.

"India is one of the most important emerging markets with tremendous growth opportunities for our adhesives business", said Jan-Dirk Auris, Executive Vice President Henkel Adhesive Technologies. "Our trusted brands and leading solutions based on our unmatched portfolio of 40 technologies create sustainable value for our customers. With the launch of this state-of-the-art, multi-technology manufacturing facility, we have created capacities to meet the demands for our high impact solutions in this dynamic

market. This investment will enable us to further drive profitable growth."

The new site is equipped with state-of-the-art technologies to ensure traceability and transparency and to exceed the high standards for quality and safety in the industry. Designed as a smart factory with a high level of process automation it enables a wide range of Industry 4.0 applications. The end-to-end digitalization of the plant operations also ensures digitized workflows for a high efficiency in manufacturing.

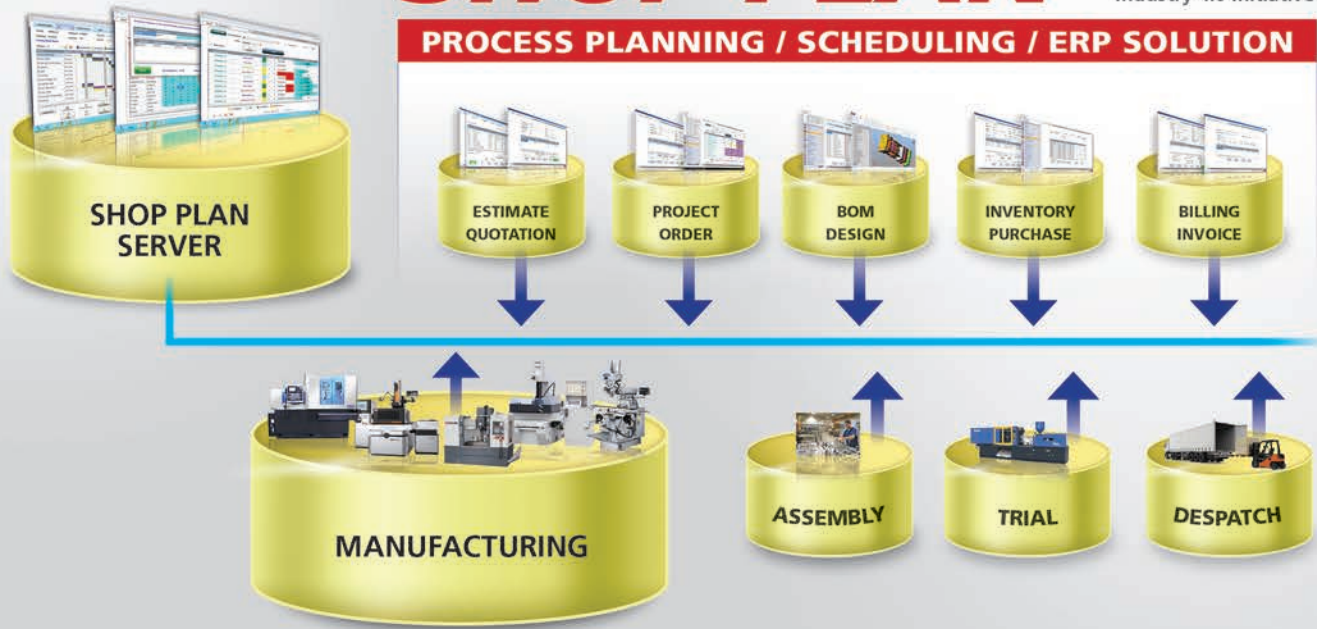
The new Kurkumbh site also meets the highest standards of sustainability. It is among the very few chemical manufacturing sites to be awarded the LEED Gold certificate by the US Green Building Council based on a holistic energy efficiency concept.



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## L&T MBDA Missile System sets up integration facility in Tamil Nadu

L&T MBDA Missile Systems (LTMMMSL) has set up a missile (inert) integration facility at Coimbatore. LTMMMSL is a joint venture between engineering and construction major L&T and the European defence company MBDA. L&T owns 51% stake in LTMMMSL while MBDA has 49%. The inert facility spreads across an area of 16,000 sq. meters in a Special Economic Zone and will cater to domestic and global markets. The company has set up the assembly line for inert integration (without explosives), testing the Missile Subsystems and weapon launch systems. Part of the Tamil Nadu Defence

Industrial Corridor, the investment in the facility is yet to be disclosed.

LTMMMSL has received a few orders and delivery of sophisticated weapon systems using state of the art test equipment is set to begin from this year itself, the company said in a release.

J D Patil, Chairman L&T MBDA Missile Systems, said: "L&T MBDA Missile Systems has been working proactively to offer advanced missiles and missile systems to the Indian Armed Forces through domestic production. The creation of this new integration facility

at Coimbatore is a first step in this direction. We are showcasing some of these next-gen offerings at the DEFEXP020 to be held at Lucknow."

"With the technical and human capabilities offered by this site, India will be ideally placed to offer its armed forces and the export market the very latest generation of defence equipment technology," said Pasquale Di Bartolomeo, Vice Chairman and Member of the Board L&T MBDA Missile Systems.

Source: Business Standard

## Danfoss Power Solutions opens new facility in Pune

**DENMARK**-headquartered Danfoss has invested 15 million euros (over Rs 118 crore) to set up a facility in Pune for manufacturing mobile hydraulics for the construction, agriculture and other off-highway vehicle markets. The company's Indian subsidiary Danfoss Power Solutions will be manufacturing products like electronic controls, pumps and valves, motors, sensors and transmitters, among others in this facility. "We have invested around 15 million euros so far for this facility. This is for the first time we are manufacturing these products here for Indian customers as per their needs," a senior company official said. The company aims to invest on increasing its product offerings in India within the next 24 months and remains firm on its mission to ensure a minimum of 50 per cent localisation level for sourcing and manufacturing in their future product lines as well, the official said.

"Over the last 5 years, Power Solutions business has seen a strong double digit CAGR growth with strong potential for further growth in India owing to the nation's rising demand for infrastructure development, electrification, urbanisation, efficiency in agriculture," Danfoss India Region President Ravichandran Purushothaman said. With its focus on the Indian market, the company has a 3:1 ratio on products manufactured for India as compared to exports to several core global markets, he added.

Source: Business Standard

## HAL, Wipro 3D sign MoU for metal 3D printing adoption in aerospace



**IN** a first, HAL, India's aerospace, and defence company and Wipro 3D, the metal additive manufacturing (AM) business of Wipro Infrastructure Engineering (WIN), have signed an MOU recently to design, develop, prove out, manufacture and repair of Aerospace Components using Metal Additive Technology. This MoU also accentuates development, prove out and application of new material for use in Metal Additive Technology.

The path breaking initiative will focus on development, prove out and production of Aerospace applications including MRO, using metal Additive Manufacturing. Prove-outs and certification of components developed using Metal 3D Printing is also a key element of

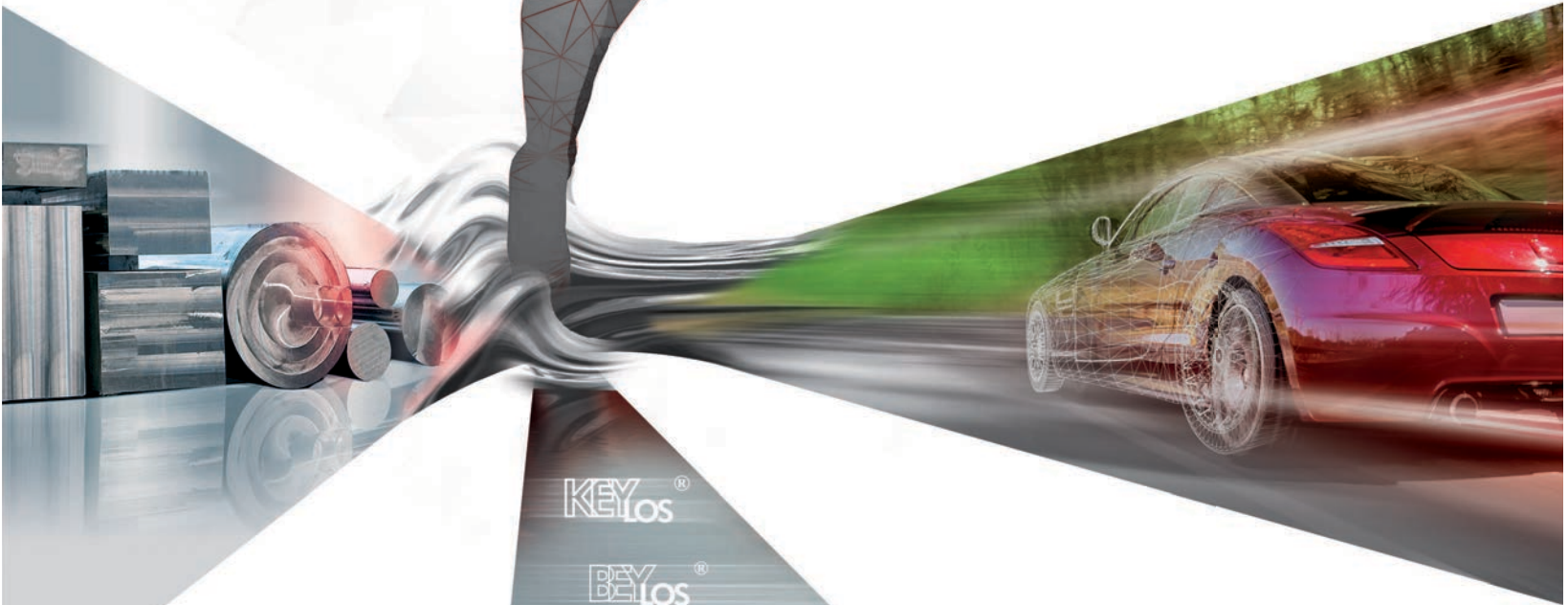
this co-operation. Commenting on the collaboration, Mr. Shekhar Shrivastava, CEO, Bangalore Complex, HAL, said, "This initiative between HAL and Wipro 3D will create a unique synergy of capabilities that can accelerate the adoption of metal additive manufacturing in Aerospace in India. Qualification of parts for Aerospace is challenging as it would require prove out and extensive testing followed by certification by regulatory authorities which may also include flight testing. This cooperation would be a unique opportunity for both the parties. Metal 3D printing has the potential to play a significant role in the success of national aerospace and defense platforms including HAL's own needs."



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## All Segments Sales Register Upward Trend, Overall Sales Down by 16%: SIAM

**ACCORDING** to data released by SIAM, the industry produced a total 20,736,410 vehicles including Passenger Vehicles, Commercial Vehicles, Three Wheelers, Two Wheelers and Quadricycle in April-December 2019 as against 23,853,770 in April-December 2018, registering a de-growth (-) 13.07 percent over the same period last year.

### Domestic Sales

The sale of Passenger Vehicles declined by (-) 16.40 percent in April-December 2019 over the same period last year. Within the Passenger Vehicles, the sales for Passenger Cars and Vans declined by (-) 23.59 percent and (-) 37.31 percent respectively in April-December 2019 over the same period last year, while the sale of Utility Vehicle increased by 6.35 percent.

The overall Commercial Vehicles segment registered a decline of (-) 21.09 percent in April-December 2019 as compared to the same period last year. Medium & Heavy Commercial Vehicles (M&HCVs) declined by (-) 36.69 percent and Light Commercial Vehicles declined by (-) 11.34 percent in April-December 2019 over the same period last year.

Three Wheelers sales declined by (-) 2.70 percent in April-December 2019 over the same period last year. Within the Three Wheelers, Passenger Carrier sales registered a de-growth of (-) 2.02 percent and Goods Carrier declined by (-) 5.85 percent in April-December 2019 over April-December 2018.

Two Wheelers sales registered a de-growth of (-) 15.80 percent in April-

December 2019 over April-December 2018. Within the Two Wheelers segment, Scooters, Motorcycles and Mopeds declined by (-) 16.16 percent, (-) 15.04 percent and (-) 25.10 percent respectively in April-December 2019 over April-December 2018.

### Exports

In April-December 2019, overall automobile exports grew by 3.86 percent where Passenger Vehicles and Two Wheelers exports grew by 5.89 percent and 6.87 percent respectively. However Commercial Vehicles and Three Wheelers registered a de-growth of (-) 38.74 percent and (-) 8.80 percent respectively in April-December 2019 over the same period last year.

## Lexus India begins local assembly in India

**LEXUS** India starts its local assembly of its cars in Bengaluru with the ES 300h sedan. The company introduced new entry-level 'Exquisite' variants for the ES 300h sedan and NX 300h crossover. Both models are now BS-VI compliant as well. With this, India becomes Lexus' third vehicle making base outside of Japan and North America.



The ES 300h Exquisite edition has been launched at ₹ 51.90 lakh, while the ES 300h Luxury variant will

be retailed at Rs 56.95 lakh. The NX 300 Exquisite, NX 300 Luxury and NX 300 F Sport will be available at ex-showroom prices of Rs 54.90 lakh, Rs 59.90 lakh and Rs 60.60 lakh respectively. The LC 500h has been priced at a whopping Rs 1.96 cr. In the luxury hybrid space, Lexus has been a global leader with sales of over 1.5 mn vehicles since the first hybrid was launched in 2004.

In addition to this, Lexus India also announced the expansion of its guest experience centre network in four new cities of Chandigarh, Chennai, Kochi and Hyderabad. The company already has similar guest centres in Delhi, Mumbai and Bengaluru.

## Mahindra Electric Launches New Brand Identity

**MAHINDRA** Electric Mobility Ltd recently unveiled a new corporate brand identity with a new logo and tagline - 'Spark the New'. The new brand identity is meant to give the brand a renewed thrust to achieve its global ambition of being a leading player in electric mobility technology solutions.

The identity also simplifies the portfolio so that the vehicles and hardware solutions are offered under ME branding and the software solutions are offered under NEMO branding. The new identity further enhances the brand for a digital world by ensuring the logo works seamlessly on digital assets as well as on the EV components and vehicles. This move will help the brand approach the Indian and

global markets with a clarity of purpose and a sharply defined identity. The launch of the new brand coincides with the completion of over 200 million electric kilometers by Mahindra EVs on Indian road.



The new identity intends to position the organisation as the preferred e-mobility partner for OEMs across the globe. Speaking at the launch of the new brand identity, Mahesh Babu, CEO, Mahindra Electric said, "Today, with a decade's worth of experience in electric vehicle technology, we are completely prepared to make India an EV hub."



