

TAGMA TIMES

NEWSLETTER

(Technical Info. on Die, Moulds & Toolroom)

Volume: XXVI / No. 06

(Private Circulation for Members Only)

February 2020

Digitising Manufacturing of the Future

The background of the cover features a stylized illustration of a factory with two buildings and two smokestacks emitting a cloud. A large gear is positioned behind the factory. The entire scene is overlaid on a complex circuit board pattern. The color palette is primarily blue and white, with black outlines for the factory and gear.

Budget Analysis

Budget 2020:

Changing the course of Manufacturing

Tech Focus

How to increase productivity in plastics production by 25%

Die Mould India: "Die Mould India postponed amid COVID-19 Breakdown"pg34



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PRESIDENT'S MESSAGE



As we were hoping for a fresh start in 2020 with BS-VI finally stabilising and economy getting back on track, something unexpectedly came up and shattered the global economy. Yes, I am talking about the COVID-19. The COVID-19-Novel Coronavirus has become the talk of the town with countries around the world locking down their citizens to avoid physical contact, there are huge travel bans, manufacturing is on stand still as the virus has now impacted Europe and US as well. The whole scenario has basically stopped the growth prospect for us at least till the end of this year. The emergence of Coronavirus has impacted practically all industries and we are not yet sure when the vaccine will be available.

In this challenging time, my suggestion to fellow tool makers would be to develop new skills, explore possibilities over internet which largely remains untouched by us to meet potential customers and explore new concepts/techniques such as industry 4.0, additive manufacturing, etc. If we look at the business scenario after the previous epidemics, the demand shoots up as everyone wants to catch up with the backlogs. We should be prepared with our skills and infrastructure to grab the most of it.

Budget also was announced recently and lot of funds were allotted for agriculture and infrastructure. So, it would be worth learning skills to venture into these industries as they are poised to grow in coming days as well.

In this challenging time, while the global supply chain has been disrupted, India has still not been affected badly. Hence, we must prove our capabilities and encash this opportunity.

Also, taking into account the current pandemic situation, TAGMA India has decided to postpone the Die Mould India exhibition. While it was a tough decision to take, but safety of our members, exhibitors and visitors is our utmost priority. The exhibition will now be conducted from August 24-27, 2020.

Best Wishes,

D. K. Sharma
President



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Uncertainty Continues

Dear All,

COVID-19 or the Novel Coronavirus has been declared as an epidemic by the World Health Organization (WHO). During these unprecedented times, when the world is impacted by this epidemic, the global stock market has also witnessed an adverse effect.

Manufacturing activity is at an all-time low as new orders contracted, reflecting worries about supply chain disruptions related to the fast-spreading Coronavirus outbreak. This is also revived the fear of a recession.

Manufacturers around the world are trying their best to improvise to keep the factories running amidst the coronavirus threat. They are battling one of the biggest disruptions in terms of the supply chain, staffing, and demand.

This whole scenario will eventually pose challenges for India tool makers too. Though the way India has been dealing with the Coronavirus threat is quite impressive, the fear of outbreak has led citizens to cut down on travel, the purchasing index has also been very low. The whole scenario will also impact Indian manufacturing activities.

While there are several challenges and uncertainties, here are a few things tool makers should keep in mind:

- ▶ Explore other industries beyond automotive
- ▶ Develop skills to venture into new industries as the dependency on one industry will not work in the long term
- ▶ Learn to market and reach out to customers from around the world
- ▶ Exercise brand building activities through the internet, social media, etc
- ▶ Explore more about the futuristic trends such as additive manufacturing, industry 4.0, and cloud manufacturing, among others.

The February edition of the TAGMA Times focuses on digital manufacturing and the budget of 2020. Now that we all are maintaining social distancing, it's a good time to take a break and gather knowledge from all the sources that can help us in the long run (including the Tagma Times :)).

Before I sign off, I wish you, your family, and colleagues a safe and healthy time ahead. These are challenging times, let's come together and do our part to beat COVID-19.

Best Wishes,

Nishant Kashyap

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Brose India forays into motors and electronics for electric two-wheelers

AUTOMOTIVE mechatronics supplier, Brose India, inaugurated its new campus in Hinjewadi, Pune in February this year, to foray into motors and electronics for electric scooters and motorcycles. The company plans to invest 17 million euros (₹ 132.67 crore) over the next 5 years.



The Pune campus is spread around 175,000 square feet and is home to 480 employees. Brose is investing 3.2 million euros in a new headquarters building, development and IT center as well as the manufacturing plant.

“This investment is not only a commitment to the Indian market; it is also a strategic move for the Brose Group. To improve competitiveness and efficiency we are further expanding the global engineering and IT service center in Pune and shortening the paths between development and

manufacturing. Speed is a success factor for our company. The market trends in the global automotive business rely on extremely fast and consequent decisions,” emphasised Ulrich Schrickel, CEO Brose Group.

The company’s goal is to enhance more of its products with sensor technology and software solutions. This will enable the automotive supplier to create new mobility experiences. For example, a more comfortable vehicle access with side door drives and seat adjusters moving in unison. “With our competence in the integration of electronics, sensor technology and software into intelligent products Brose is actively shaping the future of mobility,” added Schrickel.

This is why the supplier must expand its software expertise. In the last year alone, the family-owned company hired 100 experts in digital development, embedded software and IT in Pune. “The current plan is to grow to around 500 employees in total. They will work on cost-effective products for the domestic market and also support other Brose locations,” summarized Vasanth Kamath, President Brose India.

The company plans to develop twice as fast as the domestic market with an average growth rate of 20 percent per year until 2025.

India to Fast-Track Manufacturing of Tech Goods in wake of Coronavirus

SEEING opportunities in the light of companies looking to shift their manufacturing base from China due to the coronavirus epidemic, the Indian Union Cabinet is soon expected to take up for consideration a scheme that will aim at boosting the manufacturing of smart phones, semi-conductors, and other high-value tech goods.

This proposal is likely to replace existing schemes like the Modified Special Incentive Package Scheme (MSIPS), Electronic Manufacturing Clusters (EMC), and Electronics Development Fund (EDF). The scheme was first announced by Finance Minister Nirmala Sitharaman in the Union Budget this year.

“The process of drafting the scheme, deciding its contours, and getting it started are being expedited in the light of the situation in China. Based on our conversations with companies that are interested in moving their

manufacturing bases out of China, we do see opportunities,” said a senior finance ministry official.

It is learnt that the scheme will encompass multiple proposals that will require Cabinet approval, mostly from the Ministry of Electronics and Information Technology (MEITY).

“The proposals have to be sent to the Cabinet and may be approved in a few weeks. Because of the coronavirus situation, they might look at the proposals more favourably,” said a MEITY official. “Because of the coronavirus, there is an overlap and some proposals are being discussed with the finance ministry,” the person added.

Some details, like the outlay, are still being worked out, officials said. It is likely that the outlay of the new scheme will slightly exceed the allocations for those it will replace. In MEITY’s budget, the

three programmes have been allocated Rs 980 crore for 2020-21, compared with the 2019-20 revised estimates of Rs 690 crore and budgeted estimates of Rs 986 crore.

“I propose a scheme focused on encouraging the manufacture of mobile phones, electronic equipment, and semi-conductor packaging. The details would be announced later,” Sitharaman had said in the Budget.

In their meetings with Sitharaman last week, representatives of a number of sectors spoke about the need for India to build manufacturing capacity long-term for goods, raw materials, components and active pharmaceutical ingredients, for which they now have a huge dependence on China.

Source: Business Standard

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U.S. Manufacturing Technology Industry Optimistic About 2020

U.S. manufacturing technology orders fell 15 percent in November from the previous month to \$320 million, according to the latest U.S. Manufacturing Technology Orders report published by AMT – The Association For Manufacturing Technology. For the first 11 months in 2019, manufacturing technology orders were \$4.1 billion, down 19 percent from \$5 billion in 2018 which was an especially strong year.

“This figure is in line with expectations we’ve had since January that 2019 spending would be about 20 percent lower than in 2018,” said Douglas K. Woods, president of AMT. “Given how strong a year 2018 was, current dollar volumes are still healthy compared to

the average over the past ten years.”

He continued: “November’s drop in the dollar value of orders by 15 percent while units fell by only 3 percent reflects an aggressive move by sellers to reduce inventory before the end of year. The



dollar volume would have been lower if not for the growth in orders for complex machines as larger manufacturers returned to the marketplace.

“Another contributing factor to lower November orders was the tax reform

enacted in 2017, which established a clear set of rules on tax incentives through 2022. This created a stability that has leveled investments in capital equipment across the year and eliminated the year-end rush to place orders.

“We expect to see the manufacturing technology market pick up in the second half of 2020 for several reasons. The U.S.-China trade deal, which will significantly increase Chinese imports of U.S. agricultural products, will lead to increased investment for agriculture equipment. Anticipated approval of USMCA will increase trade throughout North America and lead to new investment in key capital-intensive industries.”

Car sales in India to stabilise in 2020: Moody’s

CAR sales in India are expected to be relatively flat this year after plunging 11.8 per cent in 2019 amid slowing economic growth, as per Moody’s Investors Service.

The rating agency also lowered its global sales forecast as the coronavirus outbreak reduces demand and disrupts automotive supply chains. “We expect Indian auto sales to rise 0.5 per cent in 2020, supported by stimulus measures, discounts on new cars that do not comply with Bharat Stage VI (BS VI) emission norms, which will take effect in April,” the ratings agency said in a statement.

But weak consumer demand and tight liquidity will likely limit any improvement in car sales this year, it added.

“In 2021, we expect Indian car sales to rise 2 per cent,” Moody’s Investors Service said. On global auto sales, it said, “We expect global auto unit sales to decline 2.5 per cent in 2020,

narrowing from a 4.6 per cent drop in 2019, but worsening from the 0.9 per cent decline that we had previously projected for this year.”

The ratings agency expects sales to rebound only modestly in 2021 with growth of 1.5 per cent. “Our outlook on the sector remains negative,” Moody’s Investors Service said. It further noted, “We would consider returning to a stable outlook if we were to expect global light vehicle sales growth to recover to at least 1 per cent over the next 12 to 18 months. A stable outlook would also require improving pricing and at least stable capacity utilisation.”

Moody’s also predicted auto sales decline in China. “In the wake of the coronavirus outbreak, we expect auto sales in China, which includes both passenger vehicles and commercial vehicles, to fall 2.9 per cent this year, a meaningfully weaker performance than the 1 per cent growth we had previously projected,” Moody’s said.