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## Artificial intelligence for machine tool maintenance

**RESEARCHERS** at the Karlsruhe Institute of Technology have developed a system for fully automated monitoring of ball screw drives in machine tools. A camera integrated directly into the nut of the drive generates images that artificial intelligence continuously monitors for signs of wear, helping to reduce machine downtime.

In mechanical engineering, maintaining and replacing defective components timely in machine tools is an important part of the manufacturing process. In the case of ball screw drives, such as those used in lathes to precisely guide the production of cylindrical components, wear has until now been determined manually.

"Maintenance is therefore associated with installation work, which means the machine comes to a standstill," says Professor



Jürgen Fleischer from the Institute for Production Technology (wbk) at the Karlsruhe Institute of Technology (KIT). "Our approach, on the other hand, integrates an intelligent camera system directly into the drive, which enables a user to continuously monitor the spindle status. If there is a need for action, the system informs the user automatically."

The new system combines a camera with light source attached to the nut of the drive and artificial intelligence (AI) that evaluates the image data.

As the nut moves on the spindle, it takes individual pictures of each spindle section, enabling the analysis of the entire spindle surface.

### Artificial intelligence for mechanical engineering

Combining image data from ongoing operations with machine-learning methods enables system users to assess directly the condition of the spindle surface. "We trained our algorithm with thousands of images so that it can now confidently distinguish between spindles with defects and those without," says Tobias

Schlagenhauf (wbk), who helped development the system. "By further evaluating the image data, we can precisely qualify and interpret wear and thus distinguish if discoloration is simply dirt or harmful pitting." When training the AI, the team took account of all conceivable forms of visible degeneration and validated the algorithm's functionality with new image data that the model had never seen before. The algorithm is suitable for all applications that identify image-based defects on the spindle surface and is transferrable to other applications.

From 20 to 24 April 2020 at HANNOVER MESSE, KIT shows what is possible with intelligent spindle monitoring in ball screw drives at Stand C14 in Hall 25. Furthermore, KIT organises an energy pavilion (Hall 27, Stand L51) as well as other topic-specific exhibits.

## Mitutoyo Introduces MiSTAR 555 Shop Floor CNC Coordinate Measuring Machine

**MITUTOYO** Corporation released the MiSTAR 555 CNC Shop Floor Coordinate Measuring Machine to its CMM product line that operates without compressed air and on conventional 120V 20 AMP electrical service with movement speeds of 606mm/s and acceleration of 2,695mm/s<sup>2</sup> (3D).

The MiSTAR 555 is a compact, space-saving in-line or near-line CNC coordinate measuring machine designed for high-speed, high-accuracy measurements with accuracy assurance from 10° C to 40° C. An open-structure design with a single support moving bridge enabling users to mount

workpieces from the front, rear and right for installation as a walk-up inspection station for easier operability.

The modular control unit and PC are stored in the base of the main body structure, making the MiSTAR more compact, reducing the installation area to approximately 70 percent from a conventional moving bridge model for location flexibility. The MiSTAR also uses a Mitutoyo designed and manufactured robust scale detection system with a high resistance to airborne contaminants, eliminating the need for costly environmental controlled enclosures.

The MiSTAR features several Industry 4.0 integrations including the Mitutoyo-developed Smart Measuring System (SMS) which enables monitoring the operation state required by smart factories. Status Monitor that retrieves current CMM status features using the MTConnect protocol. Condition Monitor provides a system that collects and evaluates different operational information such as measuring, movement lengths, machine error, probe functions, and many more for long-term preventative maintenance and machine use statistics.



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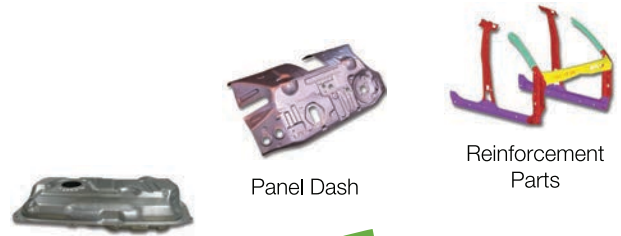
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## LMT Tools partner Liebherr for ChamferCut-CG and ChamferCut-IG

LMT Tools, a leading specialist for the development and production of precision tools, and Liebherr-Verzahntechnik GmbH, a leading manufacturer of CNC gear cutting machines and automation systems, are collaborating to continue the success story of the patented ChamferCut method. The two technology partners signed a cooperation contract for the new ChamferCut-CG (collision gear) and ChamferCut-IG (internal gear) recently.

With the ChamferCut cutting method offered by LMT Fette, LMT Tools raised the process of chamfering and

deburring gears to a new level some years ago. In close collaboration with Liebherr-Verzahntechnik GmbH, the tool specialist was responsible for launching the first evolutionary stage. Accordingly, the gear machine manufacturer based in Kempten has co-designed and supported development of this innovative technology, including in the form of specially-developed gear hobbing and chamfering machine designs.

With the new ChamferCut-CG (collision gear) and ChamferCut-IG (internal gear), this successful partnership is now entering

its second round. At EMO in Hanover, Daniel Ehmans, CEO LMT Tools, and Dr. Hans Gronbach, Managing Director Technology, Liebherr-Verzahntechnik GmbH, signed a corresponding cooperation agreement recording mutual exclusivity. Liebherr already enjoys by far the largest penetration of the market for ChamferCuts offered by LMT Fette. Now, thanks to the new agreement, these latest extensions also enable users to benefit from the high degree of process and application competence as well as long-term expertise offered by these technology partners.

“We have already been linked to Liebherr-Verzahntechnik GmbH for several years by means of a very close and agile cooperation which goes well beyond a basic supplier-customer relationship”, emphasises Ehmans, adding: “This strong partnership is also the result of similar values and goals which we share as companies and premium manufacturers driven by innovation. We are, therefore, particularly delighted that Liebherr is once again at our side with ChamferCut-CG and ChamferCut-IG and joining us in designing technological progress.”

## Schunk introduces standardised parallel pole technology for milling applications

**WHETHER** narrow, thin or bulky ferromagnetic workpieces are to be clamped for a milling application, square pole plates sometimes reach their limits, since not all the poles are covered, and the magnetic field is not balanced.

With immediate effect, the SCHUNK MAGNOS MFPS parallel-pole milling plates with fixed and movable pole extensions offer an alternative for this kind of application. The concentrated magnetic field over the entire pole width ensures that high lateral holding forces, deformation-free and low-vibration clamping, and short set-up times are achieved with narrow workpieces.

Due to the elevated position of the workpieces, they have the same height as the magnetic chuck, allowing 5-sided machining in one set-up: The workpiece is simply put on top while the electro-permanent magnetic chuck is activated with a short electrical pulse. Due to



the movable pole extensions, it's no longer necessary to spend time on the laborious fine adjustment nor other preparations are necessary.

On the contrary, the pole extensions individually adapt to the workpiece. Punctual damage, or workpiece distortions will not happen. Operators benefit from a maximum clamping accuracy and workpiece evenness. The full-surface clamping minimises vibrations, prevents the machine spindle and the tool cutting edges from damage, and thereby lowers workpiece and maintenance costs. Power is only required for activating or deactivating

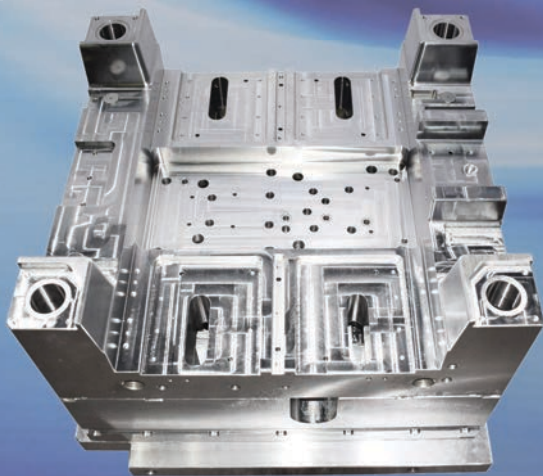
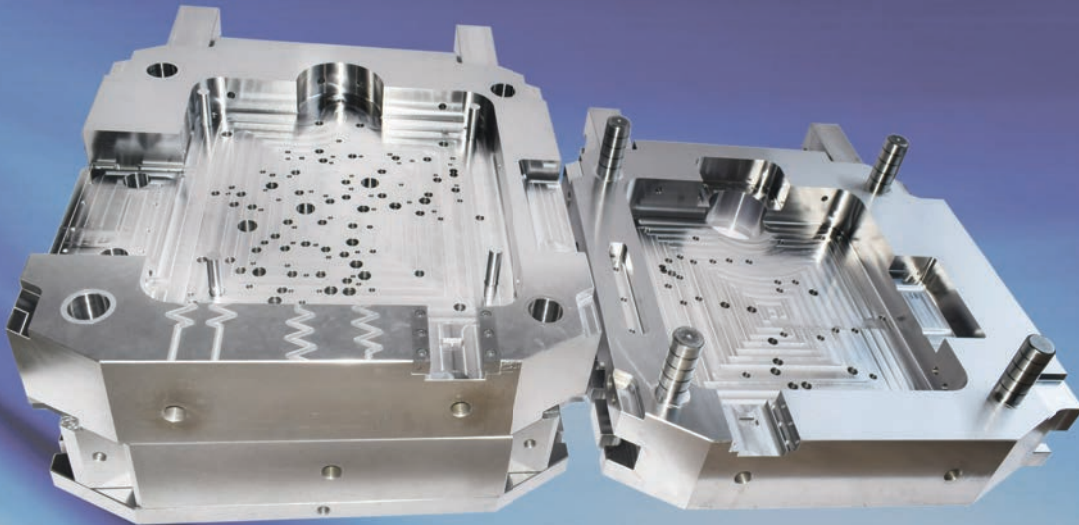
the magnets. For maintaining clamping, the parallel pole plates do not require energy.

A patented status display informs automatically about the individual state of activation of the magnetic chucks without requiring external energy supply. Thus, for example, the clamping condition in a workpiece storage can be controlled any time. The SCHUNK MAGNOS MFPS parallel pole plates are available in various standardised sizes from 315 mm x 300 mm to 1.000 mm x 500 mm with 6 to 22 poles and a pole pitch of 30 mm.

The holding force amounts to 160 N/mm<sup>2</sup>. Moreover, application-specific parallel pole plates for palletising systems are available. MAGNOS MFPS magnetic chucks are suitable for milling and drilling applications. Their monoblock design ensures high stability and rigidity, thereby additionally minimising vibrations, and improving the surface quality of the workpieces considerably.

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## Hoffmann Group launches “GARANT Master Alu” series for high-performance cutting of aluminium

**WITH** its new “GARANT Master Alu”, the Hoffmann Group is launching a completely redeveloped line of solid carbide milling cutters, designed for high-performance cutting of aluminium.

As such, customers can now also benefit from the particular performance, process reliability and efficiency of the top-class “GARANT Master” cutters when machining aluminium, as well. This range was established in 2015 with the introduction of the “GARANT Master Steel” solid carbide milling cutter and includes high-performance milling cutters for steel, stainless steel, titanium and aluminium, as well as various high-performance drills.

The new “GARANT Master Alu” line of solid carbide milling cutters has been designed to maximise precision and cope with the most stringent high-performance cutting requirements. The



range has tools to handle any application: a balanced single-cutter milling cutter, a finishing cutter, a roughing end mill with knuckle profile (SlotMachine) and a pocket milling cutter (PickPocket) – the latter also comes as a torus cutter.

The single-cutter “GARANT Master Alu solid carbide milling cutter” is precision balanced using a newly developed process, in order to optimise chip evacuation and ensure a smooth cutting action. With a balancing quality of G 1.8, it achieves optimum performance figures at high speeds. In contrast, the

“GARANT Master Alu PickPocket” pocket milling cutter achieves maximum feed rates, as does the “GARANT Master Alu SlotMachine” roughing end mill with knuckle profile, which was designed specifically for slot milling. Wet machining is also required in most cases, which is why the tools are also optionally available with through-coolant. What’s more, as a result of their patented end face geometry, the pocket milling cutter and the roughing end mill with knuckle profile aren’t just able to be used for ramping and helix milling, they can even handle plunging (drilling).

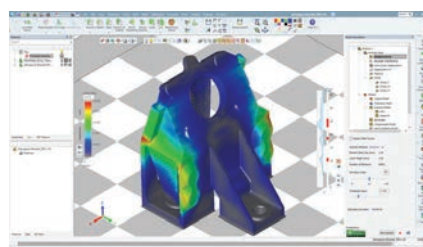
To make the process more stable, the tools from the new “GARANT Master Alu” milling cutter line also feature the latest generation of high-quality DLC coating as per the ISO code in green. The single-cutter milling cutter and the PickPocket pocket milling cutter are also optionally available without the coating.

## 3D Systems Unveils 3DXpert® for SOLIDWORKS 15

**3D** Systems is transforming customers’ digital design and manufacturing environments and putting software at the core of its strategy. The company recently unveiled its latest software solution – 3DXpert® for SOLIDWORKS 15 – which empowers SOLIDWORKS customers to easily prepare and optimise their designs for additive manufacturing, allowing them to design complex structures and accelerate the product design life-cycle with better automation and seamless bi-directional data exchange from and to SOLIDWORKS. These enhancements help provide an accelerated path to design freedom, increased efficiency, reduced total cost of operation, and gain competitive advantage for a range of applications and industries.

The growth of additive manufacturing is contingent on optimising digital workflows and that begins with

reimagining how software supports the process and corrects the core issues that pose significant challenges for designers. Until now, the design toolset available has been oriented for traditional manufacturing techniques, which has created barriers to digital



manufacturing workflow optimisation. In addition, designers have faced demand for lighter weight parts and parts that possess complex geometries. 3D Systems’ latest software solution addresses these challenges and unlocks new possibilities, including the ability to create more shapes in more ways.