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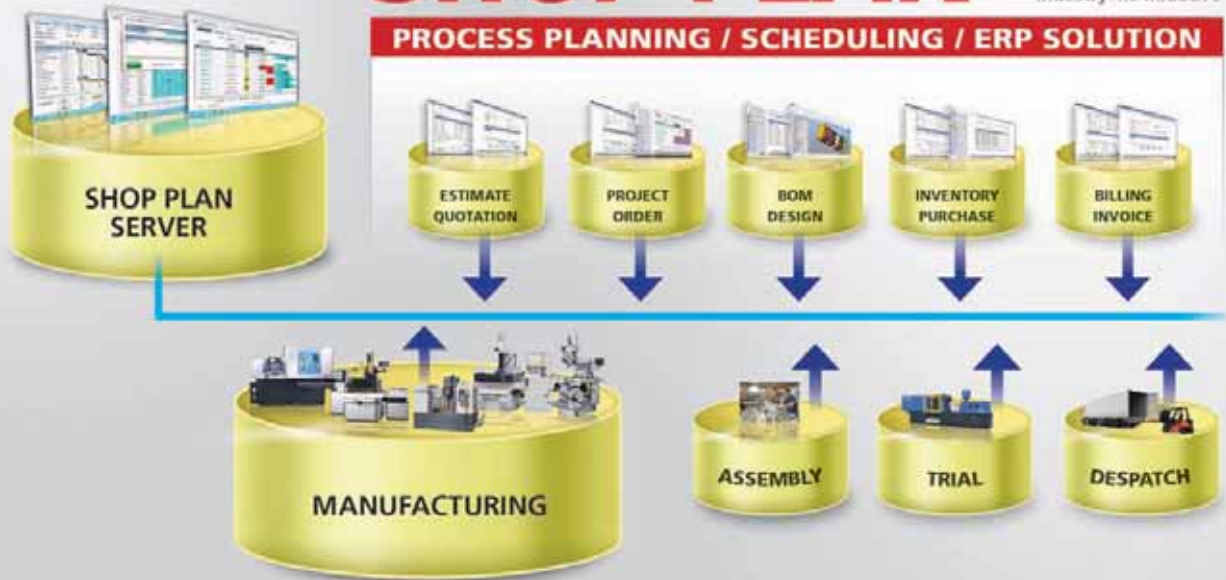
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NITI Aayog discusses future of mobility in India

THE government's think-tank NITI Aayog, chaired a workshop with various states and Union Territories and discussed the future of mobility in Indian and their experiences on the topic of electric mobility.

Rajiv Kumar, vice-chairman, NITI Aayog mentioned that while "electric mobility is a sunrise sector and it's still evolving. NITI Aayog is committed to the vision of clean and sustainable future mobility for India." Kumar added that the country will need to moved towards a model of shared, connected and zero emission, and also reduce dependency on fossil fuels. According to Kumar, the government is working towards putting in place an ecosystem to ensure that India take steady strides towards the future of mobility.

Amitabh Kant, CEO, NITI Aayog, said "The onus is now on states to put the pedal on the metal and move towards shared, connected and zero emission mobility. 'Make in India' has to be at the heart of future of mobility. Renewable power and battery storage can surcharge the shift towards a cleaner mobility paradigm."

Sanjeev Ranjan, Secretary, Ministry of Road Transportation & Highways said: "The Road Transport Ministry is taking the necessary steps to ensure provisions for shared and connected mobility in India by ensuring necessary structural changes and regulatory requirements."

Kant added that with the "Vehicle Scrappage Policy, there is a huge opportunity to create fitness centres and new kind of jobs for the States. A recent report by Morgan Stanley, 'India's Transport Evolution', has highlighted that half of India's car fleet will be EVs and half of all miles driven will be on shared platforms by 2040. This new sunrise area can emerge as the biggest catalyst of clean environment and new jobs. Indian States must push for public transportation. India has only 1.2



buses per 1,000 people; only 63 of the 458 Indian cities have a formal city bus system and 15 cities have a bus or rail-based mass rapid transport system. Public transport must become the core focus area for states."

Source: Autocarpro

SIAM proposes formation of South Asian Automotive Forum

SOCIETY of Indian Automobile Manufacturers (SIAM), along with the automotive industry associations and government representatives from neighbouring countries including Bangladesh, Myanmar, Nepal and Sri Lanka, have agreed to jointly constitute a South Asian Automotive Forum.

"The representatives of auto industry associations from South Asian countries have agreed to constitute this forum and a joint roadmap is being worked upon," said Rakesh Sharma, chairman – SIAM exports group and executive director, Bajaj Auto Ltd.

Explaining the intent behind setting up the joint forum, he said that the platform would help develop and nurture the neighbouring markets by assisting in creation of right policies, build supply

chain capabilities, ensuring transparency in terms of valuable information on local market requirements, among other areas.

Nearly two years ago, the authorities in Sri Lanka had made airbags mandatory on the locally retailed quadricycles,



which became a roadblock for Bajaj Auto - the maker of Qute quadricycles. However, later the mandate was removed. Bajaj Auto exports quadricycles to Sri Lanka.

"A large share of our automobile exports, about 16% amounting to USD 1.8 billion

per annum goes to these South Asian countries. Hence, it is important that a forum for discussions be established to ensure sustained and mutually beneficial growth," Sharma said.

Major automakers such as Hero MotoCorp Ltd, Tata Motors Ltd and Ashok Leyland Ltd have assembly plants in Bangladesh. Mahindra & Mahindra Ltd (M&M), Ashok Leyland, Ceat Tyres Ltd are a few other key examples with assembly units in Sri Lanka.

"The aim is to build a closer engagement within the South Asian automotive fraternity to support the development of an efficient value chain and serve the large customer base whilst meeting the objectives of the respective governments," Sharma said.



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TVS partners Motomundo to expand presence in Central America

TVS Motor Company has partnered with Motomundo SA, one of the largest business groups in Honduras, to expand the sales and service of TVS products across all Motomundo outlets in Central America in a phased manner.

Motomundo showrooms will start with an exclusive outlet for TVS Motor Company and will expand it to 3 stores in the country within a year. TVS Motor Company says that it will be present in 40 Motomundo outlets and over 25 dealers across Honduras. Moreover, the brand will also operate 25 service outlets to ensure complete service and spare support. The company says that the range of two-

wheeler offerings will be supplemented with attractive retail finance schemes.

According to R Dilip, executive vice-president - International Business, TVS Motor Company, "We are delighted to partner with Motomundo SA, to expand our presence in Honduras. Motomundo SA shares our values of maintaining high quality of service and transparency across operations. The unique network of distribution that Motomundo SA has developed makes it the best strategic ally for TVS Motor Company. With this partnership, we will be able to offer customised products with complete service and spare parts

for our customers and consolidate our presence in the region." Mariano Jimenez Torres, executive director, Motomundo SA, said, "All our outlets will be manned by skilled manpower in-line with TVS Motor Company global standards thus reinforcing our commitment towards the Honduran market. The technology and quality prowess of TVS Motor Company, combined with our network facility will definitely create an impact in Honduras".

TVS Motor Company will be selling TVS Apache RR 310, TVS Apache RTR 200 4V, TVS Apache RTR 160 4V, TVS Apache RTR 160 2V along with Ntorq and Wego in Honduras.

Auto component maker NEIL investing ₹ 100 crore to expand product portfolio

AUTO component maker National Engineering Industries Ltd (NEIL), a C K Birla group firm, is investing ₹ 100 crore over the next three years for producing needle roller bearing at its Jaipur facility, according to a top company official. The company, which is entering the needle roller bearing segment with the help of NTN Corporation's licensed technology, expects sales from the vertical to be around ₹50 crore in the next year and subsequently scale it up to ₹ 100 crore. "Now that we are entering into this needle roller bearing segment, we have a complete portfolio. This was the only piece missing in the automotive segment. In the needle roller segment, we will be investing about ₹ 100 crore specifically in the next three years," said Rohit Saboo, President and CEO, National Engineering Industries Ltd (NEIL). He said the company has an ongoing overall capex plan of ₹ 330 crore in three years and the investment in needle roller segment will be a part of it. When asked about expectations from the new segment, Saboo said, "This year it will be rather small because there will be some trial and testing done. From next year, we are looking at starting from ₹ 50 crore and subsequently going up to ₹ 100 crore." The company is setting up the capacity for the new segment at its existing plant in Jaipur, he added.

Source: Economic Times

Hyundai likely to go more local for electric vehicles

HYUNDAI Motor India said it was accelerating the localisation plan for its electric vehicles (EV) as the government is set to hike basic customs duties on completely-built as well as knocked down EVs and components making imports more expensive.

"We understand the government's direction of Make in India. We will look to localise more," said SS Kim, the managing director of Hyundai Motor India. "We are already localising some plastic parts and some interior parts on the Kona."

The company is looking at multiple partnerships to create a manufacturing ecosystem to ensure that EVs become mainstream and accessible, he said. Hyundai India's planning division is already conducting customer research to find out how much customers would be willing to pay for its electric vehicles Kim said. The company's Indian arm, along with engineers

at the Namyang R&D Centre in South Korea, has commenced studies to gauge the optimum range and price points for the product.



HYUNDAI

The company has set a timeline of 24-36 months to launch a mass-market EV and aims to ready

a concept of the vehicle for the 2022 Auto Expo. The push for localisation comes as the Centre looks to set up an EV manufacturing ecosystem in India that could compete with the best in the world. As part of the Phased Manufacturing Proposal, customs duty on imports of EV components will be raised in a step-wise manner to encourage a gradual shift to local procurement. Import of knocked-down electric vehicles presently attracts a 10% basic customs duty which is set to go up to 15% from April.

Source: Economic Times

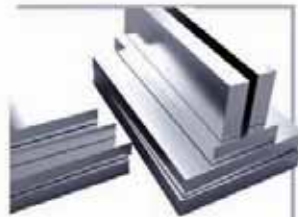
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Mastercam 2021 Released for Global Public Testing

IF you are a currently maintained Mastercam customer, you can now participate in the Beta Program for Mastercam 2021. Shops all over the world, from small job shops to Fortune 100, get a chance to test-drive Mastercam 2021 before it is released and provide valuable feedback to help shape the final product. Participants in the Beta Program get an early look at dozens of powerful new tools for simple to complex jobs.

Faster, more flexible multiaxis programming. As more shops continue to rely on streamlined multiaxis cutting for single-setup precision, Mastercam 2021 adds new techniques and strategies such as Expanded Multiaxis

Pocketing, a new 3+2 Automatic Roughing toolpath, enhancements to the 5-axis Flowline toolpaths, and more.

Advances in turning and turning-related applications. Mastercam 2021 introduces

Mastercam 2021
PUBLIC BETA

the new Lathe Custom Thread toolpath to support custom thread forms and expands the support for modelling chucks and chuck jaws. Mastercam supports collet chucks as individual component types which greatly expands the range of machines that can be directly supported. Mastercam Mill-Turn

simulation enhancements are included, as well as support for select Swiss machining.

NC Programming speed, safety, and precision. New toolpaths in Mastercam 2021 consist of Advanced Drill which is a customisable multi-segment drill cycle, as well as the new Chamfer Drill toolpath that chamfers holes after calculating the correct depth. When creating a bounding box in Mastercam, the new Wrap option allows you to create the smallest bounding box possible. And, the new Check Tool Reach function lets you to check your tool and holder against the selected model geometry to view where the tool can and cannot reach.

Reliable Performance: The New Solid Carbide Drill with SGL-Point Geometr

KENNAMETAL brings unprecedented drilling success to manufacturers in the aerospace, and energy industries.

Kennametal today introduces another high-performance cutting tool, the B21*SGL solid carbide drill with coolant-through. Designed for stainless steel, nickel and cobalt-based alloys, the B21*SGL with patented point geometry and monolayer PVD AlTiN coating, delivers improved productivity and longer tool life for aerospace and energy applications requiring predictable, high-production drilling.

"In customer tests, the B21*SGL consistently outperforms competing drills, producing more holes in less time, with improved hole straightness and surface quality. The new design virtually eliminates the risk of chipping and flaking that lead to drill failure. And thanks to a unique point gash, it offers the lowest thrust level on the market, enabling productive drilling even in delicate workpiece geometries," said Frank Martin, Product Manager, Solid Carbide Drills.

One of the problems with these materials is their tendency to stick to the cutting tool, leading to built-up edge and corner chipping. The B21*SGL's proprietary gash geometry, polished cutting edge, negative rake corner margin, and "chip-friendly" flute design mitigates these effects, while encouraging chip evacuation and reducing cutting forces. Add to that Kennametal's extremely wear-resistant, high aluminum content KCMS15 grade and you have a drill that not only makes more holes per tool but does so more quickly



and predictably. "A number of our customers have seen tool life improve by two to six times in a variety of challenging materials, even after increasing feed rates by up to 50% in some cases," said Martin.

Holemaking is a critical machining process, especially so for those producing turbines. Because the drilling operation typically comes near the end of the production cycle, when workpieces are at maximum value, a broken drill can damage or even destroy components worth tens of thousands of dollars. "This new solid carbide drill will bring incredible value to anyone needing to drill large numbers of holes in Inconel, titanium, PH-series stainless steels, and other heat-resistant superalloys. Especially relevant to aerospace manufacturers, given the tremendous pressure to ramp up production of the LEAP aircraft engine program," said Matthieu Guillon, Key Account Manager, Aerospace.

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Schunk launches versatile clamping force tester

SCHUNK'S new versatile clamping force tester is designed to regularly check and ensure maximum process safety and efficiency of lathe chuck in daily use.

It can be used on 2, 3, and 6-jaw chucks up to 6,000 RPM regardless of the chuck manufacturer, and at a maximum clamping force of 90 kN per jaw. Adjustable measuring extensions allow variations in clamping diameters between 72 mm, 88 mm, and 108 mm. Data evaluation is done with wireless data transfer with an app on a tablet computer or with other terminals. The battery life of the measuring head is more than 90 minutes, and it takes less than 3 minutes to recharge.

The clamping force tester can be used for static measurement such as determining loss in clamping force under speed, or for individual adjustment



of the required initial clamping force for individual machining operations. SCHUNK recommends regularly checking the clamping force at the beginning of a serial operation, and also between the maintenance intervals again and

again. It is the regular verification that ensures the optimal safety. If possible, the clamping force should be measured in a state that is how the lathe chuck is used in an individual clamping situation. If for example, top jaws with clamping steps are used, the operator should measure the clamping force in the same way on the same jaw step as he will apply it to the workpiece later. If the measurement reveals that the clamping force is below the target value, SCHUNK recommends that the operator intervene immediately to ensure safety of the ongoing operation. Depending on the condition of the lathe chuck, it is appropriate either to lubricate the lathe chuck or to completely disassemble, clean, and then lubricate it.

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).

Hexagon launches entry-level optical CMM for the Asia-Pacific region

HEXAGON'S Manufacturing Intelligence division today announced the launch of Captura, an entry-level optical coordinate measuring machine (CMM) that offers an intuitive and cost-effective solution for multisensor measurement of small to medium parts.



Captura supports measurements using vision sensors, laser sensors and confocal sensors, and is designed to offer good price to performance ratio for the entry-level market. The basic machine is supplied with a vision sensor and can be expanded with additional sensors. The dynamic machine concept offers high positioning accuracy, fast measuring point acquisition, and high-performance vision capturing. Captura CMMs run the Metus metrology software, a Hexagon-developed package for 2.5D multisensor measurement.

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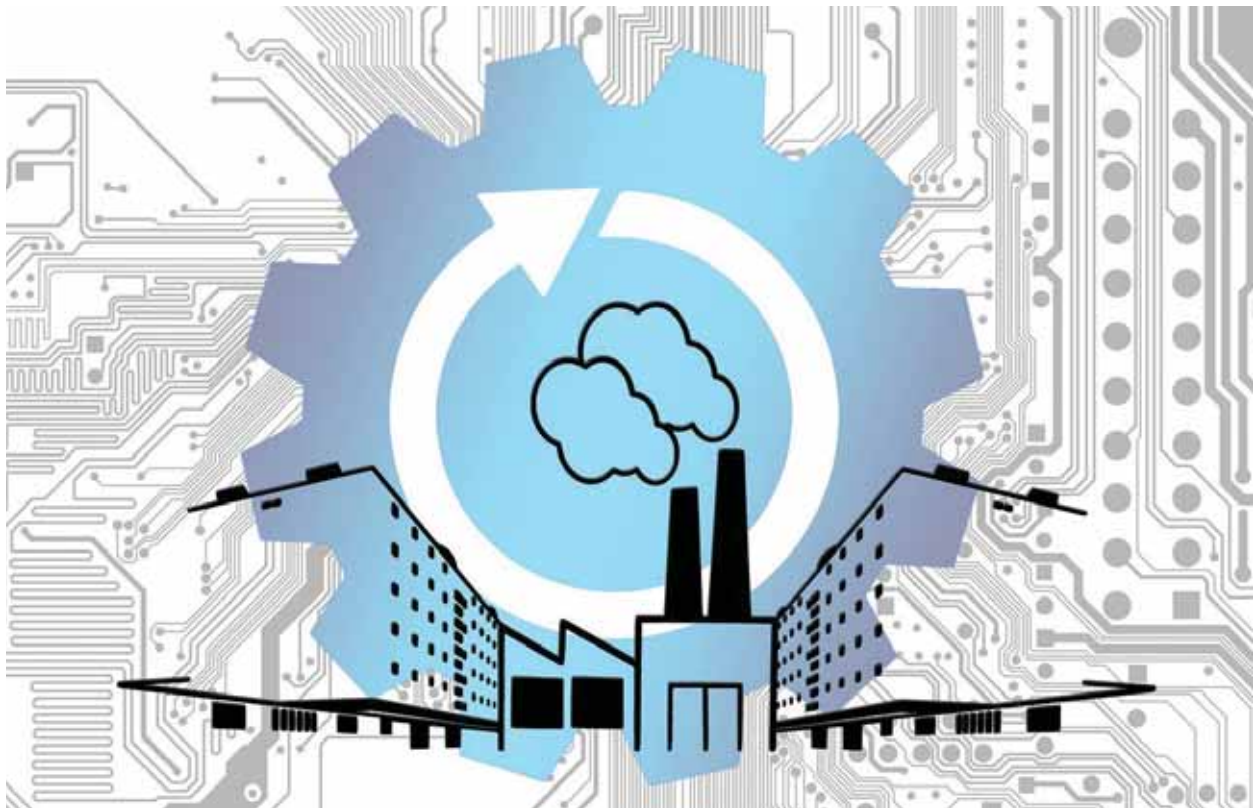
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Digitising Manufacturing of the Future

Manufacturing process in itself has undergone a paradigm shift. The way products were manufactured a decade back, are now rendered obsolete. Digitisation has completely changed the system. And the pace at which digital technology is evolving, manufacturing processes too need to be in sync and evolve accordingly and evolve at a much faster rate than expected.

Debarati Das



Digitisation, Industry 4.0, Smart Manufacturing, Artificial Intelligence.

Today, these words are a reality across the globe with digitisation increasing the connectivity of everything, everyone, everywhere.

This has also changed the definition of manufacturing which is no longer about huge plants,

long assembly lines, elaborate logistic chains, paper drawings and 2D schematics.

It is all about being global yet monitoring from a centralised location. It is about making changes in the manufacturing parameters with just a click of a button from a location which is thousands of miles away. It is about designs which are in 3D CAD files. It is about creating digital twins to mirror the objects which

In Focus

are being built. It is about everything connected via the internet of things. It is about making everything digitised.

Going Digital

With the amount of pressure that manufacturers around the world are facing for high quality, impeccable precision, low cost and digitally enabled products; adopting digitisation is no longer a choice but a compulsion.

Customers, governments, competitors and the constant need to be in sync with the changing global manufacturing landscape has made it imperative for manufacturers to adopt emerging technologies to digitise their organisations.

Digitisation in turn helps organisations to develop and manufacture customised, digitised products on tighter deadlines and budgets, while retaining sufficient flexibility to meet constantly changing design specifications.

Furthermore, latest trends like digital monitoring and data analysis help manufacturers to track and trace the requirements for products and achieve sustainable development goals in product design, energy-efficiency and other facets of manufacturing.

Digitisation has not just made the manufacturing process more connected, but has also synced the operational part of an organisation with manufacturing bringing everything at the same level.

From a manufacturing perspective, digitisation has

- ▶▶ Enhanced automation, traceability and centralised control.
- ▶▶ Digital twinning and simulators are facilitating more efficient and cheaper product development and creating models for new services.
- ▶▶ Predictive maintenance allows operation to monitor and manage their own health and order spare parts in good time.
- ▶▶ Digital inventories and radio frequency identification (RFID) tags are improving production control, lead-time analysis and capacity planning.

Within an organisation, digitisation has led to a more systematic work flow with:

- ▶▶ Seamless, data-driven vertical connections within a single organisation
- ▶▶ Integrated systems and efficient decision making, both internally and between companies

- ▶▶ participating in the same end-to-end supply chains
- ▶▶ Significant restructuring of personnel, operations and manufacturing processes due to the introduction of digitised products and services.
- ▶▶ Digitisation increasingly adds value for customers through improved delivery of products and services or by using data and software to develop a new business model.

Changing facets of Manufacturing with Digitisation

The manufacturing process followed a decade back is now obsolete. Digitisation has changed the way shop floors function. Here is a list of changes that digitisation has brought to a manufacturing set up:

- ▶▶ **Bringing manpower and machine power in sync**
Digitisation is dissolving the barriers between functions within an organisation. Manufacturers are increasingly depending on data generated by machines to evaluate the performance of the machine, precision of the products and analyse the tipping point of the entire process. Moreover, digitisation plays an important role in every phase including product design, product development, production manufacturing, supply chain and design functions.

Digital and other emerging technologies are also transforming the performance and mind-set of employees. The expanding role of data, analytics and AI at every operational level is analysing the performance of the workforce at every level. With many tasks becoming automated, it is also enhancing problem solving and innovation capability on the shop floor.

Digitisation will have a sustained impact on operational and business processes as emerging digital technologies enable the creation of new processes, products and business models, thereby forging digital enterprises

- ▶▶ **Faster Manufacturing**

Digitisation will transform the speed of manufacturing. With rapidly changing consumer expectation and an accelerated pace of new product introduction/innovation, manufacturing needs a faster way to adapt.

Digitisation gives an instant boost to productivity, allowing projects to move faster as manufacturers will be able to rapidly move from design to floor and back again as clients and engineering team make the changes during the manufacturing process.

▶▶ **“Set and forget” reliability of machine maintenance**

Many industries rely on manual checks of each and every machine. But now, digitisation is becoming the technology of choice in an array of industries to give accurate and direct monitoring of data every millisecond, giving it the “set-it-and-forget” reliability. Artificial Intelligence embedded sensors can detect acoustics, temperature and vibration across every centimeter, in real time, giving companies the ability to limit site visits and reduce operational costs. This will be of critical importance in industries like manufacturing, where one single error can lead to complete damage in component precision, major downtime and monetary loss.

With real-time data on maintenance requirements and wear and tear, the manufacturing process will not just be refined but also help avoid unplanned downtime. Data is increasingly being valued. Millions and millions of data that is being collected every second is being used to analyse the entire manufacturing process to perfect the process.

This, along with automation and AI is continuously optimising existing designs in response to real-world circumstances, leaving engineers to focus on the innovation of new products. Furthermore, cloud computing and analytics is improving decision making while data analysis capabilities is bringing in an evolution in the way industries will function in future.

▶▶ **Manufacturing globally**

Manufacturing is now a global industry and manufacturers have to be where the customers are. However, to ensure absolute sync in precision and quality, digitisation plays a huge role. With IIoT, machine learning and artificial intelligence, it is now possible to have control and round the clock surveillance over the manufacturing process from any corner of the world.

▶▶ **Smart factories**

Digitisation is making way for smart factories. Effective manufacturing relies on the smooth functioning of many independently-operating yet interconnected parts. Traditionally, businesses have relied on Manufacturing Operations Management (MOM) software, a combination of ERP and PLM functions for the factory floor. However, digitisation will lead to greater integration with organisational data to tie together production, resources, supply chain, maintenance and human resources into a single system.