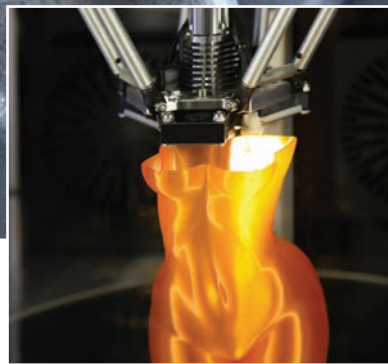
“Software is the foundation of transformative digital manufacturing solutions,” said Radhika Krishnan, executive vice president, software, healthcare, & digitisation, 3D Systems. “Looking at our expertise and combining that with our end-to-end software portfolio solutions and the specific needs of SOLIDWORKS designers, we realised that we could help SOLIDWORKS users streamline their digital manufacturing workflows and gain competitive advantage in several ways such as adding design for additive manufacturing capabilities to their toolset with 3DXpert for SOLIDWORKS 15. In addition, SOLIDWORKS users can accelerate their product design cycle and reduce the time – from hours to minutes - required to build CAD models of real-world objects using advanced scan-to SOLIDWORKS capabilities that are included in our Geomagic® for SOLIDWORKS solution.”



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# “Huge opportunity for Indian Die and Mould industry”

**Mr. Raghava Badhya TV, President, Makino India Pvt Ltd brings out an optimistic view for the Indian die and mould industry and points out that the industry is ready to take on the next gen machining challenges with high end automation.**

## ■ Nishant Kashyap



### Q Your opinion on the Indian die mould industry

The die and mould industry in India has grown over the years and is currently relishing a distinct position in the global manufacturing. Die mould industry is keeping its pace with the time & redefining productivity, quality and precision.

Automotive is transforming into new technological needs, to meet the future requirements of global pollution norms. We feel that the auto industry is returning to normal & is very much intact. We believe that the long-term growth of the Indian Auto Industry is still exciting.

The non-automotive industry segments in die and mould has undergone a positive transformation. Industries are capable of catering to a variety of specific demands.

The market driving force for this industry are the opportunities from several effective sectors including consumer goods, Plastic products, Automotive Plastic, Electrical switch gears and press tools.

### Q Elaborate on your solutions and how it helps end-user (tooling suppliers) in enhancing productivity and efficiency?

Makino application experts analyse through the process step by step to decide what works best for customer's needs. We have worked with various manufacturers and machines all over the world and we can provide the assistance to find solutions for your unique challenges regardless of Milling, EDM or CAM programming.

Our smart softwares and systems monitor your machine's health and alerts you for the precautions to avoid the possible damage, down time and production losses. Automation can standardise efficient process to enhance the productivity and quality regardless of unmanned operations.

We have dedicated training centers for machine applications and maintenance.

Makino Die mould machines are specifically designed to meet the demands of speed, reliability, accuracy and surface finish with best-in-class performance.

Our 5 axis machines can accomplish a wide variety of die and mould making applications. We



# In conversation With

provide one stop solution for Multi technology, CAM Programming, Milling, EDM wire and Sinker machines. Our die/mould application team helps you find the right solution for your shop.

## Q What are the recent technological developments in the machine tool and EDM segment with regards to die mould industry?

### a) H.E.A.T. (HIGH ENERGY APPLIED TECHNOLOGY).

In WEDM, the most difficult cuts are when the nozzles are away from the workpiece. Makino's H.E.A.T. Technology uses a combination of flushing enhancements and the generator to increase the cutting speed. As a result, Makino H.E.A.T. technology delivers a part to the customer with minimal operator intervention which is faster, accurate and with superior surface finishes. This combination is unmatched in the EDM industry resulting part straightness within 5 microns and with high speed machining.

### b) Thermal stabilisation for better accuracy and repeatability.

Thermal drifts are avoided by maintaining the same temperature on machine and the dielectric fluid. It is controlled by the cooling unit. This reduces thermal distortion of structure cast iron components to provide high accuracy machining. The dielectric fluid cooling unit incorporates an inverter system to minimise the temperature difference between its On/Off states. The temperature is controlled with high accuracy to within  $\pm 0.1^\circ\text{C}$ . This will result in thermal stability leading to same results and repeatability regardless the day or night temperature variations.

The Hyper Control improves machine productivity by intelligently streamlining the interface so that all operator skill levels can achieve the most efficient results. Makino's family of Hyper Technologies revolutionise the machining process in both Sinker and Wire EDM, and ensures the ideal mix of Speed, Finish, Reduced Electrode Wear or Reduced Trim Cuts, to achieve the ultimate in productivity. The unified Hyper control delivers an identical streamlined interface to both Wire and Sinker EDM operations, and provides new levels of capability, efficiency and user friendliness.

## Q In what ways does Makino incorporate smart technologies in its solutions?

Makino machines are the first to have voice-activated industrious assistant that anyone can use.

- ATHENA is an add-on application software. Talking to Athena, manufacturing workers of all skill levels can take command of the machine, control operations and call up critical data- all with just a few words and a little training (she knows g-code, too). Athena runs on any Makino VMC, HMC or EDM, using the single universal language of voice command. But voice activated machine operation is just half the story. ATHENA is able to learn. Beyond basic control commands, Athena guides and analyses. She can even respond to "thinking questions such as:

- ⇒ How do I change a tool?
  - ⇒ What is my run time on this part?
  - ⇒ What is my coolant temperature?
- ...and much more.....

### Collision safeguard.

Real time interference check before machining, collision safeguard checks errors of tooling, and setting errors of tool length to minimise emergency stoppages. Then, during machining, it monitors machine behaviour and detects interference in advance to stop the machine before collision.

## Q What are the current demand trends in Indian tooling industry?

The current trend revolves around making the machine intelligent with Industry 4.0 compliance and IoT enabled for data traceability, history, remote monitoring and notifications.

Digital connectivity is transforming manufacturing to new standards on machine performance to predict problems and prevent unplanned downtime & track a variety of key machine performances, including:

- ⇒ Status monitoring
- ⇒ Utilisation monitoring
- ⇒ Alarm analysis
- ⇒ Spindle and axis monitoring
- ⇒ Tool data management
- ⇒ Probe data analysis
- ⇒ Camera monitoring
- ⇒ Power-consumption monitoring

## Q Do you feel that the rapidly growing Indian die mould industry will have positive impact on EDM suppliers as well?

Yes certainly, the market is positive, and the tooling industry will grow from the current market. EV and Cell phone segment is the paradigm shift which is driving the Die Mould growth. The plans for

# In conversation With

manufacturing of smartphone parts, display units for laptops and televisions shall also propel the economy and increase the exports. EDM will be extremely in need for micromachining applications with respect to communication technologies, high speed press applications for connectors and Switch gears.

## Q What are your expectation from year 2020?

The automotive industry, across the country is in a phase of transition. There is exciting work happening in the areas of regarding new technologies and future mobility. Leading the BSVI transformation, two-wheeler and four-wheeler manufacturers launched BSVI-compliant models which are now available in the market. The new vehicles have introduced a host of new features offering latest technology gaining the momentum.

Electric vehicles are the future of mobility. It is imperative for the world to move to cleaner, more sustainable forms of transport. Electric vehicles also herald a change in the way of the plastics part ascetics looks. It calls for better & uniform textures. Moulds must be more challenging to meet the needs.

## Q How the recent slowdown in Indian automotive industry is impacting die mould industry?

Die & Mould Industry is still active due to New product development, in fact they are very vigorous in upgrading their current facility and expanding the capacity in India to avoid import from China or Korea. Recent slowdown in Automotive Industry had made few dents in-terms of

- ➔ **Harder to Get Loans:** Banks have become strict about giving out loans, favouring only those individuals with high CIBIL scores
- ➔ **Negative sentiment:** SME's and MSME's getting cautious and holding back on investment.

## Q How tool and mould makers can enhance their efficiency?

5 axis machines will increase the flexibility and easy operations. Longer tools lengths with lower tool overhang allows an easy approach to critical areas and enhance the surface finish. This will also lead to cost effective solutions by reduced part setups, zero clamping system, quick set-up, simple to manage and long-term reliability and repeatability. Decreased cycle time with more advance equipment's tooling, work holding and CAD/CAM technologies will benefit the industry further.

Cutting tools are also getting more productive. Multi-flute cutters allow much higher feed rates with no compromise in quality. Combined with five-axis machines, new barrel-shaped cutters allow you to

significantly increase stepover distance yet still generate smoother surfaces.

## Q What kinds of opportunities you see in Indian die mould industry?

The Die and mould industry in India has evolved over the years & plays a pivotal role for most of the manufacturing industries like auto components, packaging, plastics, electronics, electrical, healthcare, machine tools. The opportunity in the Die and Mould making industry in India is huge. High quality and high precision are the catchwords of any Die-Mould business. It is gradually drifting away from traditional development procedures and implementation to proven approaches new technologies of manufacturing.

## Q What are the things should tool and mould makers keep in mind before choosing EDM or VMCs?

Smart machines, less dependence on the operator skills, palletisation and automation has become necessary. Collision detection and avoidance crashes on machine controls gives machine operators the confidence to run programs unattended. Additive manufacturing can be used to 3D print conformal cooling structures that radically reduce cycle time in the moulds. Highly reliable technological support and services, efficient processes shall lead to growth.

## Q Your future plan for the Indian market?

We aim to provide comprehensive solution- from product design to part to Turnkey Solution to Indian DM Customers through our product and value-added services.

We provide knowledge transfer & training customers through our product experts to ensure that the overall efficiency of the machine is more than 95%. We aim at creating experts in DM (Programming, machine Operation, Maintenance) through Makino Technical Training Center.

The low-volume, high-mix nature of the mould, tool and die industry leads many shop owners to believe that their businesses are not good candidates for automation. However, it is just the opposite. In an industry in which shops with stand-alone machines typically achieve utilisation rates around 30 to 35 percent, it is possible for mould, tool and die shops that add automation to achieve utilisation rates approaching 85 percent, through planning, scheduling and management.

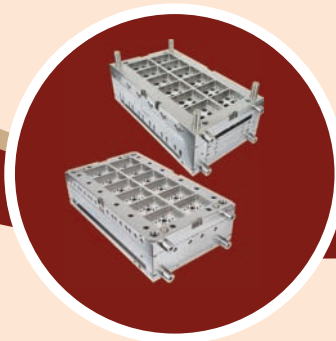
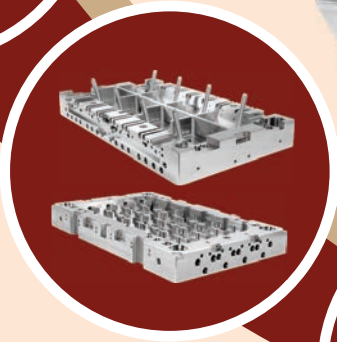
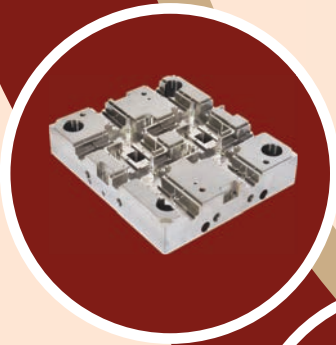
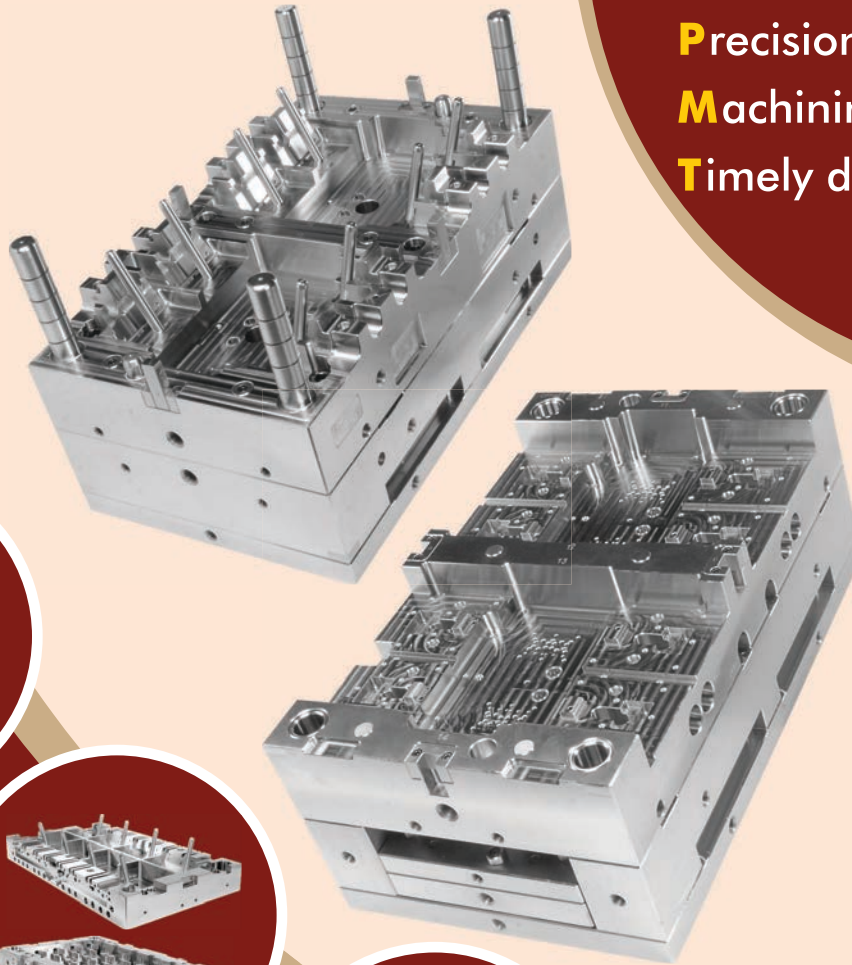
To compete in today's global die/mould market, automation is essential to reduce costs and increase capacity. Automation fundamentally changes the way mould, tool and die shops do business. 🌈