Such level of comprehensive overview of operations will give manufacturers and managers all the data they need to make informed decisions to make production and other business processes more efficient. It will also help manufacturers to quickly respond to changes in the market, consumer demands, or fluctuations in the price or availability of resources, while ensuring that every worker from the shop floor to the manager’s office has the data they need to do their job.

▶▶ **Digital supply chains**

Ensuring flawless supply chain will be a big part of “manufacturing 4.0”. To create the digital factory of the future, manufacturers will need to integrate their entire supply chains – not just from sourcing the raw materials to shipping the finished product, but also incorporating every stage of the product lifecycle. This requires manufacturers to bring together multiple business functions such as marketing, product development, planning, logistics, and production, and to tie together the systems and technologies on which each relies.

The goal should be to create a supply chain ecosystem where the relationships between different parts of the “machine” are affected by changes or events elsewhere in the system. This insight will not only provide manufacturers with a real-time overview of every link in the supply chain, but will enable them to model – or simulate – different scenarios, ensuring that they are fully prepared for whatever the future holds.

Introduction to Industry 4.0 in mould industry

Smart manufacturing, also known as Industry 4.0, refers to a wide range of practices that use advanced technologies in a variety of combinations, from robotics and automation to additive manufacturing and cloud computing to big data and analytics.

For mould builders, some of these practices are commonplace, while others have yet to be adopted. However, one approach that virtually all mould manufacturers can benefit from is using real-time production data to make informed decisions and to improve performance.

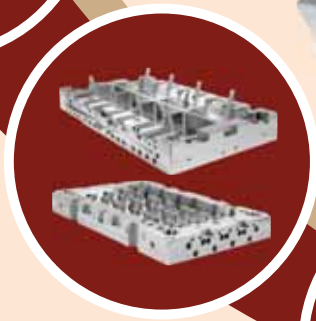
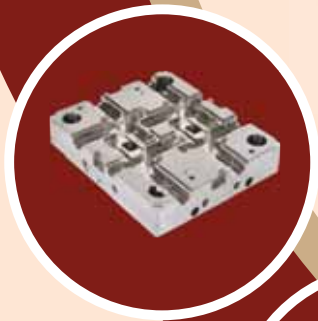
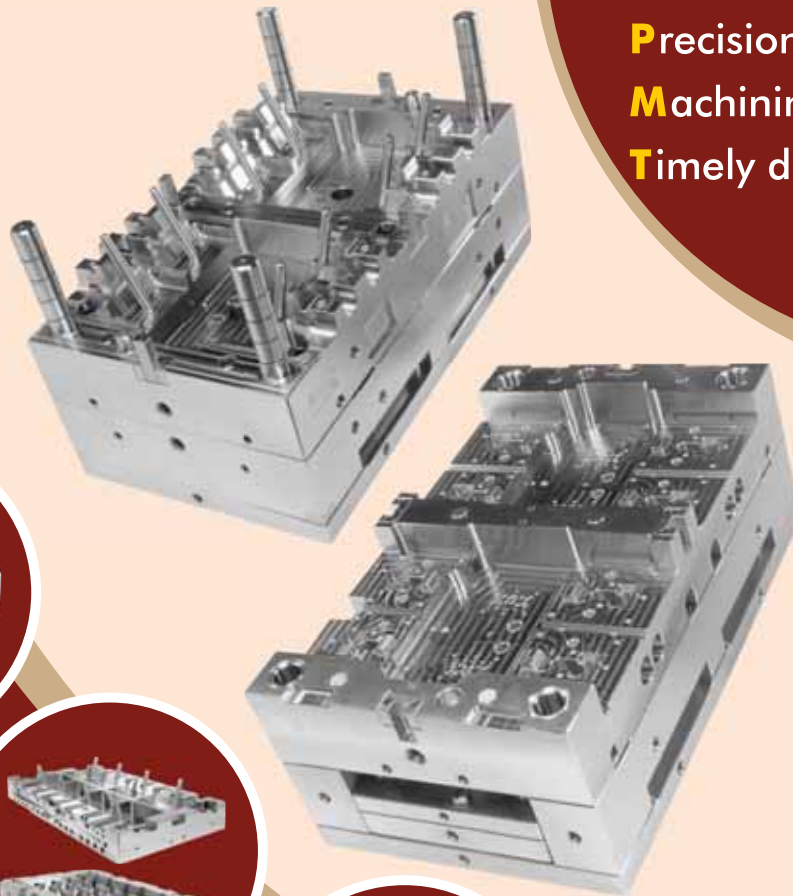
In theory, this means gaining a unified view of every job across production, which makes it much easier to plan work, adapt to changes and find ways to run the shop floor more efficiently.

In the context of smart manufacturing, it is more

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appropriate to imagine smart manufacturing's potential impact on the everyday challenges of producing high-quality moulds on time and on a budget, rather than a far-away future state that may or may not be feasible for your shop to achieve.

Every shop is familiar with the difficulty of managing the following processes throughout each work day.

- ▶▶ Scheduling
- ▶▶ Managing changes
- ▶▶ Improving performance

Applying a “Smart” Approach

The goal of smart manufacturing is to retrieve critical metrics continuously and move them to a central location that is easy for all to access. Ideally, smart manufacturing enables you to identify improvement opportunities more easily, make sure operators are using each machine to its full capacity and even understand which kinds of jobs are the most profitable. Excelling in any one of these areas could drastically improve and enhance your production performance. Improving all three would give you an edge over key competitors.

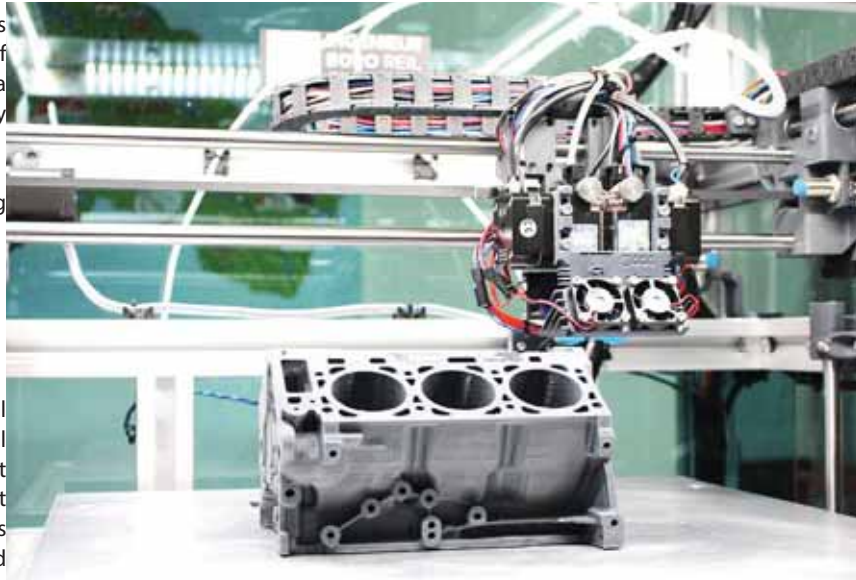
Knowing where everything is at any moment in time has a huge impact on mould manufacturers.

Digital scheduling would help you better manage capacity and make decisions that are based on actual workloads instead of having a guess work. Digital work instructions could reduce the risk of mistakes and unplanned downtime at any workstation would be evident, which would enable you to address potential issues more rapidly and reroute other work before bottlenecks occur.

After a job runs, data about how it moved through production provides insight to which job instructions, job sheets and workstations produced the highest-quality mould tools. This kind of analysis could be vital to identifying the source of scrap, rework or other issues. More realistic time-to-market calculations could also improve the accuracy of quotes for similar jobs.

It's also important to automatically generate a detailed product history that facilitates traceability as well as useful information on how your shop manufactured a mould. This could help your shop meet record-keeping requirements. Plus, capturing institutional knowledge about how to make specific parts can be useful if you need to program a similar job in the future.

There is potential to deliver a great deal of value to your shop by unifying your production and creating



closed-loop feedback, all in parallel with the benefits of cloud computing. The benefits add up to a measurable competitive advantage, including:

- ▶▶ **Higher speed:** Fewer or faster rework loops let your shop ship more parts faster. In many situations, speed is a higher priority than cost.
- ▶▶ **Higher efficiency:** Together, better utilisation of machines and better optimisation of production schedules enable your shop to achieve higher throughput with less effort.
- ▶▶ **Higher quality:** Knowing the details of scrap rates create opportunities for your shop to resolve problems earlier and apply successes broadly to increase the overall yield of quality.
- ▶▶ **Higher profitability:** Less scrap reduces cost, while improved efficiency and throughput help your shop manage higher workloads and serve more customers.

Going Forward:

Mould making has always been referred as a backbone industry. However the technology adoption in the industry has been slow compare to the other industries. However, all the customer industries such as automotive, consumer goods, aerospace, packaging, among others are investing heavily on the digital manufacturing, which is a clear indicator that mould makers must embrace the change and gradually adopt digital manufacturing techniques in order to be competitive. 🌈

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“Industry should shed inhibition to learn & invest in new technology”

Vishwas Puttige, Business Head, Amace Solutions Pvt. Ltd, talks at length about the dire need for the industry to open up and adopt new technologies to make manufacturing, faster, better and more efficient.

Q Please tell us about amace’s business verticals and future prospects

Ace Micromatic Group is a leader in metal cutting technologies in India and we have diverse experience in the manufacturing industry. At Ace Micromatic, we are always on the lookout for newer business areas within manufacturing technology domain. We have seen that technological developments in metal cutting machines are getting saturated. Whatever new developments have happened in the industry in the past few years are incremental and marginal changes. So, about 4 years back it was decided that we need to diversify into futuristic business segments while improving our core business areas. It was important not only in terms of growth but also for sustainability. Metal cutting machines will go through huge disruption in coming 10-20 years and we never know if it will still be that relevant as it is today in manufacturing. Additive Manufacturing being the ‘Future of manufacturing’ we forayed into the segment.

We did our research about the different applications, technologies and decided that the best way to learn about the technology is to become a service provider. This way we will be able to understand customer requirement, 3D printing technology and develop skills. It’s been 2 years since we started, and from a business perspective we have been fairly successful. But if I consider the learnings and experiences we have developed in these two years, I would say that we have been very successful.

Q Does Ace Micromatic also plan to manufacture 3D Printing machines in future?

Right now, the focus is on services and to understand complete applications. The idea is to know how to get the best out of these machines, different

functionalities, developing different applications, and then based on the requirement of customers think of building machines. Also, the metal 3D Printer machine demand is still very less in India. There would probably be less than 100 metal 3D printing machines in India. So, while working in amace, we would like to learn as much as possible, keep track on the global additive manufacturing industry, developments in machines. Ace Micromatic has always been focused on meeting customers’ demands and expectations. Currently the understanding of this technology in manufacturing sector is less than 5%. Once the small & medium scale industries start to feel the need for this technology, the demand for AM machines will also increase. It is our constant endeavour to partner with our customers for their different needs, services or machines.

Q Once this technology becomes main stream, do you feel that adoptability will increase with prices going down?

Yes, definitely! Prices will surely come down and we will be able to do things differently when it comes down. In the recent past, prices of powders have come down, machines have become more productive, multi-laser 3D printing machine coming at the same rate as single laser machine, machine sizes have increased, we have faster and higher powered machines now. All these developments are helping the technology to get closer to serial production. In fact, we are working with few customers who started with prototyping as samples and now we are talking to them about serial production. That way, we have definitely customers have started seeing value in AM. However, compared to the conventional manufacturing process, AM still has a long way to go to get into the mainstream manufacturing.

Q In die mould industry, which industries are you catering to?

We cater to different industry segments including

Leaders Speak

automotive, die mould, aerospace, defence, education, public sector units like space, energy, etc. Government institutes are pioneers in terms of adoption of the AM technology. They are already ahead of the curve in terms of what they have explored and researched in the subject, so they know lot more than many other industry experts.