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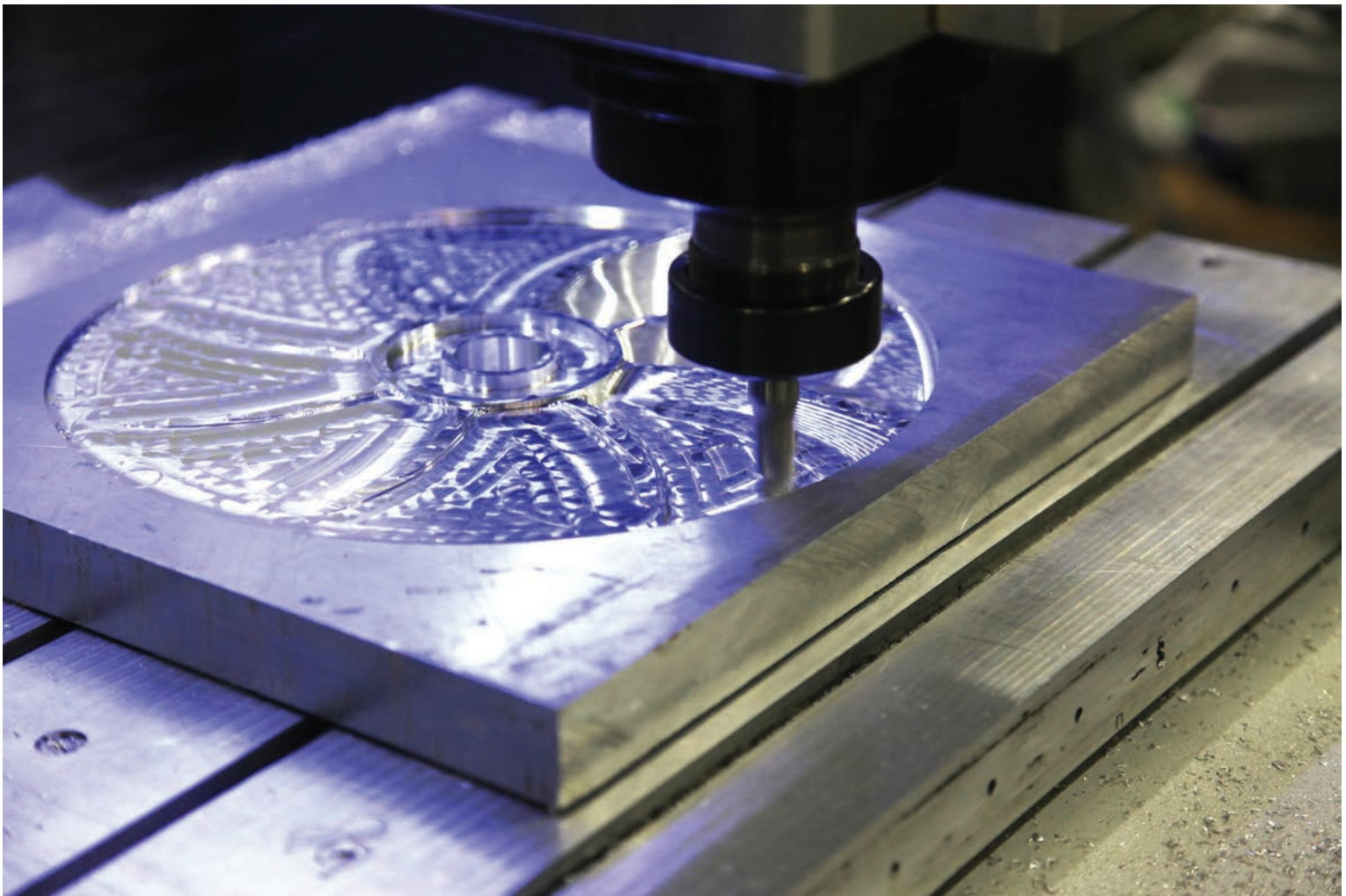
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# Manufacturing & Tooling Trends 2020

The slowdown has been much talked about, pondered upon and analysed into. Now it's time to rectify the mistakes and move on. The biggest drawback of the Indian manufacturing industry was to focus on the ongoing growth pace and leapfrog over the global trends and learnings. 2020 will be the year for the Indian industry to take a step back and imbibe some of the biggest manufacturing trends that they missed.

**Debarati Das**



# In Focus

The Indian manufacturing industry is changing dramatically with an aim to mark its place in the world map as a manufacturing hub. It is expected that India will become the 5th largest manufacturing country in the world by end of 2020.

However, it is not going to be a rosy path. The Indian manufacturing industry has been left crippled in the year that went by due to the massive slowdown in the automotive industry. India's GDP growth dipped to an 11-year low of 5 percent in the current fiscal, mainly due to poor showing by manufacturing and construction sectors. Reports however suggest that the automotive industry is expected to recover by first half of 2020, reviving the pace of the economy once again. The government is also taking various measures to diversify and strengthen the manufacturing industry. For instance:

- ▶ The government recently passed the National Policy on Electronics (NPE) to create an electronic manufacturing industry of US\$ 400 billion by 2025.
- ▶ An exemption of custom duty has been implemented on 35 machine parts to increase mobile handset production
- ▶ Phased manufacturing program (PMP) was launched to push domestic manufacturing of mobile handsets
- ▶ Hike in GST exemption from Rs 20 lakh to Rs 40 lakh was implemented
- ▶ There has been a reduction of the income tax rate to 25% for companies with a turnover of Rs 250 crore and less
- ▶ The government also increased export incentives by 2% for the MSME sector
- ▶ Strategic Partnership model has been implemented for private companies to tie up with foreign companies when manufacturing armored vehicles, jets, submarines, etc.
- ▶ Modified Special Incentive Package Scheme (MSIPS) has been implemented to promote large-scale manufacturing. This provides a 20% subsidy on capital investments in special economic zones (SEZs) and 25% on non-SEZs.

Apart from this, the Government is also promoting various skill programs to increase employment especially in the poor and underdeveloped areas of the nation. The government is also taking up several initiatives like 'Make in India' to position India as a global manufacturing hub. Under 'National Manufacturing Policy' (NMP), the government envisages to increase the contribution

of manufacturing from ~15% to 25% of GDP by 2022.

However, all this will not be enough if the 'automotive-minded' industry does not broaden its horizon, take risks and explore new avenues of manufacturing. Learning from its mistakes, the manufacturing industry is taking rampant corrective measures to get back on track before it is too late. Many experts call this phase of lull as the 'catching up phase', where the industry is trying to imbibe the global trends of enhancement that were left out in the frenzy of meeting targets and achieving monetary goals.

Tata Strategic Management Group, in its recent report on the readiness of Indian manufacturing to adopt advanced manufacturing trends, pointed out that Additive Manufacturing, Advanced Robotics, Industrial Internet of Things (IIOT) and Augmented Reality will be the four key trends that will be adopted and/or enhanced by the Indian manufacturing industry in 2020. The study found that currently only 10% of companies have adopted advanced manufacturing, while 80% plan to adopt the same by 2020.

Shripad Ranade, Practice Head – Automotive & Engineering, Tata Strategic Management Group, in the report said, "The changing global and Indian scenario has made it important for the industry to consider leapfrogging towards the advanced manufacturing trends. It is imperative for stakeholders to improve the adoption by focusing on driving awareness of these trends, emulating global best practices, forging industry-academia connect and up-skilling workforce"

In this regard, advanced manufacturing will enable Indian manufacturers to not only be cost competitive but also enable access to developed markets through technologically advanced products.

### Economy growth projection by International Monetary Fund and World Bank Group

Country	Expected GDP growth					
	2018	2019	2020	2021	2022	2023
India	7.3	7.4	7.7	7.7	7.7	7.8
China	6.6	6.2	6.2	6	5.8	5.6
US	2.9	2.5	1.8	1.7	1.5	1.4
European Union	2.2	2	1.8	1.7	1.7	1.6

Source: IMF

### The 2020 trends in Indian Manufacturing industry

Adopting the latest global trends and being in sync

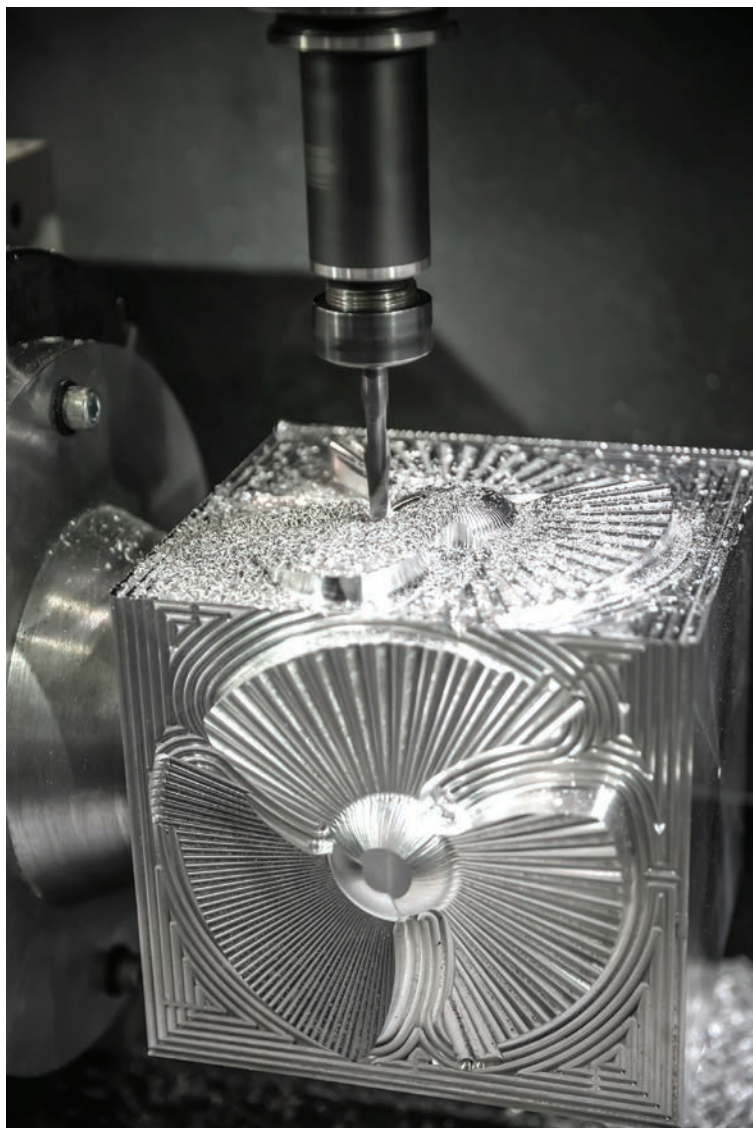


with global manufacturing will help the industry to achieve productivity improvement and quality consistency and be globally acceptable.

Here are some of the trends that the industry will be rigorously working on in 2020 to be in sync with the global market and stride towards achieving its goal to be one of the leading manufacturing hubs in the world.

### ***Digital Transformation***

Digital transformation is clearly changing the dynamics of the industry. And although the industry has been witnessing the digital transformation revolution over the years and upgrading their systems as per the latest technologies coming into the market, the number of companies opening up to this transformation and adapting these technologies as a part of their process is startling.



Industry 4.0, IoT, Artificial Intelligence are some of the technologies that are making a huge mark in the manufacturing sector. The manufacturing companies too are identifying the very big impact of connecting one's work and processes to the IoT. These technologies have positively been able to help manufacturers to deliver higher quality goods, at low cost. Going forward, manufacturers will be facing increasing pressures in cost, efficiency and quality and these technologies will help the industry to streamline its processes towards success.

In the future, there will be an increasing union of AI and IoT bringing in a new wave of AIoT into the industry. Gartner's predicts that in the coming years more than 80 percent of IoT projects will be surrounding AI.

Apart from cost savings, IoT also supplies in-depth insights on procedures, costs, productivity, etc along with supplying data about the supply chain—the quality of parts and products being utilised, where they came from, and how they were grown, bought, or formed.

Research shows that manufacturing companies will invest over US\$267 billion by 2020 making it even more clear that technology can provide incredible value for them.

### ***Predicting the process***

With the amount of data generated, AI and predictive analytics can help analyse the data accurately and decrease planned outages by 50 percent. IBM recently declared that it can even diminish unplanned outage by 15 percent. Predictive analytics is increasingly being used as it can effectively help companies to better understand their machine work, the process and their failure and prevent damages from happening. Preventive analytics also help manufacturers assess market risks making them take better, faster, smarter, and less risky decisions about everything from machine maintenance to supply chain optimisation. All these help impart better customer experience, better quality of goods and better logistics.

### ***Smart Manufacturing***

We are standing right at the threshold of the age of 5G which will take digital transformation to new heights. 5G is expected to diminish latency, offer high bandwidth, and permit for reliable real-time communication on a huge scale. With 5G, manufacturers can imbibe upon 'smart manufacturing' by enhancing their use of sensor,

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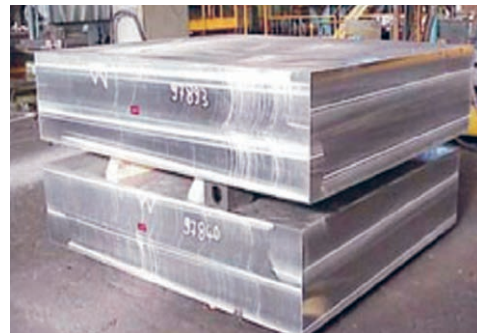
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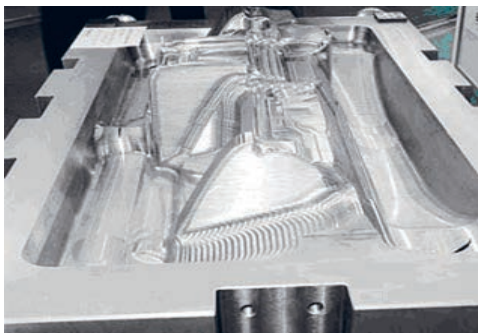
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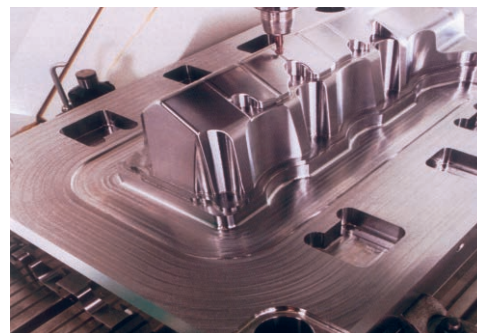
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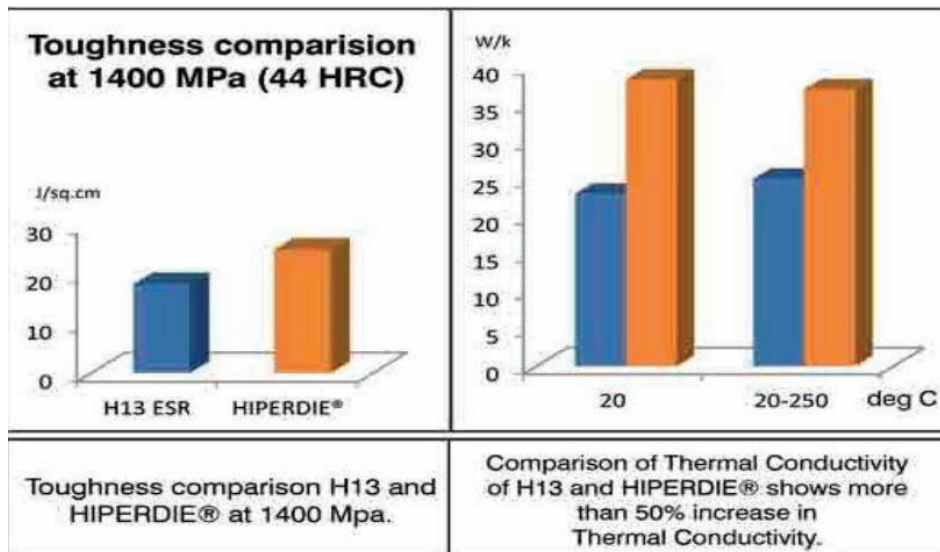
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# In Focus

cloud, quality inspection, centralised tracking, etc., creating a “smart manufacturing ecosystem”.