I feel, there are lots of opportunities in mould manufacturing because the concern about post-processing is lesser here and conformal cooling is a huge advantage which is not possible otherwise. We know for sure that many of our customers have observed at least 40 to 50% improvement in cycle time especially in plastic injection moulding because of conformal cooling channels.

Currently, the whole industry is talking about conformal cooling. Indian mould makers are well aware of the advantages of conformal cooling, so they have been trying it through different means to understand more about the AM. There are some companies who are early adapters and have already invested in 3D printed moulds but there are still many companies that are stuck with the old notion of cost factors without seeing the value AM has to offer.

Most mould makers are aware of the technology and they are all waiting and watching if rates metal printing machines and overall printing costs come down.

Q What role will awareness and education play in higher adoption of AM?

There are still many myths about 3D Printing in India and people want to know more about the technology. I believe, references and case studies are the best ways to showcase the benefits of any new technology. Whatever we say in general would be all taken as marketing talks unless we can demonstrate the real value through actual use cases. We need to give suitable examples in numbers clearly highlighting before and after usage of 3D printing. Also, SMEs need to understand that the world is moving towards higher productivity and efficiency, so it is imperative that we adopt new and futuristic technologies as soon as possible.

Q What is your suggestion to mould makers and SMEs to adopt AM?

They should shed their inhibition of learning new technology. Everyone is scared to invest and learn new technology. Learning always comes with a cost and ends up giving you long term results. Today, to be ahead of your competition, you have to invest.

For instance, some of the best mould makers in India are the ones who decided to learn and adopt new technologies like 5-axis manufacturing and design software back in days when conventional methods were more famous. Similarly, AM will call for some investment, but it has got immense potential. It has given intangible benefits, which means you will not see benefits immediately, but eventually, it will be beneficial.

Q What are the new trends you observe in the AM industry?

Newer material: There has been great advancement in the way materials are being used in 3D printing. In the mould making segment, in Europe, people are talking about multiple material to be printed together, which means you can have copper inserts printed along with steel die together. This is huge in the mould making business.

Much better software interface: The new age software have become so advanced that it can simulate the entire process, provide analysis, much better prediction of failures and save material wastage.

Hybrid manufacturing: Today one of the concerns is that these conformal cooled channels have high surface roughness because of which you have salt deposition during use. Hybrid manufacturing with machining along with printing provide better surface finish. Electro polishing and abrasive flow machining of conformal cooled channel provide high surface finish with lesser salt deposition.

Q What are the challenges in the market?

Some of the challenges remain the same as in other industries:

- ▶▶ India's extra consciousness for the cost. There are very few people who would focus on technology than cost.
- ▶▶ Lack of early adapters. For example, we are not the kind of people who would stand outside a Tesla showroom overnight to book the first car, we are people who would want to see 10 others using it, get feedback from them and make a calculated investment. It not bad but slows down your R&D activities and growth.

Also, western companies with manufacturing base in India are still importing AM parts from their HQ as they lack trust in Indian suppliers. It is gradually changing, but it is also one of the challenges some of us face who can build any kind of complex part faster and cheaper in India with the same quality. But it's a matter of time and I am pretty confident about the good days ahead. 🌈



“Die-Mould industry is generally shielded from slowdown”

Vineet Seth, Managing Director – South Asia & Middle East, Mastercam APAC, talks about the recent state of the die mould industry, and how it is imperative for the industry to adopt cutting edge technologies to efficiently cater to their customer’s varying needs, at a reasonable cost.

Q Please tell us about the current trends and demands in the Indian die mould industry

While the Die Mould Industry has grown year-on-year in India, the past 8 months have eroded quite a number of orders due to economic uncertainty in the Global markets. This has definitely had a cascading effect on the D&M industry here; The next few months too will be unpredictable, given the outbreak of COVID-19 across the globe and in India.

Demand is increasing constantly, however the quality of software and equipment needs to be upgraded across most toolrooms in the country. Time required to deliver is extremely critical in the D&M sector, and addition of world class software and equipment will bring orders back to the industry; Currently OEMs and Tier-1 companies import their critical tooling from other countries.

There is a huge opportunity in the precision plastics business – which can be tapped if the bulk of our toolrooms upgrade their manufacturing ecosystem. A number of toolrooms also need to upgrade their infrastructure to benefit from the efficiency that the new systems bring.

Q With lots of uncertainties in the automotive sector, how do you find the business outlook in the Indian die mould industry?

The Die-Mould industry is generally shielded from slowdown as it caters to diverse domains, including white-goods, aerospace and other industries. In India, the reliance on the Automotive sector seems to be considerably higher, which is expected to see a reduction in short-term order booking.

Further, the launch of newer models of automotive vehicles will continue to keep those toolrooms busy, which work closely with Automotive OEMs and Tier1 suppliers.

On the other hand, considering that we have had a recent advisory that the Index of Industrial Production is expected to fall to 2% (half of what it was a couple of years back) and the fact that there is a slightly higher inflation rate this year (4.09%), business outlook for the current year will not be without its challenges to Small and Medium sized toolrooms.

Q Indian manufacturing industry witnessed a slowdown in the year 2019, what are your expectations from the year 2020?

I was expecting that things will change by April 2020. However, due to the recent COVID-19 pandemic, it may be a little longer before we are able to recover from last year’s slowdown. That said, a number of leading economists are of the opinion that we will pick up pace in the coming months and are likely to have a moderate growth in 2020. Beyond 2020, there are a number of opportunities for the manufacturing industry, with the infrastructure and smart city projects moving into the next phase of investments after 2022.

Q What are the new technologies that are gaining promises in the tooling industry?

On the manufacturing side, there are a number of new technologies that are seeing adoption. Smart systems for monitoring machine tools, new age wireless DNCs for data transfer to CNC controllers and Multi-tasking CNC machines are some of the examples of how the Tooling industry is building efficiency. There are a few who have also made investments in new age metal 3D printers as well.

Q According to you, how tool and mould makers can enhance their efficiency

I have said this before and I stand by it, that Tool and Mould makers need to stay on top of the latest, cutting edge technology, while ensuring that their current investments

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are being utilised most effectively. This is possible when their suppliers work with them as partners in progress and provide assistance with best practices, process knowledge, expert inputs with critical projects and continuing support.

In addition to the above, Tool and Mould makers should invest time in up-skilling their resources. Often, the absence of an updated utility (software) can lead to diminished efficiency, due to old and outdated methods.

Tool and Mould Makers should also approach leading institutions and their industry associations to help them chart a growth path, assist in setting goals and achieving these goals through common facilities at a reduced cost.

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

The Indian Die Mould Industry is quite large, however, scattered and sometimes isolated. If all these toolrooms and professionals were to come together under TAGMA and make their voices heard, I am certain things will change for the better for all of them.

This will not only position the Indian Toolmaker as part of a progressive association, but will also open up new doors to opportunities that, for some, didn't exist earlier.

Q Your suggestion to tool and mould makers regarding the adoption of technologies...

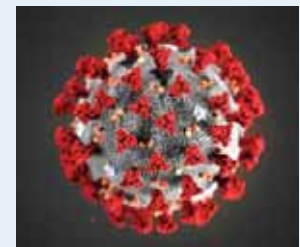
Most Toolrooms are like laboratories. They are faced with a wide variety of challenges, each different than the other. It is therefore important that Tool and Mould makers are geared up to cater to their customer's varying needs, at a reasonable cost and in the most efficient time span.

Considering the above, it is very important to choose supplier-partners that are able to assist with continual training, updated technologies and most of all hand-holding during critical projects.

While venturing into new technologies, due study and prove-outs need to be done on real world projects before they arrive at a purchase decision. Pros and Cons should be carefully studied, a point system should be allotted to grade each, and an informed decision should be taken. 🌈

Die Mould India postponed amid COVID-19 Breakdown

With uncertainty growing regarding COVID-19, TAGMA Council has decided to postpone the Die Mould India exhibition to August 24-27, 2020. Earlier the event was scheduled to take place from 22nd to 25th April 2020 at Bombay Exhibition Centre, Goregaon, Mumbai. While the venue remains same the dates have been changed looking at the growing concerns related to COVID-19.



"First of all I thank all the exhibitors and partners for cooperating with us at the 12th edition of Die & Mould India. The event has fetched very good response from the Industry. While we are only few weeks away from the exhibition, we are stuck with the global crisis COVID-19. We have been closely observing the development of the situation. As a measure to contain its spread in India, the government has advised all citizen to avoid mass gathering. With all these unpredictable and uncontrollable things considered, in light of the current unstable situation and in the overall interest of exhibitors and visitors of the exhibition, the Executive Council of TAGMA has decided to postpone the event," said Bhaskar Kanchan, Director, TAGMA India.

With the challenge that has emerged in form of COVID-19, the immediate future looks challenging for the Indian tooling industry. Manufacturing sector around the globe has been impacted with the low supplied from China and plant shutdown.

"While we understand it is challenging time for tool makers as they largely depends on events to showcase their capabilities, the step is been taken for benefit of every stakeholders. Health of our exhibitors, visitors and partners are very important for us. We hope this challenging time passes soon and we come back stronger," concludes Bhaskar.



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Changing the course of Manufacturing

Budget 2020 made a paradigm shift in the mindset of Indian manufacturing. Realising the need to diversify, the budget made whole hearted provisions to encourage and boost diversity in the manufacturing community.

Debarati Das

The highly anticipated Union Budget of 2020 was backed by a lot of expectations from every industry for some big bang reforms. But while it didn't end up making everyone happy, the Budget this time had some clear missions to achieve.

With the macro challenges that the economy faces currently, the pressure to rev up India's economic slowdown and the country's target to reach \$5 trillion by 2024, Nirmala Sitharaman took a more measured approach in her second budget providing an impetus to only a few niche sectors which promises a growth outburst in the near future.

The Budget 2020 revolved around the three important themes of Aspirational India, Economic Development and Caring Society and most of the budgetary announcements sprouted on these visions.

"The three levers of Aspirational India, Economic Develop and a Caring Society enshrined in the Budget will be the bedrock to propel us further," said Deepak Jain, President, ACMA.

Let's have a look at some of the major changes that the government has made for the manufacturing sector:

Conducive Corporate Tax Regime

The budget brought in concessional corporate tax rate of 15 percent to new domestic companies in the manufacturing and power sector to encourage the establishment of new manufacturing companies and boost the 'Make in India' program.

Mobile and Electronics Manufacturing

The relentless focus on the automotive sector has put the mobile and electronics manufacturing on the backseat for long. The industry is now understanding the dire need to diversify manufacturing to industries which can globally make a big impact. In her Budget speech, Sitharaman said, "India needs to manufacture networked products which will make India part of the global chain. Electronics industry's potential in manufacturing and job creation is immense. We need to encourage manufacturing of mobile phones, electronic equipment and semiconductor."

Hence, to encourage manufacturing of mobile phones, electronic equipment and semiconductor packaging in the country, the government is bringing in various policies to attract manufacturers. For instance, an inclusive Modified Special Incentive Package Scheme (MSIPS) may come out to promote a

20-odd component manufacturing ecosystem in the country for the electronic manufacturing sector, and establishing India as electronics hub. Manufacturing of medical devices too is expected to receive similar boost to cut down the country's import dependence.

The Die and mould industry, being an underling will definitely be at a huge advantage with a growing demand for wide range of new moulds for these growing industries.