This level of digital transformation in manufacturing will also enhance technologies like 3-D printing, Robotics, additive manufacturing, etc.

## **Additive Manufacturing**

Additive Manufacturing is revolutionising manufacturing processes bringing in sustainable manufacturing with 90% less time in manufacturing and 80% less energy consumption. Today, almost every industry, including automotive, FMCG, semiconductor, manufacturing, aerospace, food & beverages, and healthcare are increasingly using additive manufacturing in their processes.

McKinsey predicts that Additive Manufacturing is projected to touch a market of \$20-billion by 2020 while the Indian 3D-printing market alone is expected to be worth \$79 million by 2021.

Increased domestic production, low manufacturing costs and an increased utilisation across industries and application will drive growth in this sector. Apart from some large companies entering the 3D-printing market, validating the space and pushing the overall industry to innovate faster, start-ups are also entering the market as service providers or as manufacturers. There is also a growing awareness around this progressive mode of manufacturing and small, medium and large companies alike are taking an active interest in making AM a part of their manufacturing process.

Apart from this, global technologies are also making their way into the Indian industry. For instance:

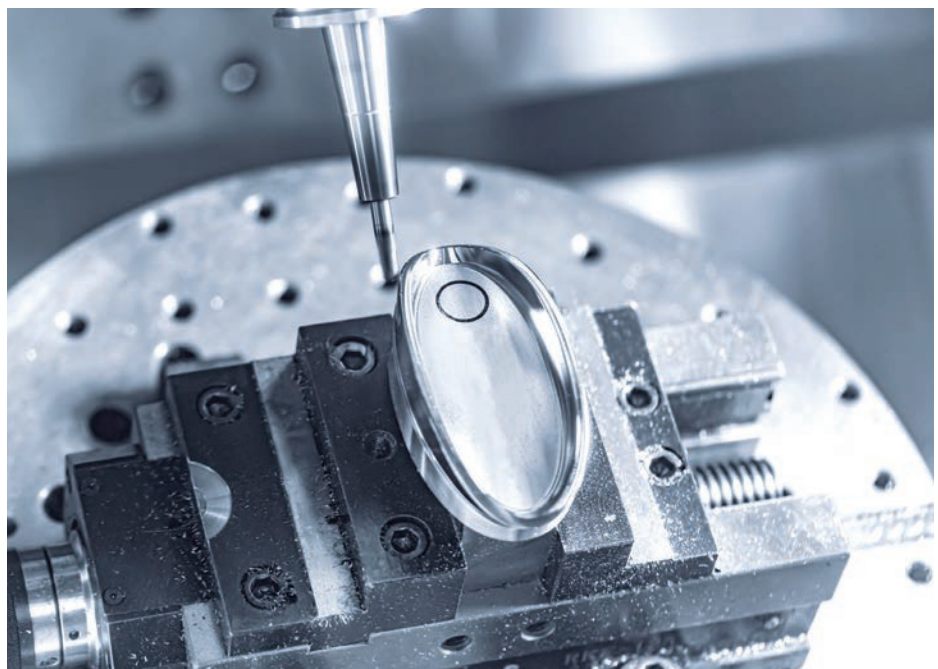
- ▶ **Hybrid manufacturing** wherein machines can perform additive and subtractive manufacturing both are gaining popularity.
- ▶ **Mixed-material printers** which can print more than one material is being actively considered.
- ▶ **Metal printing:** While plastic is the most common material used in 3D printing, metal printing is witnessing a steady rise and is soon expected to overtake plastic printing globally. The shift can be seen in India as well.
- ▶ **Binder jet metal printing**, which has the capacity to cut down 50 percent of the time required to produce each part, is poised to become widely available in the future.

Hence, additive manufacturing is getting faster, better and more reliable mode of manufacturing.

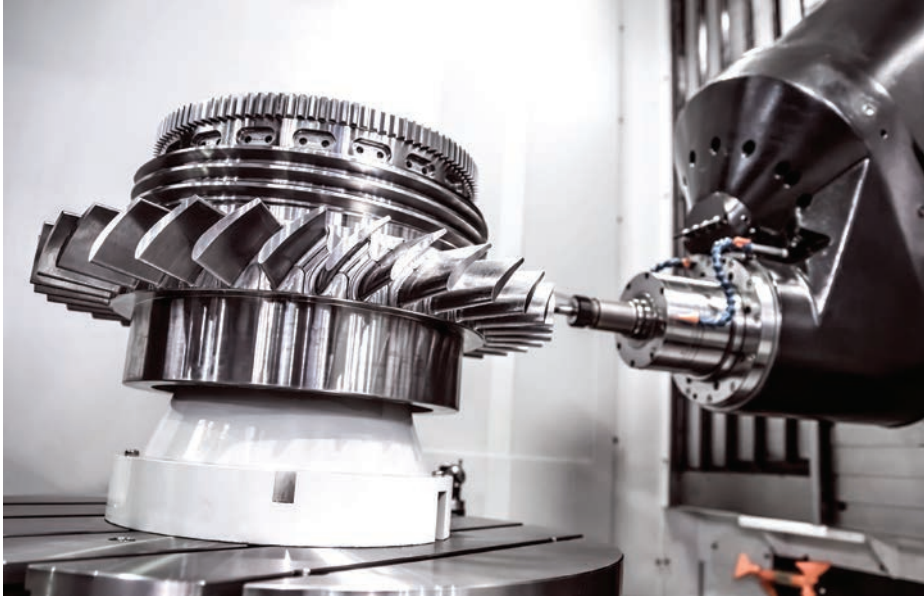
## **Next-gen Robotics**

Robotic automation is rapidly evolving, and industrial robots are increasingly becoming a part of factory settings across the world. Industrial robots have been speeding up operations, making core processes smarter and cheaper. Some of the trends in new age robotics are:

- ▶ **Amalgamation of IIoT and Robotics:** High-speed internet, adoption of Industrial Internet of Things (IIoT) and robotics- when rolled together will revolutionise the manufacturing process beyond recognition. Robots will increasingly deploy smart sensors at the edge of production to collect data previously inaccessible to manufacturers. This trend will lead to new levels of productivity and efficiency. Furthermore, the collection of big data will help manufacturers to analyse the information and organise their process effectively reducing downtime and errors.
- ▶ **Heavy-duty robotic arms:** Heavy-duty robotic arms can keep the workflow moving smoothly and prevent accidental injuries resulting from human fatigue or strain. In the future, shop floors will see more opportunities to use new types of arms with better arms’ strength, reach, and functionality.
- ▶ **Age of cobots:** Cobots or collaborative robots will be the next normal thing in any shop floor where robots will work around or together







with humans. For this, robots are becoming lightweight and compact enough to move between worksites or areas of factories.

### Changing trends in Die Mould Industry

With changing stance of the overall industry dynamics- which includes rapid model changes, technology changes, frequent product changes, shorter production runs, lower inventory levels and higher productivity demands- the die and mould industry too must evolve to be in sync with changing times.

There is undoubtedly an increase in demand for tooling in India and it is bound to increase as Indian manufacturers broaden their horizon and explore new avenues and industries. However, to meet the new requirements, die and mould industry is imbibing upon a host of new technologies like die sinking & wire EDMs to encompass hard machining and complex profiling on multi-axis machining centres. These new machining methods have also led to new developments in design analysis, inspection techniques and complex programming systems.

Here are some of the technology trends happening in the die and mould industry:

**High Speed Machining:** With the increased usage of 5-axis machines, faster mould making is possible by reducing machining time. Next generation multi-helix, variable pitch and selective tool geometry, flat end mills are fast replacing ball nose in 5-axis rough

machining as this removes material with high depth of cuts.

**CAD/CAM Software:** To reduce error & time and provide better productivity, mould making companies are bound to use 3-D CAD/CAM software systems in design and manufacturing. One of the growing trends in the industry is the enhancements in engineering simulation and the evolving role of design optimisation. In the field of die design, precision metal stamping has gained considerable prominence in recent years. The role of software today goes hand in hand with the manufacturing industry. 3D simulation not only eliminates errors, but also gives the manufacturer an opportunity to visualise the path and act according to fastest machining. The output of dies is tremendously complemented as it reduces the trial & error method and advances the scope of manufacturing and time taken for the output of a die or mould.

**Rapid Tooling:** Rapid tooling aims to reduce cycle times by 40% as compared to conventional machining. The use of conformal cooling, bimetal layering and better mould materials, like aluminium, allow quicker thermal conductivity in moulds. Also, the rapid processes allow production of inserts and mould tooling in less than 48 hours. Rapid processes are also capable of producing modifications in the tool, like undercuts or side-action easily.

**Stamping Dies:** Sheetmetal stamping dies are used to produce high precision metal components, which are identical in shape and size. Metal stamping dies are now integral part of any manufacturing industry as it provides high dimensional accuracy and stability. As the metal stamping component caters to every industry from small electric switches to large automobile and aircraft, the demand for high precision stamping component is rapidly increasing. Metal stamping dies can be used for various sheetmetal operations like, blanking, bending, shearing, piercing, forming, coining, embossing, extrusion, deep drawing, etc. Tool and die making is one of the highest precision engineering branches. It requires precision machinery and highly skilled workforce

All these trends will not only modernise the Indian manufacturing industry and the Indian tooling industry but will also help them easily explore new manufacturing sectors and deliver with precision, cost competitiveness and ease in process. 🌈



### “Automotive Manufacturing will revive in 2020 reopening doors for tooling industry”

**Mr. Mahesh Kothawale, General Manager – Mumbai, DesignTech Systems Pvt Ltd. shares his optimism for the tooling industry in the new year adding that the growth will be supported by digitalisation.**

#### Q **What top 5 trends do you foresee in the Indian tooling industry in 2020.**

The topmost trend that can be foreseen and predicted is that keeping with the changing times, India tooling industry will go digital. Digitalisation will compel them to adopt and implement new technologies such as –

- 3D Printing or Additive Manufacturing for jigs, fixtures and tools manufacturing
- Using advanced CAE or product design analysis and simulation solutions to validate product performance and thus build robust products
- Implement PLM solutions for processes and resources management
- Adopt Digital Manufacturing technologies for streamlining optimised manufacturing workflows
- Implement Industrial IoT for systems and operations monitoring, and adopt Augmented Reality solutions for enhanced visualisation, data sharing and communication

#### Q **What opportunities would 2020 bring to the Indian industry.**

Government of India is focussing hugely on infrastructure development and advancing Engineering and Manufacturing Industry in India. Machine tools manufacturers supply to diverse industries such as heavy engineering, power and energy, consumer goods and electronics, industrial machinery, all of which are expected to experience big surge in their size and scale of operations. These industries are expected to grow manifolds in the coming years, thus unleashing huge growth opportunities for the tooling industry.

Though the Automotive Manufacturing Industry took a hit in 2019, they are expected to revive by mid-2020,

which will reopen the doors of expansion for the tooling industry.

With government also emphasising special focus on Aerospace Manufacturing, and Aerospace Repairs and Maintenance operations segment in India, Tooling industry could contribute greatly to this sector.

Modern and advanced research and manufacturing of agricultural technologies will also offer significant business opportunities for the tooling industry.

Tooling industry in India has a tremendous potential for growth in the coming years as they supply to diverse industry segments, many of which are at the threshold of revolutionary expansion.

#### Q **Which critical challenges would be addressed in 2020.**

The traditional focus on manufacturing will shift towards automation to achieve globally competitive operational efficiencies. The product development time will keep on reducing more and more. Companies will have to go for system integration approach and outsource non-core components to reduce cost and speed up the development.

Challenge of global competitors coming to India due to revised corporate tax structure will force domestic companies to remain competitive. Domestic companies will be forced to look at growing exports to achieve the economies of scale. Financial markets will also be volatile due to ongoing global uncertainties. 🌈



### “The slowdown has taught us to diversify in 2020”

**Yash Rane, Director, Chizel delves into the learnings of 2019 slowdown and the ways in which the Indian manufacturing industry should change its course of action to make this new year a diverse, profit making year.**

**Q What are your expectations in 2020 after the slowdown in 2019?**

The major slowdown is primarily because of Automotive sector which is huge in India. It employs around 35M people and contributes 7% in GDP. The slowdown in Automotive has had a ripple effect on other sectors like automation, tooling and casting industry. However, most of the other B2B sectors like electronics, heavy engineering have seen stable growth. Large infrastructure projects are still under progress and we have not seen any slowdown there.

2019 slowdown has taught us to diversify in 2020 and cater to wider sectors. Too much dependency only on one sector has proven to be difficult only for those who are one-industry focussed.

**Q In the Indian tooling industry, what top 5 trends do you foresee in 2020?**

1. Financial infusion: Lot of credit companies (NBFC sector) are eying on Indian manufacturing to support them for their working capital requirements. We may see traditional support from banks getting side lined and newer ways to raise money will be adopted by manufacturing sector to pacify the financials woes.
2. SMB Digitalisation: Most of the players are now transiting towards adoption of technology in some way. SMBs are now progressing towards cloud adoption. Most of the digitalisation is for easy accounting, managing employees or keeping track of purchasing. But a staggering 68% is still offline and new manufacturing tools / software are coming to Indian market.

3. Diversification and consolidation: Use of Additive Manufacturing with traditional manufacturing is now widely adopted. Tool and die makers must embrace the new methodology of making 3D Printers patterns, inserts and several other use cases that comes with additive manufacturing.