MSME & Startups

The MSME sector forms the backbone of the Indian manufacturing sector and is a major driver of growth for the industry. The RBI had recently allowed a one-time restructuring of existing debt up to ₹ 25 crore for the defaulting companies even as their loans are being classified as standard assets. Now the government has asked for a tax relief with turnover upto 100 available in 3 consecutive years out of the first 10 years. Besides, the turnover threshold for auditing for MSME and startup has been increased from ₹ 1 crore to ₹ 5 crores.

Furthermore, there has been a huge proliferation of manufacturing startups in the MSME sector. Hence, the Budget proposed several measures for startups including a dedicated early-stage fund, relaxation of taxes levied on employee stock ownership plans (ESOPs) and fresh tax rebates on these firms based on their turnover.

"Being significantly dominated by MSMEs, enabling measures to extend invoice financing to MSMEs and creating access to working capital through a new scheme are a welcome step. That apart, enhancing the turnover threshold for audit of MSMEs to ₹ 5 crore will facilitate 'ease of doing business.'" said Deepak Jain, President, ACMA.

"The Budget 2020 is definitely a MSME friendly budget, enabling the sustainability and growth of MSMEs in the country. The budget included some of the key MSME initiatives including Government – E Market Place (GeM) for the MSMEs to show case their products and increase their business, introduction of Trade Receivables Discount system (TReDS), restructuring of MSME loans, Subordinate Debt Scheme, and many more," said Kavitha P, Partner, T. Sriram, Mehta & Tadimalla Chartered Accountants.

Automotive & EV Sector

This time around, the automotive sector had huge hopes of some big announcements for its revival. But the sector returned empty-handed as its demands

were mostly unmet. The automotive industry has been demanding a cut in GST rate and waving of customs duty on lithium batteries for EVs to promote EV manufacturing in the country. Currently, battery costs almost 40-45% of the cost of EVs due to increased imports duty.

"The Indian automobile industry was looking forward to some direct benefits in the budget, which could have helped in reviving demand in the context of the current slowdown and huge investments made by the industry for transition to BS-VI and from that aspect, the Budget speech was not what we were expecting. SIAM had made specific recommendations on steps that could have revived demand, like an incentive-based vehicle scrappage scheme; budget allocation for diesel buses procurement by STUs and zero customs duty for lithium ion batteries, which do not seem to have been considered," said Rajan Wadhera, President, SIAM.

Automobile dealers' body FADA too expressed their disappointment. "It was disappointing that as part of auto ecosystem, no direct benefits for the automobile industry were announced. Budget allocation for an attractive incentive-based scrappage policy would have been a demand booster for commercial vehicles," said Ashish Harsharaj Kale, President, FADA.

The government, however, has other plans. While it has budgeted from slashing imports on batteries, it has increased import duty on Completely Built Units (CBUs) in both EV and conventional vehicle categories to promote manufacturing in the country.

The government has also announced an investment of ₹ 1.7 lakh crore for transport infrastructure to construct 2500 access control highways, 9000 km eco-development corridors, 200 coastal and port roads, 2000 km strategic highways, Delhi-Mumbai expressway and 2 other corridors. All this is expected to indirectly boost the demand for automotive and hence, automotive manufacturing as well.

Auto component body ACMA, expressed satisfaction on the measures announced in the Budget especially for the focus on development of rural economy, manufacturing and infrastructure.

"We are glad that the government has announced a ₹ 1,000 crore handholding scheme for mid-sized companies including those in the auto components to give a thrust to export development, R&D and technology upgradation. The scheme will help the component sector remain relevant and competitive.

This has also been a long-standing request of ACMA," said Deepak Jain.

Jain further added, "While we are happy that the process of GST continues to be streamlined and made effective, it is critical that the GST rate on all auto components be a uniform 18%. Currently 60% of auto components attract 18% while the rest are at 28%. Being an intermediary industry, reduction in rate will be revenue neutral. It will also help curb grey operations in the auto components after market."

The industry also lauded the government's initiative to increase customs duty on imported electric vehicles and said it would help in establishing local production of such products in the country.

Supporting hike in customs duty on imported electric vehicles, Tata Motors President Electric Mobility Business, Shailesh Chandra said, "The proposed hike in SKD/ CKD forms of passenger EVs is consistent to the 'Make in India' approach and encourages progressive localisation of electric vehicles in the country. This will drive the efforts of OEMs more towards local operations and ensure greater commitment to electrification in the country."

Managing Director of Mahindra & Mahindra, Pawan Goenka said that the structural changes in the way things are being done may not be enough to have an impact tomorrow, but will definitely give strong impetus to the economy in the long run.

Push for foreign investments

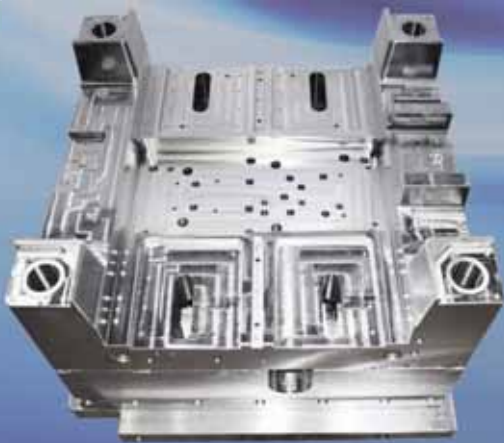
The Budget removed Dividend Distribution Tax which is expected to bring down the tax burden for incoming investors and further the effort to make India an attractive destination for investments. Also, the proposals for 100% tax concession on investments for sovereign wealth funds as well as increase in Foreign Portfolio Investor (FPI) limits is expected to attract greater foreign investment and provide the much-needed capital impetus required by Indian businesses.

"The Government's endeavour is to create a simplified tax structure whilst phasing out deductions and exemptions. The Budget Taxation initiatives such as faceless e-assessment are aimed at moving towards a more digitised and business friendly regime" said Pramod Chandra Mody, Chairman, Central Board of Direct Taxes, Ministry of Finance

"The removal of dividend distribution tax will enhance the rate on return on equity," said Vikram S. Kirloskar, President, CII.

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"The abolition of dividend distribution tax and introduction of classical system of taxing dividends in the hands of shareholders is a bold measure and is expected to have positive spin off on reducing the cost of equity capital in the country", commented Chandrajit Banerjee, Director General, CII.

Encouraging digital connectivity

Digitisation is the norm in the global manufacturing sector. In India as well, there is an increased focus on connectivity with a huge push for incorporating new age industries, including quantum computing, machine learning and AI. This has led to the proposals for creation of data centre parks and a significant outlay for BharatNet. This move will definitely boost the growth impetus in manufacturing and electronic manufacturing industries

Subho Ray, President of the Internet and Mobile Association of India (IAMAI) said, "The focus on technology and digital infrastructure is a step towards realising the trillion-dollar economy and will open up new opportunities for demand generation."

Improving Purchasing Power

In this Budget, the government focused on increasing the buying power of citizen and announced a new

tax regime where 70 tax exemptions will be removed but the income between ₹ 5 lakh and ₹ 7.5 lakh will be taxed at 10% down from current 20%, income between ₹ 7.5 lakh and Rs 10 lakh will be taxed at 15% down from current 20%, and income between ₹ 10 lakh and ₹ 12.5 lakh will be taxed at 20% down from current 30%. Income between ₹ 12.5 lakh and ₹ 15 lakh will be taxed at 25% down from the current 30%. Incomes above ₹ 15 lakh in a financial year will continue to be taxed at 30%. The finance minister mentioned that the Budget 2020 is actually targeted at boosting incomes and enhancing purchasing power with the reduced tax burden.

The way forward

Overall, while the Budget wasn't an industry pleasing endeavour, it definitely focused on some of the important aspects of growth which was for long left out.

"The Union Budget has taken multiple measures that will build the confidence of the industry. These include the measures to reduce tax harassment, to enhance contract enforcement, to decriminalise business laws and simplify the processes of tax payment. These measures will considerably improve the business environment in the country," said Kirloskar. 🌈

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Manufacturing in the time of COVID -19



Nishant Kashyap

After suffering from the downturn in the automotive industry when everyone was hopeful for a better year, something unexpected happened – the arrival of COVID-19 (Coronavirus). It has disturbed the global economy and India is no exception.

Though there have been fewer cases in India, the situation in China has impacted and will continue to affect the global supply chain in the days to come. According to Crisil, approximately 18% of India's total merchandise imports are from China. India had a trade deficit of \$159 billion as of calendar 2019 and it remains a net importer from China



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(including Hong Kong) of \$56 billion. The worst-hit are industries like electronics, auto components, and manufacturing.

To minimise the spread of COVID-19, governments around the world are advising citizens to avoid any kind of mass gathering. This has impacted trade shows/ exhibitions around the world. Several exhibitions are already cancelled while some are postponed. In such a scenario, how do B2B companies (especially machine tools, mould makers, and 3D Printing suppliers) who are dependent on such trade exhibitions going to promote their products and solutions? How do they reach out to their potential customers?

To answer this let me share my conversation with the owners of two of job shops. This is what I realized:

Job shop A: The job shop generates business worth Rs 20 crore (about \$2.8 million). The owner was worried about the impact of COVID - 19 on his business. He solely depends on trade shows for marketing and meeting potential clients. Since most of the exhibitions around the world have been called off or on the verge of being postponed, he is not sure how to reach out to potential clients and promote his solutions and services. **(This job shop is 23-year-old, though there is a website to its name but it doesn't do justice to their capabilities.)**

Job shop B: This job shop manufactures automotive components and mould, among others. The revenue generated is about Rs 15 crore (\$2 million). Interestingly, the owner informed that since the last month he was witnessed a good number of inquiries from countries like the USA,

Israel, and other European nations. According to him, they are looking for suppliers in India because China is on a standstill. Though he is worried about the coming days, he is also hopeful of getting export orders because of the situation in China. **(The job shop is only 7-year-old and the owner has invested in a decent website showcasing the job shop's capabilities attracting inquiries.)**

The industry expects a lukewarm response to the trade shows, at least in the first half of this year (for the ones that are not canceled), why not put some of the money kept aside for these shows to create your company website or making the existing ones better?

Further, explain your services better and start your

social media activities. In my opinion, it can be done by focusing on digital marketing activities, which is long due.

Most of the Indian SMEs in these industries usually skip digital marketing (Several players do not even have a website), which means no presence in the social scene. I feel it's high time these players change their promotion strategy.