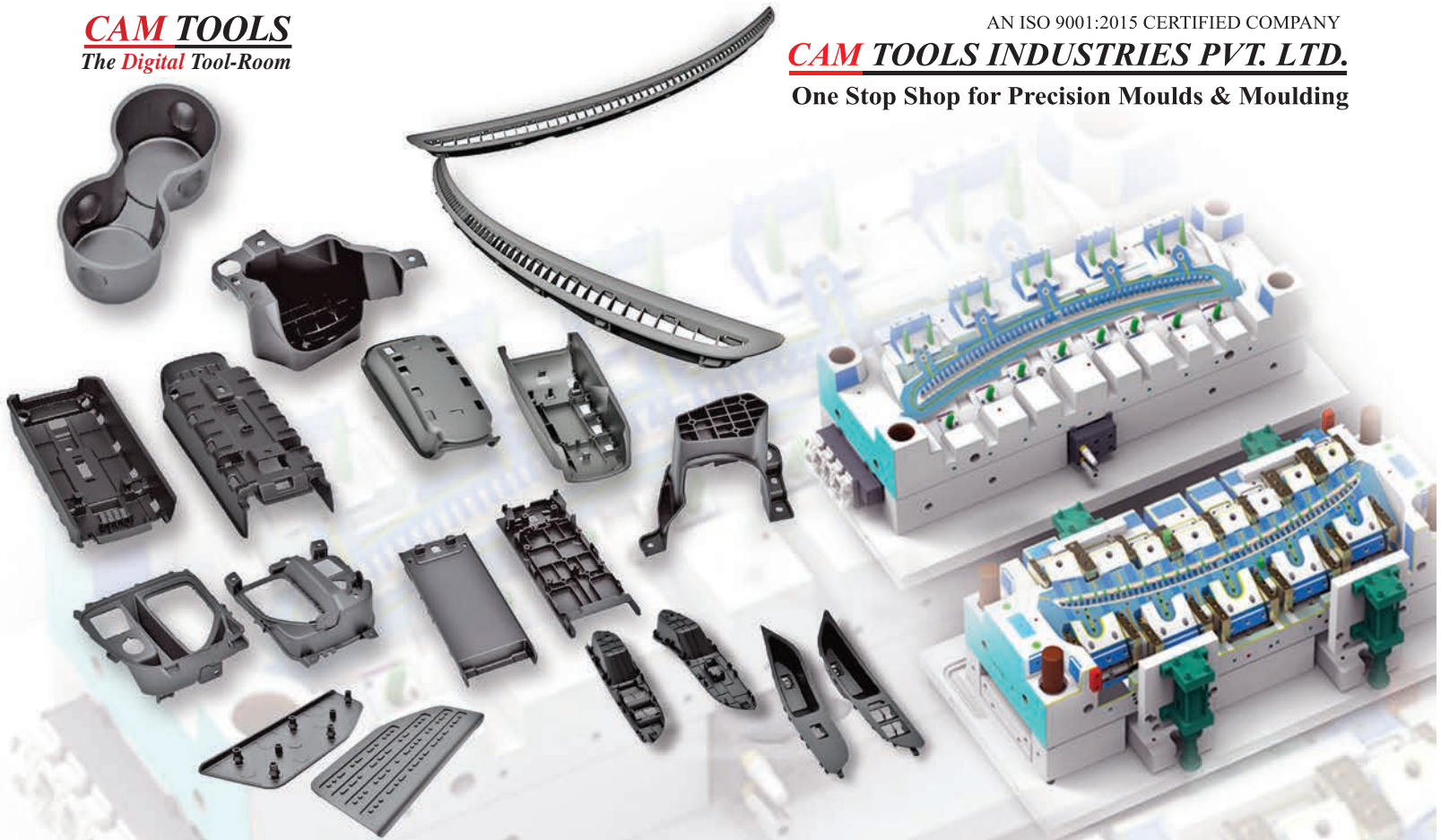
**Q What will be the top opportunities in the Indian industry?**

These trends are the opportunities for the industry. Any stride in this direction will bring more customer satisfaction, better efficiency and strong bottom line with right management.

**Q Tell us about some of the critical challenges that will be addressed in 2020.**

- ➔ Liabilities should be met in 2020. Market might take time to grow again but it is important to ensure that all the liabilities are met. The management of companies should make this a priority.
- ➔ Input and output GST Credit: SMBs are badly hit with long payment cycles from customers. With most of the customers are still on 45 days payment cycle, Govt. itself collect the GST within 30 days leaving the manufacturers high and dry to manage their cash flow on their own. Getting working capital from banks is a long process. 🌈





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## What's Ahead for Industrial Enterprises

# 5 Technology Trends in 2020



The past decade has seen sweeping changes in industrial innovation, from advanced automation to shifting workforce demographics. Leading-edge industrial enterprises are investing billions in digital transformation, driven by major challenges facing industrial companies globally: worker and talent shortage/aging workforce, risk and cost pressure, and digital disruption..

Successful enterprises are at continued risk for disruption – and forward-thinking organizations will increasingly turn to digital transformation and innovative technologies to mitigate, accept, and leverage this new landscape as a strategic differentiator in an increasingly volatile, competitive market.

With 2020 around the corner, we've aggregated trends and predictions for this year (and beyond) to help industrial leaders navigate uncertainty and increase operational flexibility for the future. Let's

have a look at PTC's curated list of technology trends in 2020:

### AI & 5G Move from Emerging to Prominent Technologies for Industrial Enterprises

Over the past decade, artificial intelligence (AI) has revolutionized the workplace, with enterprises making use of machine and deep learning across a broad range of industrial applications to transform processes. AI has the potential to transform the industrial world – and businesses are investing more each year in AI. Research shows a 95% growth projection in the adoption of AI over the next two years, with 42% of industrial enterprises already using the technology to personalize customer experiences, reduce human bias, and automate tasks.

Similarly, 5G is poised to take center stage as a prominent technology in 2020. Forbes notes that the proliferation of 5G will accelerate advancements in smart manufacturing, among other IoT-intensive technologies, proving “the true value of 5G won't be limited to phones.”

5G brings a profound improvement to the industrial setting: fully wireless factories. Smart factories of the future, armed with 5G capabilities, will deliver: speeds that are up to 100 times faster than 4G, latency of less than one-tenth of a millisecond, and movable, easily repurposed IoT sensors that can collect data from one part of the factory one day and a completely different part the next.

### Digitally-Enhanced Workers Drive Productivity and Innovation

The manufacturing skills gap remains a real and pressing threat to industrial enterprises globally. A report by The Manufacturing Institute and Deloitte last year found that 4.6 million jobs will need to be filled in the sector over the next decade, and 2.4 million jobs may be left open due to a lack of trained workers.

Leading-edge organizations are turning to digital technology to optimize their workforce for the present and future. IDC predicts, by 2021, new future of work practices will expand the functionality and effectiveness of the digital workforce by 35%, fueling an acceleration of productivity and innovation at practicing organizations. A survey from PwC finds 89% of respondents say digitalization will drive the hiring of new employees with necessary qualifications. A further 47% of survey participants say they intend to replace workforce attrition due to age by using digital technologies, and half of respondents believe digital technologies will help older employees work longer.

### **The Impact of Industrial IoT Becomes Pervasive Across the Supply Chain**

The IoT is the network of physical objects that contain embedded technology to interact with their internal states or the external environment. For industrial enterprises, it's a valuable asset for one simple reason: it provides the data that makes up the building blocks of the smart factory.

IDC notes that, by 2025, 60% of manufacturers will use IoT platforms with digital innovation platforms to operate networks of asset, product, and process digital twins for a 25% reduction in cost of quality. But Forrester predicts this year will see profound industrial IoT expansion as well, proliferating across consumer products, industrial operations, and supply chains.

"IoT is a technology that supply chain leaders simply cannot ignore," says Christian Titze, research vice president at Gartner. "We are seeing more supply chain practitioners exploring the potential of IoT. Areas that IoT might have a profound impact on are enhanced logistics management, improved customer service, and improved supply availability."

### **Augmented Reality Wearables See Explosive Growth**

While augmented reality (AR) has been around for years, Forbes notes the technology has primarily been adopted in the entertainment space. Forbes predicts, in 2020, AR will see tremendous growth, with businesses realizing the wealth of possibilities offered by AR, virtual reality, and mixed reality, including training and simulation, as well as new ways to interact with customers. IndustryWeek, in fact, says AR will be the easiest way for the next generation of workers to learn new efficiencies – and enterprises will have to embrace the new technology to succeed.

More specifically, MarketWatch projects AR wearables, such as the HoloLens, will take the industrial sector by storm, growing by 73% over the next few years as enterprises leverage the technology to improve workplace productivity, efficiency, and safety.

### **Manufacturers Turn to Digitally-Native Companies to Drive Digital Transformation**

With technologies like AI, 5G, IoT, and AR becoming increasingly prevalent across the industrial sector, manufacturers are turning to partnerships to drive digital momentum. A Deloitte study shows many manufacturers are actively mobilizing partnerships within their ecosystem that can drive targeted business goals, ranging from bolstering a traditional area (e.g., improving customer experience) to adding new capabilities (e.g., creating new business models). As manufacturers think about building agility into their supply chains, there is increasing realization that these efforts cannot occur in isolation.

Deloitte's 2020 Manufacturing Industry Outlook shows leading manufacturers are leveraging digital partnerships at a much higher rate than their peers. Whether to pursue new business models, create new value for customers, or drive higher productivity and output, successful industrial enterprises are embracing digital transformation – and fast.

### **Final Thoughts**

With 2020 around the corner, the time is now for industrial companies to invest in an increasingly digital world. Forward-thinking organizations are leveraging nascent technologies to their strategic advantage, transforming their processes, products, and people.

The trends forecast for the coming year includes a mix of innovative technologies and a new way of thinking about driving change within the industrial sector – will your organization keep pace with the 2020 trends predictions? 🌈

### **About Author:**

**Stacy Thompson:** Stacy Thompson serves as Senior Manager of Corporate Content Marketing at PTC. She has more than a decade of experience in content, SEO, and social media development, B2B and B2C communications, demand generation campaigns, and analytics/content measurement. She is also a Professor of Content Strategy in Kent State University's User Experience Design Master's program.



Sustainability, Scaling, and Uncertainty

# 3D Printing Trends for 2020



**“If we could go into 2020 with only one word in mind, it would be ‘sustainability.’ The focus on sustainability will go beyond environmental and social impact. Though there are uncertain economic times ahead, 3D printing presents an opportunity for companies to be financially sustainable, through end-use production and new applications, along with technical capabilities like automated post-processing and AI. These trends will define our industry in 2020.”**

**- Fried Vancaen, Materialise CEO**

In 2020, we will celebrate Materialise’s 30th anniversary. In the past three decades, we’ve seen 3D printing grow from a nascent technology that was struggling to create even basic shapes to a revolutionary technology, capable of transforming entire industries and challenging our traditional manufacturing processes. We build on those three decades of 3D printing experience to look forward and identify those themes and trends that will drive and define our industry in 2020.

## 1. Making 3D printing more sustainable

Multinational corporations are becoming increasingly influential, and with that influence comes responsibility. The 3D printing industry is not exempt from this and needs to consider the

social and environmental impact of the technology. This means that, as we develop new products and technologies to help our customers create innovative and meaningful applications, sustainability needs to become top of mind.

3D printing already affords companies with an instrument to manufacture in a more sustainable way — both socially and environmentally. The technology empowers people locally through decentralized production, it improves people’s health and wellbeing through personalized care, and it enables higher-quality jobs. At the same time, 3D printing also supports a manufacturing process with less waste, through mass customization and optimized distribution. As a result, many view 3D



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printing as a positive force that helps companies operate more sustainably. But that is simply not enough.

Moving forward, the question is not: is 3D printing a more sustainable manufacturing technology? The question becomes: what can we do to make 3D printing more sustainable?

## 2. Uncertainty becomes opportunity

With uncertain economic times ahead of us, manufacturers will focus more on reducing costs and mitigating risks, particularly those manufacturers operating in industries that are more sensitive to fluctuating demand. During the economic crisis of the late 2000s, the 3D printing industry was hit quite hard, seeing as it mainly served as a prototyping technology at the time. And as companies cut investments in R&D, the demand for prototyping fell.

"Today, this is different," says Jurgen Laudus, Vice President and General Manager Manufacturing. "3D printing is no longer only about prototyping — it has become a complementary technology for the creation of final products. At the same time, the technology itself has matured and with increased trust, more manufacturers now rely on 3D printing to deliver specific design and manufacturing benefits. And so in uncertain times, 3D printing no longer represents a cost and a risk — but an opportunity."

Compared to traditional manufacturing technologies, 3D printing doesn't follow the same economies of scale. It requires very little start-up capital. On-demand production means there is less need for stock and localized production can absorb the impact of fluctuating tariffs. As we face uncertain economic times, we believe more manufacturers will turn to 3D printing as a tool to reduce costs and mitigate risks.

**"Our industry can and needs to do more, by developing new and innovative ways to reduce our impact on the societies we interact with and the environments we operate in," says Fried Vancraen, founder and CEO. "I'm excited to see more and more industry leaders who recognize this and who develop initiatives to reduce energy consumption, to increase usage of recycled powder, and to create the workplaces of the future."**

## 3. Laying the foundations for AI in AM

Data is power. With increased adoption of 3D printing and more sensors providing improved insight into the 3D printing build process, we are collecting more data than ever.

But collecting data is not enough — we need to make data actionable.

AI is a promising and incredibly powerful tool to digest large datasets and create actionable insights. But this requires not only large data-sets but also a deep understanding of processes. Or in this case: the 3D printing build process.

"Today, there are certainly instances where AI helps to advance 3D printing," says Stefaan Motte, Vice President and General Manager Software. "But before we can truly adopt AI in AM, we need to work on developing better insights and get a better understanding of the many parameters and algorithms that define the 3D printing process. This will require continued investments in research and innovation and cross-industry collaboration."

Only when we truly understand the 3D printing process and develop actionable insights on how to make this process faster, more stable and more predictable, can we unleash the full potential of AI in AM.

## 4. A new climate of innovation

In recent years, 3D printing has advanced on many fronts: faster machines, new materials, and more finishing options. Today, we see all of these advances coming together to create an exciting new climate of innovation.

"This is excellent news for the 3D printing industry," says Kristel Van den Bergh, Director of Innovation. "Not only because it allows us to enhance existing applications with improved production processes, but it also sparks the development of entirely new applications that were unthinkable or unachievable before."





A good example is the new TPU material for mass customization. In previous years, it was possible to print with TPU but the process was rather unstable and therefore unscaleable. Now HP's MJF machines, BASF's new TPU materials and Materialise's knowledge of process and design are the perfect mix to create and scale new applications such as footwear, athletic gear, and safety equipment.