Picture this, businesses in different geographies need services and want to explore the options, how will they find them? Obviously, by browsing the internet. If you have a strong online presence and have taken SEO seriously, they might land at your website. Further, if you have good content, there are high chances you will get yourself an inquiry. If you don't have an online presence or the website content is not self-explanatory of your services and capabilities, they will turn away. Remember the old phrase, "The first impression is the last impression,"

So, why not start with a company website, followed by:

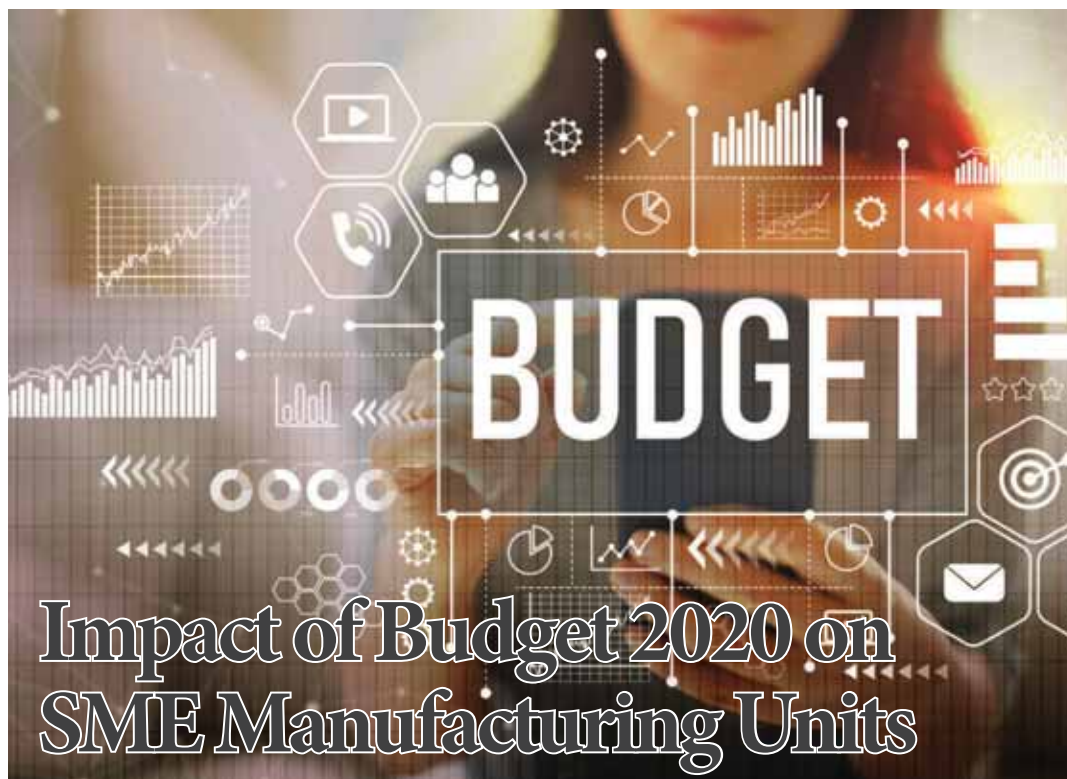
- ➔ Social media activities
- ➔ Investing in SEO
- ➔ Preparing knowledge-sharing contents
- ➔ Attending webinars
- ➔ Investing some time on platforms like LinkedIn

Another thing worth investing time is, collaborating with the On-Demand-Manufacturing platform. The on-demand-manufacturing concept has created a buzz in the manufacturing industry. These platforms take orders from different businesses and take the help of their manufacturing partners to complete them. You can list your company in one of these platforms and explore more opportunities.

In India, we have job shops led by experienced technocrats who have all the technical capabilities to cater to the requirement of the large OEMs, but we fail to market this. In the current time of rapid globalization, it is time we talk about our capabilities and reach out to customers from across the globe.

Coming back to Novel Coronavirus, yes these are challenging times, but the crisis is temporary. Let's use this opportunity to concentrate on building brand equity by engaging with consumers and providing them with quality service.

Let's hope for better days and pray for everyone who is affected by COVID-19. 🌈



Impact of Budget 2020 on SME Manufacturing Units

Micro, Small and Medium Enterprises ('MSME') play a crucial role in the Indian Economy. MSME is the back bone of Indian economy. They contribute 33.4% to the Manufacturing Output of the Country and their contribution to Manufacturing GDP is 6.11% and 24.63% to the Services GDP. MSME are helping in rural industrialization and bring the regional balance. MSMEs ensure equitable distribution of income and wealth in the country. They employ nearly 120 million people and nearly 40% of the Indian exports are from MSMEs.

MSME is one of the priority sectors of the Government and the Government policies are designed to ensure sustainability and growth of this sector. Various scheme and programs are introduced to enable capacity building and international competitiveness of MSMEs.

Budget 2020 presented by the Finance Minister, Mrs. Nirmala Sitharaman had three important themes viz.:

- Aspirational India,
- Economic Development and
- Caring Society

Various programs proposed under each of these themes have MSME in focus. The Budget 2020 is

definitely a MSME friendly budget, enabling the sustainability and growth of MSMEs in the country.

The key MSME initiatives in the Budget and their impact on MSMEs are listed below:

- 1. Government – E Market Place (GeM):** GeM is aimed at creating a unified procurement system for providing a single platform for Government procurements. This is a great platform and opportunity for the MSMEs to show case their products and increase their business. This platform enables dynamic pricing depending on the market conditions and facilitates quicker payment cycles. Further, the market available to MSMEs through this platform is huge and also enables to understand the competition around it. Such knowledge would help MSMEs to position them appropriately.
- 2. Invoice Financing by NBFCs:** To enable the working capital accessibility to MSMEs, Trade Receivables Discount system (TReDS) is introduced. With this, NBFCs will be allowed to provide invoice financing to MSMEs.

This would increase the working capital availability to MSMEs and the working capital cycles would be reduced. Working capital access

is the need of the hour and the invoice financing by NBFC would reduce the pain of MSMEs.

- 3. Restructuring of MSME loans:** In the month of September 2019, the Government had asked the banks not to classify the stressed loan accounts of MSMEs as Non- Performing Assets (NPA) till 31st March 2020. Through the Budget presented by the Finance Minister on 1st of February 2020, the Government has asked the Reserve Bank of India to extend this window till 31st March 2021.

This is a huge relief to MSMEs and allows enough time for them to work on their cash flows and to negotiate with the banks to restructure and at the same time not get tagged as defaulters and to maintain a good credit rating. The MSMEs should take advantage of this window and get out of their debt trap.

- 4. Scheme of Subordinate Debt:** MSMEs to be provided with Subordinate Debt, which would be fully guaranteed by the Credit Guarantee Trust for Medium and Small Entrepreneurs (CGTMSE).

This debt would be counted as quasi equity, which means, the repayment schedules and the terms of the loan would be flexible and enterprise friendly. Cost of such capital would be lower compared to the usual debt. Further, the Sub-ordinate debt ranks below the usual debts in case of any liquidation or winding up of the enterprises.

- 5. App Based Invoice Financing:** An app-based invoice financing loans product to be launched to obviate the problem of delayed payments and cash flow mismatches.

- 6. Export Support:** In its endeavour to bolster exports in auto, pharma and other sectors, the Government has proposed a scheme of Rs. 100 crores through Exim Bank and SIDBI. These entities would lend to MSMEs engaged in exports to invest in technology, technology upgradation, research and other long term business strategy.

This is a good move from the Government and the move would assist MSMEs in ensuring international competitiveness of their products and to remain relevant in the international market.

- 7. National Logistics Policy:** The Government has proposed to introduce a National Logistics Policy

focused on generation of employment, skills and competitiveness of MSME sector.

- 8. Increase in turnover limit for tax audit –** Presently, the audit under Income Tax Act is mandatory for entities having turnover of more than ₹ 1 Crore. The Budget has proposed to increase the above limit of Rs. 1 crore to Rs. 5 Crores.

A welcome measure from the Government. SMEs would save huge cost and effort by getting out of the tax audit ambit, results in reduced compliance cost and increases the ease of doing business.

- 9. Increase in Customs Duty:** With a view to deter the import of goods predominantly produced by MSMEs like footwear, furniture, medical equipment, mobile phones etc., the customs duty on import of these items has been increased.

This would give impetus to the local producers and achieves the objective of 'Make in India' initiative of the Government and enhances the capabilities of MSMEs.

Apart from the above, the proposals such as E- appeal proceedings, the income tax amnesty scheme 'Vivad se Vishwas' are all intended to benefit MSMEs. These measures would increase the ease of doing business by reducing the compliance cost and also the entrepreneurs get ample time to focus on business rather than compliance. The budget allocation of 2.83 Lakh crores towards Agro and allied sector shows that the Government is committed to support MSMEs.

As the saying goes, 'Opportunities do not happen, you create them'. MSMEs should use the platform set and grow exponentially. They are perfectly positioned for flourishing. 🌈

About Author:



Kavitha Paramesh Specialised in direct tax, corporate law, FEMA, corporate accounting and corporate finance kavitha is currently working as Senior Partner at T Sriram, Mehta & Tadimalla (TSMT). She has wide experience in representation before various statutory authorities, transaction structuring, international taxation, transfer pricing, startup advisory, financial management, advisory on joint ventures, mergers and acquisitions.

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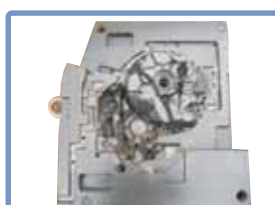
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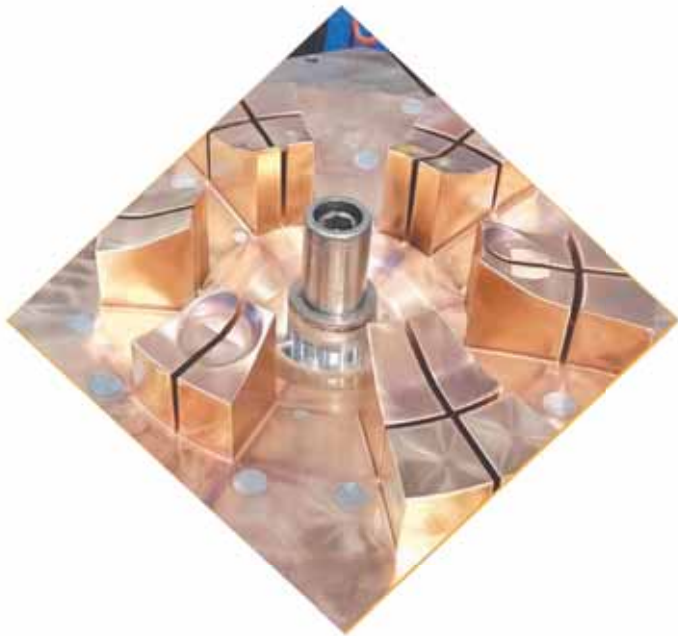
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How to increase productivity in plastics production by 25%

There are many ways production lines can be optimized to achieve higher productivity. In plastics production, there is special potential for an upgrade that manufacturers underestimate at their own peril. It concerns injection molds and the materials they are made of.



the injection mold is made of. Different materials have different properties that make them well-suited for injection molds. If plastic is to be cooled down, a key metric to watch out for is thermal conductivity. The more thermally conductive a material is, the quicker it can be heated and cooled and the quicker the production of parts can be completed. If, for instance, you use an injection mold made of iron, the best thermal conductivity you can expect is somewhere around 60 W/m K, which is not much compared to what other materials can achieve. In the field of plastic injection molds, producers are very careful when it is time to decide which basic material should be used for their molds. Up to now, some companies still use conventional tool steels, but if this material is less expensive for the buyers' side, it still presents a lot of inconveniences compared to high conductivity copper alloys. The best possible choice when it comes to injection mold materials is copper base alloys. The average

Manufacturers know that there are certain time losses in production that have to be accepted and cannot be eliminated. In plastics production, a specific time loss occurs when the molten plastic cools down inside the mold. Water runs through the mold to accelerate the process, and it seems that is all that can be done to reduce this downtime. However, manufacturers in the plastics industry should direct their attention to something they may not have thought hard enough about until now: the material

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thermal conductivity of copper is about 399 W/m K, which is 60 % better than aluminum and 3000 % better than stainless steel. Copper is second only to silver in this regard, which as a precious metal is not a sensible choice for manufacturers. Combining copper with materials like beryllium or nickel, silicone and chrome results in alloys that offer an optimal combination of hardness, wear resistance, thermal fatigue and thermal conductivity.

But gains in productivity can not only be also achieved due to their conductivity. The excellent polishing ability of AMPCOLOY® alloys has been proven when used in contact lens packaging manufacture, which requires the packaging to be transparent so the lenses can be checked through the packaging. Such high quality plastic packaging is achieved with high conductivity copper alloy inserts that are highly

polished. The polishing time of such inserts has proven to be four times faster than steel inserts, and the cycle time to be reduced by 57 percent.