Advances in 3D printing machines, software, and materials are creating a perfect storm of opportunities. In previous years, consumers may not have known or cared about the manufacturing process behind their product of choice. Now, with increased performance, aesthetics, and active participation in the personalization process, 3D printing is about to get real. In 2020, and beyond, people will discover and enjoy products they never imagined before.

#### 5. Investing in automated post-processing

As companies scale their 3D printing operations, they increasingly rely on automation. But the potential to scale is limited by post processing, which today is still mostly a manual process. Scaling this manual process by simply adding people increases cost, variability, and doesn't increase reliability. If we

want to scale production, the only way forward is to automate post-processing.

This is especially the case for mass customization. For personalized footwear, different customers may want different colors, which complicates the process even more. And even if we talk about mass customization, the total output is still relatively small.

"We believe that the time for automating post-processing is now," says Bart Van der Schueren, CTO. "At Materialise we've been heavily investing in these processes. An example of our recent commitment to automation is that we robotized our entire cleaning line in our medical production to ensure the highest possible quality standards."

Fortunately, Industry 4.0, with its increased automation capabilities and robotics, is creating new ways to automate the post-processing steps. This will require time, effort, and new investments, which will only pay off if 3D printing starts to scale. Which it will. And that's why it's vital to invest in automated post processing today. 🌈

*Article & Image Courtesy: Materialise*

## TAGMA to promote 3D Printing technology at upcoming DMI 2020

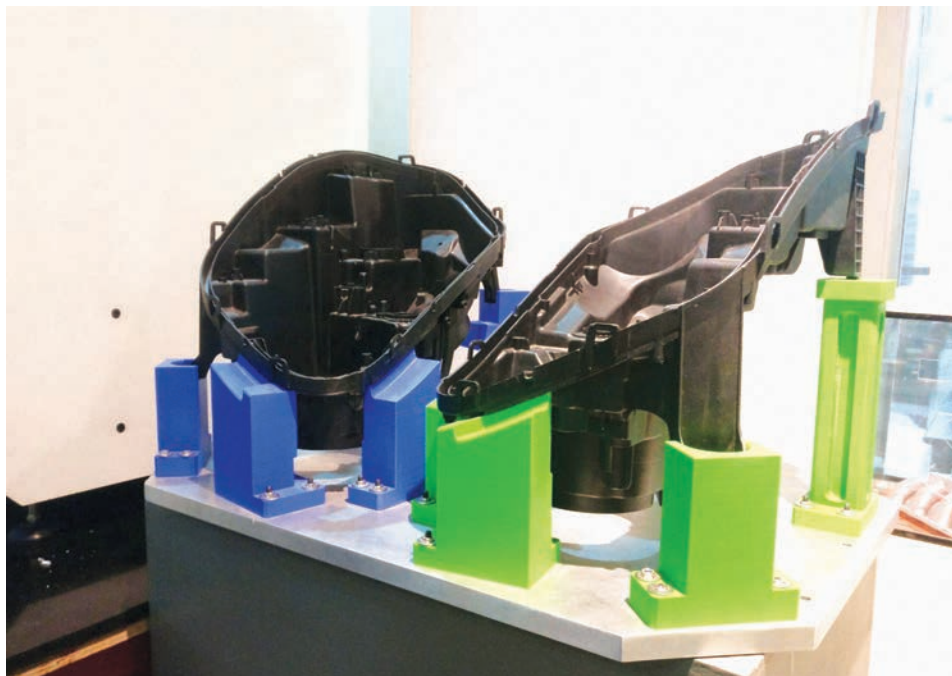
3D printing technology has evolved to become one of the most important manufacturing technologies of modern age and experts believe that we have just scratched the surface in terms of what we can do with 3D printing. Companies all over the world are coming up with new developments and pushing the boundaries to make in main stream production techniques. To spread awareness regarding the technology, TAGMA India is introducing special 3D printing pavilion at upcoming Die Mould India 2020. The numero uno exhibition for tooling industry will take in Bombay exhibition Centre, Gurgaon, Mumbai from April 22-25.

"There has been great level of interest among the tool makers to explore the possibilities with 3D printing. However, there are not many platforms to teach or train manufacturers in order to spread awareness about the same. We wanted to provide a platform, where professionals from 3D printing community and tooling industry can engage with each-others, develop contacts & explore possibilities and nothing better than DMI for such activities where 1000s of tool makers visit from across the world," said Mr Bhaskar Kanchan, Director, TAGMA India.

TAGMA has been in fore front of promoting new technologies in India and provide idea platform for technology providers to launch their products. It would be an ideal opportunity for tool makers to witness some of the live demonstration of 3D printing machines.

"Our motto is to highlight the benefits of 3D printing among the tool makers community and help them understand the technology well. Along with exhibition, we are also conducting seminar on first three days and additive manufacturing would be one of the most focused topics at the seminar. I invite 3D printing community to join us in making this successful and make most of the DMI," concluded Mr Kanchan.

# 5 Reasons to 3D Print Jigs & Fixtures



Jigs & Fixtures are considered as the backbone of any production unit. Having said that, did you know recent advances in additive manufacturing has reduced heavy consumption of key resources such as manpower and cost incurred?

These are usually manufactured and fabricated using metal or wood imposing serious design challenges and heavy investment in production time. Divide By Zero Technologies has come with its patented AFPM technology in additive manufacturing to produce Jigs & Fixtures using 3D printing. AFPM is far superior and reliable 3D Printing technology compared to the conventional FFF and other 3D printing technologies currently available.

Let us now quickly discuss the diverse advantages of 3D printing in applications pertaining to Jigs & Fixtures.

**Ergonomics:** Conventional designed tools being heavy and unmanageable, exhibiting huge strain to the labor force in tool handling. Moreover, there are times when manufactured tools comes out to be flawed units resulting in significant downtime and worker discomfort. With additive manufacturing, vendors can rest assured with the design efficacy of any complexity avoiding any problems mentioned above.

**Weight Reduction:** Did you know that strong plastic used in 3D printing has been technologically proved to be a better alternative to metals and woods? Most importantly, they are light and aids in increased productivity and the lifespan of the final product.



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As a matter of fact, they are equivalent in terms of quality and don't pose hindrances in cost incurred.

**Design Complexity:** You must be aware that intricate design features require specialized machining and tooling processes when implemented with metal tooling. With 3D printing, you can lower down significant cost and machining time and can achieve blind internal complex features that is otherwise impossible with conventional manufacturing processes.

**Quick Delivery:** Conventional machining usually requires detailed prototype drawing, reviews, and complex design challenges. With additive manufacturing, it's just a walk in the park for you. All you need to do is to create a design and program it into the machine. The biggest advantage is that the machine will run un-attended and will deliver new parts overnight.

**Cut Down Cost Incurred:** Did you know that 3D printing will cut down 2 major cost invested domains of your business - material and labor? Yes, that's right and will reduce the same by over 60%. Most importantly, none of your materials used will end up as scraps on the floor. Over 70-80% of the



time required will be shortened with 3D printing as compared to other conventional counterparts.

It's not about just saving millions, it's about getting smarter by thinking big also. How about adapting to new-age technologies and save a considerable amount of business resources? Want to see the magic unfolding? 🌈

**Courtesy:** Swapnil Sansare,  
CEO, Divide By Zero Technologies

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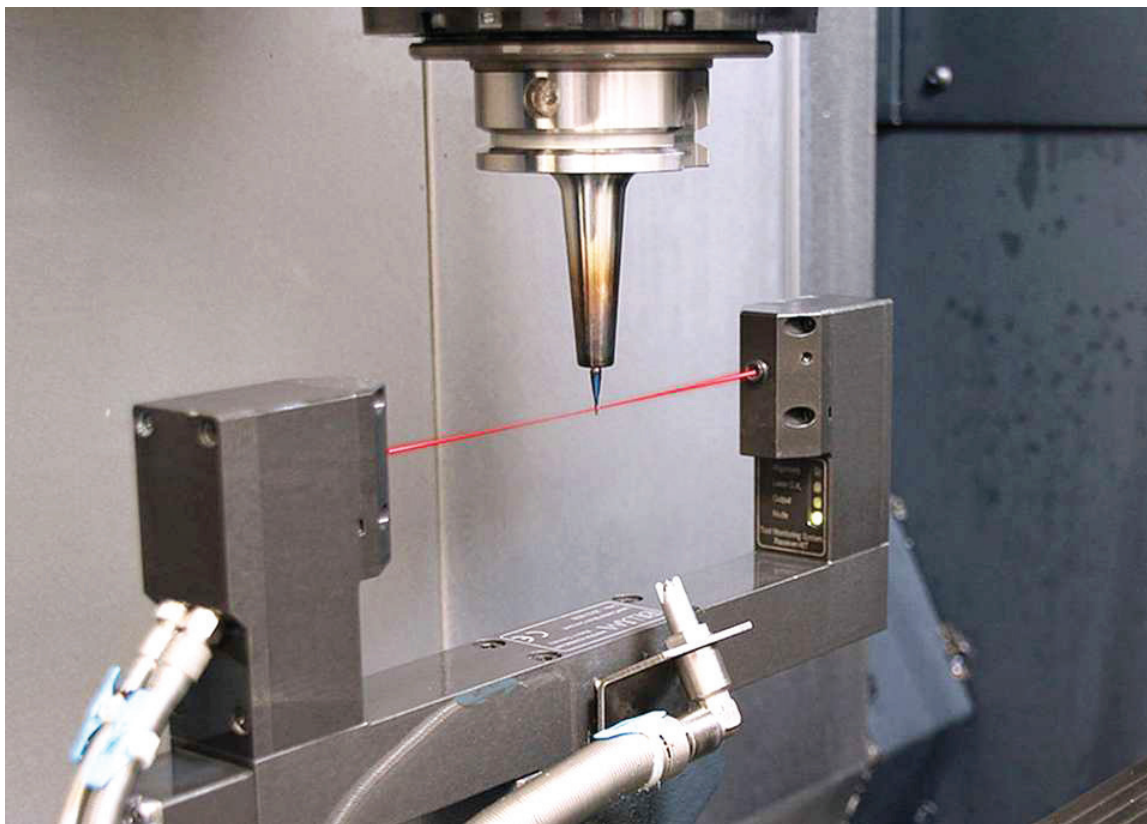
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# Reliability for automated mould making

## Laser Control at Playmobil



■ BLUM laser measuring systems help geobra Brandstätter to produce injection-moulding tools efficiently and in top quality.

**A**s the company approaches its 40th anniversary, some 2.6 billion Playmobil figures currently populate the earth. Many new figures are released every year, placing high demands on the in-house mould shop. To achieve maximum efficiency in unmanned, automated operation, Playmobil's numerous machining centres have been using LaserControl measuring systems of Blum-Novotest already for 15 years.

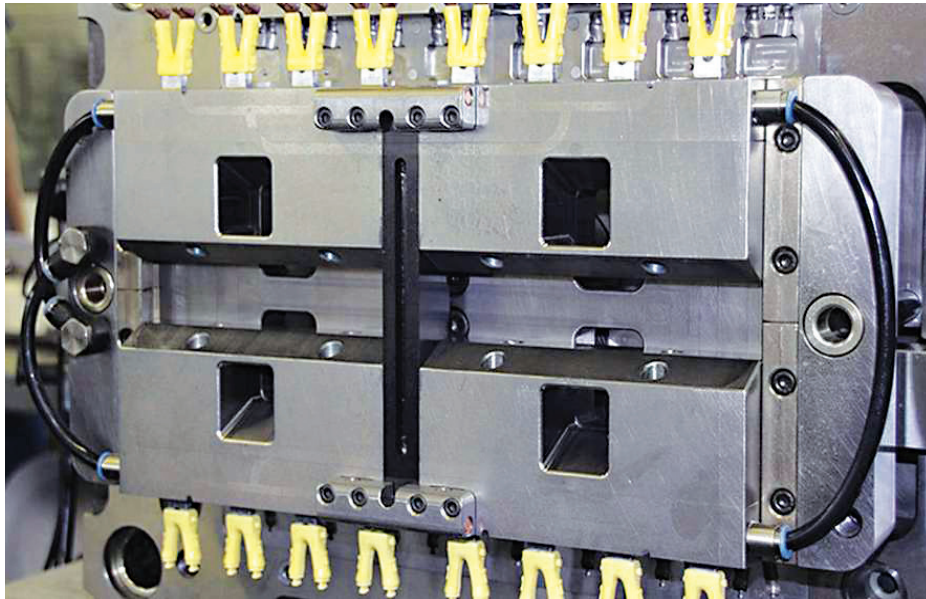
"For Playmobil figures, hundredths of a millimetre count," says Attila Britting, head of Playmobil's in-house mould shop in Zirndorf near Nuremberg. "The aim in building the injection moulds is to produce finished plastic items that require virtually no rework – which is vital in view of a daily production of approximately 10 million individual parts and over 100 million figures a year. Consequently, the mould

separation must also be a high-precision operation, so that there are not any burrs on the individual parts or the finished figure."

And not least, the moulds are specified for extremely high volumes, production runs of 200,000 to 300,000 pieces from one mould are no rarity. The required productivity can only be achieved by partially automated production alongside the normal two-shift operation. So an array of machines works overnight on prepared jobs. To execute these jobs, several of the machining centres are equipped with pallet changers and tool magazines with the capacity to hold as many as 120 tools. The machines even keep running unmanned over the weekend. The Blum-Novotest systems are installed in the machining area of the automated DMG five-axis machining centres..



## Case Study



■ In the manufacture of highly complex injection-moulded tools, hundredths of a millimetre count: All single parts are precisely matched to each other.

After every tool change, the laser automatically measures the length and radius of the tool prior to machining, and after machining checks for breakage and wear. Thus, our skilled workers no longer have to pre-set the tool in the pre-setting device. A new tool is simply shrink-fitted into the holder and measured at machining speed after fitting. This ensures that the tool data in the machine is correct, numerical errors or data reading mistakes can no longer occur. Further features include high-speed automatic compensation for the thermal expansion of the entire machine and for spindle displacement. Incorrect tool data can have costly consequences such as defective tools, rejects, or machine stoppage. A spindle damaged by a crash will cost at least 18,000 Euros to replace.

Without a monitoring system to detect worn or broken tools, automated production is hardly possible. The LaserControl system's breakage monitor ensures that broken tool detection runs immediately after every machining step. Depending on the programming, the machining centre can then either exchange the tool for a twin or notify the on-call service staff, who can log in to the machine over the Internet and monitor the workshop through a webcam. At Playmobil, as many as four of the key tools are held in the tool changer, which means that the automated overnight jobs run very reliably.

We mostly use steel with a high chromium content because it shows the least wear during the large volume production large. It does cause considerable tool wear during cutting, however. That is why it is

very important to keep an eye on the running times of the individual tools. The BLUM laser measuring systems do this very well.

High-precision measurement in a dirty environment poses a major challenge, and cooling is essential to the production process. To protect the optical system from being soiled, the measuring system is mechanically sealed off from the coolant by a pneumatically operated shutter piston during machining. The rotating tool is also cleaned with compressed air prior to measuring in order to ensure that the measurement is not impaired by swarf, dirt or cooling lubricants. During measurement, a stream of barrier air provides protection against soiling.

The LaserControl systems have truly been their money's worth at Playmobil. The systems are practically maintenance free; and, after more than 10 years in continuous operation, the seals look like new. Above all, however, the experts have never been let down by the laser systems and have experienced nothing but good things in terms of service, too. "We have had only good experience with BLUM lasers – and we save working time because there is no need for pre-setting", Marco Mendl, team leader CAD/CAM/NC, summarises. "The accuracy of the LaserControl systems is astounding, as well. Based on our experience, its repeatability is within less than two thousandths of a millimetre. And for us, one thing is for certain: Without the BLUM laser systems, this degree of automation would not be possible."

Based in Zirndorf near Nuremberg in the Franconia region of southern Germany, geobra Brandstätter GmbH & Co. KG is the manufacturer of Playmobil, and as such Germany's largest toy manufacturer. The Brandstätter Group operates production facilities in Germany, Malta, Spain and the Czech Republic. It employs more than 3,700 people worldwide, and in 2012 generated total sales of 591 million Euro. At the heart of the multi-award-winning toy concept are the 7.5 centimetre tall Playmobil figures, which are marketed in over 30 historical and modern-day themed series to more than 80 countries all over the world. Approaching their 40th anniversary, there are currently some 2.6 billion Playmobil figures populating the earth. Alongside premium toy quality 'Made in Europe', since the year 2000 the innovative business has also been manufacturing LECHUZA high-grade plastic planters. 🌱

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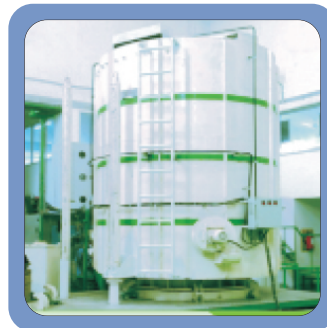
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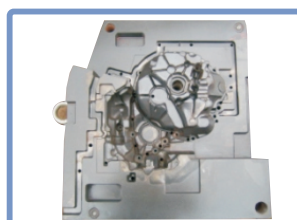
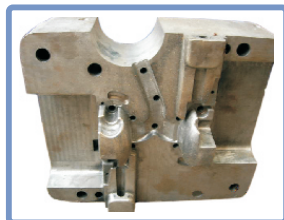
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## A look at year 2019

### TAGMA Organises 4rd edition of ITS in Pune

**THE** fourth edition of International Tooling Summit (ITS) was held at Hotel Hyatt Regency, Pune on February 7 and 8, 2019. Organised every year by Tool and Gauge Manufacturers Association (TAGMA), it is India's largest die mould gathering. This edition of ITS revolved around the theme, 'Indian Tooling Industry: Forming & Moulding the Future'. The two-day event saw about 40 speakers sharing insights about the industry through four panel discussions and 16 technical sessions.

Overall, the event aimed to highlight the latest technology trends, business dynamics, opportunities, challenges and the future outlook of the Indian tooling sector.

The programme started with the National Anthem, followed by a traditional lamp lighting and inauguration by the dignitaries. Chief Guest Mr Sunil Kakkar, Executive Director (Supply Chain), Maruti Suzuki India Ltd; Guests of Honor Mr Saurabh Kumar, DGOF & Chairman, Ordnance Factory Board and Ms Laxmi Laxman, General Manager, PCK Buderus (present on behalf of Peter Vetter, Head, Quality Planning Tool Steels, Buderus Edelstahl; Mr N Reguraj, MD – NTF and Founder President, TAGMA India; Mr D K Sharma, President, TAGMA INDIA and Mr D Shanmugasundaram, Vice President, TAGMA India conducted the lamp lighting ceremony in the presence of the attendees, speakers, panellists and sponsors.

The inauguration ceremony was followed by felicitation of Mr N Reguraj, the Founder President of TAGMA. He was



presented the life time achievement award by TAGMA India. He founded TAGMA in 1990 along with Mr Anil C Kilachand, Mr P N Rao, Mr S Samu, Mr J N Godrej, Vijay N Kulkarni, Mr S C Kalyanpur and Mr A R A Shaikh.

During the event, TAGMA felicitated four industry stalwarts Mr Surendranath Narayan Pulyadath, Mr Anand Kumar Seth, Mr P Goyal and Mr Naresh Janardan Raut for their contribution to the industry.

The two-day event helped the professionals present at the event understand the latest in technology, customer expectations, opportunities and the challenges in front of the Indian tooling industry.

### Canadian mould makers shows commitment to Indian market, CAMM delegation visits TAGMA members in Chennai area

**MEMBERS** of Canadian Association for Mold Makers (CAMM) were in India in March 2019. Led by Jonathan Azzopardi, President, CAMM; a delegation of 11 members was in India to explore opportunities in the Indian market. The South chapter of TAGMA also organised a two-day factory visit to several Chennai-based tool rooms for the delegation.



Held on March 12-13, the factory visits aimed to highlight the capabilities of Indian tool rooms. CAMM delegates visited Karthigeya Moulds & Dies and Microtech Engineers on the first day. On the second day they visited four tool rooms— Dietech India Pvt Ltd, CLASTEK Engineering Pvt Ltd, Sanjay Steels Pvt Ltd, and Classic Moulds & Dies.

A lunch meeting hosted by Mr. Prabakar, President TAGMA Chennai Chapter on March 13 for CAMM delegates and Office Bearers of Chennai Chapter. It led to a smooth interaction between both and provided a better understanding about each other's capabilities and expectations. D Ravi, Co-opted member of TAGMA said, "We were extremely happy to host Mr. Jonathan and his team. It was an excellent opportunity for us to showcase our capabilities, learn about Canadian mould making industry and their expectations. I am sure this will lead to some impactful synergies between Indian and Canadian mould makers. Together we can provide excellent solutions."

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## A look at year 2019

### Prime Industries and TAGMA jointly organises Tool Makers meet in Nashik

**NASHIK** based Prime industries, country's leading graphite supplier along with Tool and Gauge Manufacturers Association India (TAGMA) organised tool makers meet in Nashik on May 16th. The event was graced by some of the largest tool makers from Nashik along with executives from TAGMA and other OEMs such as Mitsubishi and Haas Automation. The agenda of the event was to get tool makers, association members, OEMs and material/technology providers together to discuss the challenges and opportunities in the die mould industry.



The event started with a welcome note from Mr Ashish Chandra Varma, Managing Partner, Prime Industries. Ashish spoke extensively on the innovative business model for the

tool makers and why we should think beyond the obvious to grab the bigger opportunities. He also stressed on having a collaborative approach to enhance productivity and efficiency. His speech revolved around "Business model for future & the importance of collaboration for technical assistance & outsourcing partners for business expansion."

This was followed by a session from Mr DK Sharma, President, TAGMA. He extensively spoke about mission of TAGMA, Die Mould India 2020, Toolmakers expectations, Global market scenarios and upcoming technologies.

The event was followed by the panel discussion on Opportunities & Challenges in the Tooling industry. Moderated by Mr Ashish, the panellist were a mix of machine suppliers, tool makers and association members. The panel hosted Mr. DK Sharma, President- TAGMA; Mr Nitesh Gupta, GM- Projects & Product Support, Haas; Mr Sadananda, Head sales & Tech support, Mitsubishi EDM/ Laser and Shrikant Navandar, CEO, Satish Injecto Plastic.

The event ended with networking dinner and overall it was a very interactive and participative networking event.

### TAGMA Successfully conducts AGM in Bengaluru

**TAGMA** organised AGM in Bengaluru on September 14th at Fairfield by Marriott Bengaluru. The AGM was attended by many member companies that comprises tool makers, machine tool suppliers, OEMs, among others. The event was also graced by N Reguraj, Founder President, TAGMA and MD, NTF along with Kavitha Paramesh, Partner at T Sriram, Mehta & Tadimalla, Chartered Accountants (TSMT) also an Auditor for TAGMA.

The event started with a welcome address by D Shanmugasundaram, Vice President, TAGMA. Followed by an address by DK Sharma, President, TAGMA. In his speech Sharma said, "TAGMA has come a long way and now creating real value for our members companies. I am delighted to inform that the two Tech Shows we organised with Volkswagen and Toyota were a huge success and some of us have started getting orders from



them. The space booking for Die Mould India 2020 is going on full swing and we will cross the previous records despite current slowdown. I request all of you to come forward and share your input to make a better community for mould makers. We are working hard to resolve some of the issues we face in our day-to-day life by continuously conducting dialogues with OEMs and government body."

In his address to the audience Reguraj said, "I would like to talk about the current mind set in the industry on issues such as unavailability of jobs, tool makers will not be required, artificial intelligence, machine learning will come and take over the jobs. This is all myth in a way. IC engine will not disappear, may be fossil fuels, if not other fuels. It will coexist with electric vehicles. The tooling industry do not have to worry; the body will remain same, the technology of instrumentation and brakes system will remain same. Only the power train will change but there will be plenty of work for the tooling fraternity to do. I would suggest Tool Makers to be updated with the trends and act accordingly by upgrading their quality and efficiency." Along with AGM, TAGMA also organised Mould Makers meet to discuss common challenges faced by mould makers and how to tackle the current market trends. The meet was attended by many tool makers along with TAGMA officials.





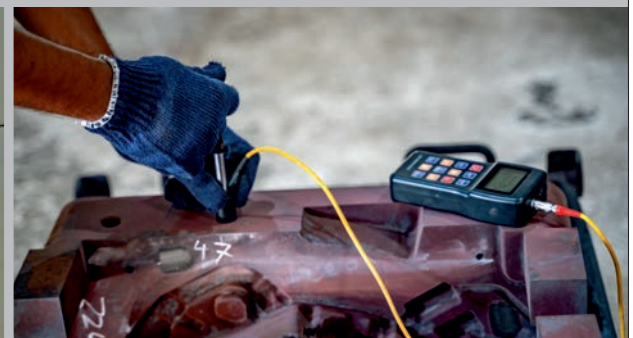
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## A look at year 2019

### TAGMA and NTTF joins hand to start training courses jointly

**FINDING** skilled manpower has been one of the daunting tasks for any Tool Makers in the country. To help the companies in skill development, TAGMA and NTTF has joined hand to start training courses. The initiative aims to help the industry in skill development, training and placement. Commenting on the collaboration DK Sharma said, "Most of you are aware that we have setup TAGMA Centre of Excellence (TCET) in Chakan, Pune. The center is being supported by DHI and the building has come up now with couple of machines. Today, I am delighted to share that Mr. Reguraj our Founder Member, our Mentor, our Father figure has given us consent to collaborate with TAGMA and TCET to start training courses from January next year. TAGMA and NTTF will form a training center called TAGMA NTTF Center of



Excellence and Training which will be conducted at the TCET Chakan, Pune. There will be special focus on the practical training as well."

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**Email Id:** mouldsdies18@yahoo.co.in

**Contact Person:** Mr. Bhavarlal M Mistry

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**Email Id:** info@hanspark-group.com

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Nashik – 422010 Maharashtra

**Tel:** 9890690221 / 7972788849

**Email Id:** nnautomationsolution@gmail.com

**Contact Person:** Mr. Niraj Jadhav

**Activities:** Manufacturers of Industrial automations, SPM's, Plastic Injection Moulds, Fixturs, Press Tools, Dies & Gauges.

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**Contact Person:** Mr. Nishil Mittal

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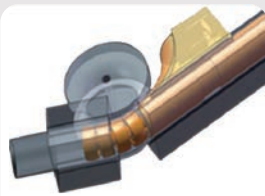
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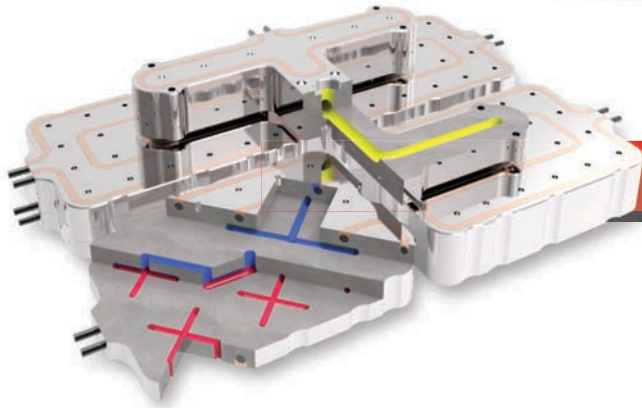


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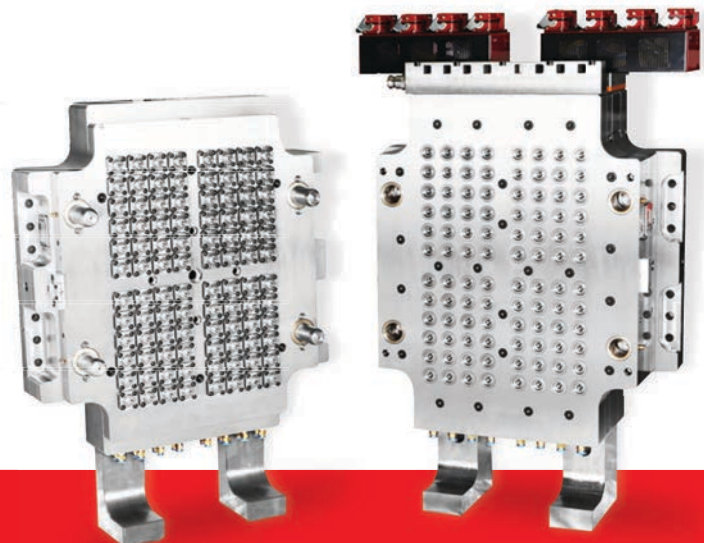
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