Reduced warpage

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Due to the superior thermal transfer characteristics of high conductivity copper alloys, (typically five to 10 times better than steel), heat can be moved away from sensitive areas of the mold at such a rate that the need for complex cooling channels in the immediate location of the molded component is reduced, or eliminated altogether. Because the number of cooling channels required in the tool is less, the machining costs of the molds can be greatly reduced—up to four times less than that of a comparable cooling rate on a steel mold. 🌈

About Author

Mr. Luis J. Bento, Chairman of AMPCO METAL, explains: “Cycle time can be reduced by at least 20 percent, and some users report reductions of up to 80 percent, resulting from the significantly faster cooling rates achieved with AMPCOLOY® alloys. This means that productivity can be increased by at least 25 percent, with some users in the automobile headlight production industry reporting up to a 500 percent production increase simply because a reduced cycle time means more components can be made per shift.”





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HANNOVER MESSE 2020:

How change becomes growth



The manufacturing industry worldwide is grappling with the twin challenges of technological change and economic and political uncertainty. With its keynote theme of Industrial Transformation, HANNOVER MESSE 2020 focuses on the opportunities presented by innovative technologies, steadily growing and ever more readily available amounts of data, and a growing awareness of climate protection.

Four megatrends are changing the world: digitalization, individualization, climate protection, and demographic change. Industry is facing a big design task. The current economic and political climates pose additional challenges that make it difficult to maintain reliable partnerships.

HANNOVER MESSE shows global industry the way forward. "The way we live, produce things and work is undergoing extremely rapid change," says Dr. Jochen Köckler, CEO of Deutsche Messe. "The manufacturing industry is in the driver's seat. The challenge is to take the wheel and shape the change. At HANNOVER MESSE 2020, some 5,500 exhibiting companies will show how transformation can be positive, and how change can spark growth and progress."

Data: Source of efficiency and prerequisite for machine learning

In today's world, growth is built on data, and thanks to digitalization, the volume of data generated in industrial production processes is growing exponentially. Our ability to extract meaning from these data and turn them into profit is also growing.

Today's industrial technology solutions are interconnected. Machines and systems communicate and share information with each other autonomously, while software takes care of the documentation, monitoring and simulation. This data revolution is driving efficiency and is the prerequisite for machine learning and artificial intelligence.

Köckler: "At HANNOVER MESSE, we show how machines, production plants and intralogistics



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processes can be transitioned to the digital world. If you don't make this transition, then sooner or later you will be left behind by your competitors." Against this background, HANNOVER MESSE will feature presentations of software solutions for flexible manufacturing and B2B platforms for industry by big-name companies like Amazon Web Services, Cisco, Google, HUAWEI, IBM, Intel, Kaspersky, Microsoft, SAP, Siemens PLM and Software AG.

5G for industry

This year's HANNOVER MESSE will see the return of the 5G testbed infrastructure that premiered last year. Network equipment providers and users use the testbed to demonstrate the kinds of functionality that the new mobile telephony standard will be able to deliver. Köckler: "The ability to transfer large volumes of data in real time while maintaining high standards of data security is absolutely fundamental to the digital integration of industry. So, in Halls 3 and 21, we are setting up a real, working 5G network." Numerous individual showcases in these halls will be networked via 5G. "Nowhere else in the world will you find such a diverse array of 5G industrial use examples in a real, working 5G network, all under one roof," remarked Köckler.

The convergence of production and logistics

Digitalization is already a major driver of change in all areas of intralogistics. This includes automated warehouses, where processes are controlled by software programs, and where automated guided vehicle systems tour the halls at all hours of the day and night, delivering the right goods and materials in the right quantities to the right place at exactly the right time. Another key aspect is that production and logistics processes are converging and becoming increasingly interconnected, thereby making production more efficient, flexible and cost-effective. This year's HANNOVER MESSE will hold a mirror to these developments by prominently featuring logistics and intralogistics solutions.

Climate protection through innovation: the road to carbon-neutral production

Industrial production is energy-intensive. That is why resource efficiency, energy efficiency, and carbon-neutrality have been on the industry agenda for many years.

The climate debate currently taking place in society is helping with this by adding further momentum to the development of sustainable advanced technologies and carbon-neutral business models. Whatever form these technologies and business

models take – whether smart solutions for energy, circular economy models or lightweight design – the resulting gains in terms of resource conservation, energy efficiency and process optimization will do more than merely counter climate change; they will be good for business as well. That is why one of the key messages of HANNOVER MESSE 2020 is that climate protection and forward-looking industrial policies are two inseparable sides of the same coin.

Energy in transition: Hydrogen as a motor for industry

Hydrogen and fuel cell technologies span both infrastructure and industrial applications and are steadily gaining ground in the alternative energy mix.

For many years at HANNOVERMESSE, the international "Hydrogen + Fuel Cells EUROPE" showcase has been a key driver of growth in the hydrogen economy. This year the group exhibit boasts record participation, with more than 200 exhibiting companies from around the world. Visitors gain a comprehensive overview of energy generation and use, transport and mobility, and the interrelationships between the building-systems, manufacturing, transport, and energy sectors.

E-mobility infrastructure and related technologies are also a big topic in Hannover: Exhibitors show everything from transportation systems and charging technology to electricity network infrastructure and stationary energy storage technologies.

Young guns: Tech startups shaking up the industrial sector

One important effect of digitalization is that it empowers small companies to achieve things that were once the exclusive preserve of the big industrial players. Startups are now able to punch above their weight with disruptive ideas and technologies that really make a mark.

Tech startups from all around the world are rising to the challenge and helping to shape the transformation of industry in all kinds of ways, whether in the form of AI-powered software, virtual reality applications, sensor technologies, smart materials or intelligent energy solutions.

Not only young disrupters present pioneering visions of the future of industry at HANNOVER MESSE. The show also profiles Indonesia's impressive roadmap for the future. HANNOVER MESSE's official Partner Country for 2020 is taking decisive steps towards the realization of Industry 4.0. 🇮🇩



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Email: brahmand@outlook.com
Contact Person: Mr. Amar R. Thakur
Activities: Tool room activities for prototype,
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Contact Person: Mr. Joseph Francis /

Mr. Abhishek Gupta

Activities: Sales and Service Provider for
CNC Machine Manufacturers

4. MOULD STUDIO LLP

105, Vihan Commercial Complex, Walbhat
Road, Goregaon East Mumbai – 400063
Maharashtra
Tel: 9920060008
Email: info.mouldstudio@gmail.com
Contact Person: Mr. Kantibhai Bhanushali
Activities: Manufacturing of Plastic Injection
Mould

5. PARAM MACHINING TECHNOLOGIES PVT LTD

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Plot No. A 195, Road No.16A,
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Thane – 400604 Maharashtra
Tel: 9321161944
Email: pmtechsales04@gmail.com
Contact Person: Mr. Gautam Kamath
Activities: Authorized Distributor & Stockist.

6. PERFECT GROUP

89, Mahasainik Industrial Estate,
Plot No.T153/1, MIDC Bhosari

Pune – 411026 Maharashtra

Email: shindeganesh85@gmail.com

Contact Person: Mr. Ganesh Shinde

Activities: Mold Maintenance & assembly ergo
table, tool room, machining.

7. SIDDHI TOOLS

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Maharashtra

Tel: 9560705669

Email: siddhitools2@gmail.com

Contact Person: Mr. Anand Kumar – Proprietor

Activities: Company engaged to
manufacturing of injection mould
(Specialty Caps & Closures)

8. YNJ INDUSTRIES

307, Ashwamegh Complex, Sayajigunj,
Opp. M.S University, Vadodara – 390005
Gujarat

Tel: 9825297886

Email Id: sales-india@ynj-industries.com

Contact Person: Mr. Suvas Thakor

Activities: Sales & Technical services
CNC wire cut machine. Wire cutting-EDM
machines supplier

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AMPCOLOY® 940 & AMPCOLOY® 944

Beryllium-Free Copper Alloys with high conductivity & high hardness

AMPCOLOY® 940 & AMPCOLOY® 944 have been created by AMPCO METAL to optimise combination of thermal conductivity, tensile strength and hardness for the plastic industry.

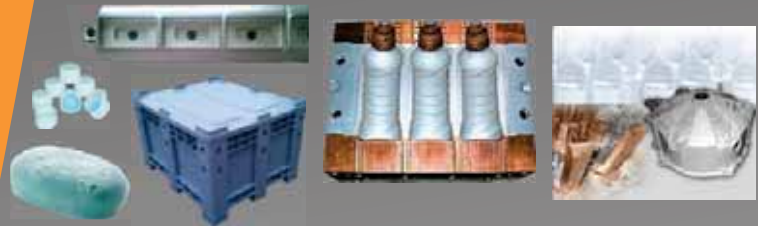
Applications:

- ▶ Injection moulding
- ▶ Thermoforming
- ▶ Blow moulding
- ▶ Soap Moulds

Food Approval of AMPCO®, AMPCOLOY® Materials
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Mechanical and Physical Properties	Unit	Beryllium-Free Copper Alloys	
		AMPCOLOY® 940	AMPCOLOY® 944
Rockwell Hardness	HRB/HRC	95 HRB	30 HRC
Thermal Conductivity λ at 20°C	W / m -K	208	156
Electrical Conductivity	% I.A.C.S	48	30



Address

AMPCO METAL INDIA PVT. LTD.
 A-8/4, At Village - Nighoje, Chakan MIDC,
 Phase IV, Tal : Khed, Pune – 410501
 MAHARASHTRA, INDIA
 Tel: +91 2135 610 810 | Fax: +91 2135 610 811
 infoindia@ampcometal.com
 An ISO 9001:2015 Certified Company

AMPCO METAL S.A
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 1723 Marly Switzerland
 Toll Free Phone: 800 8080 5050
 Tel.: +41 26 439 93 00
 Fax.: +41 26 439 93 01

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- ▶ Prevents over heat effect by optimizing thermal balance based upon casted heaters technology

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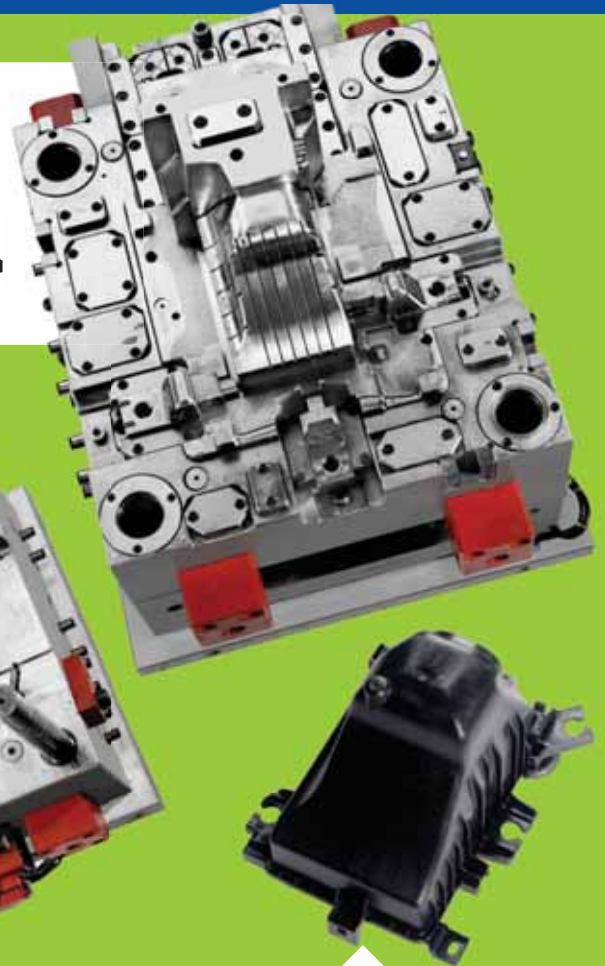
A/113 & 114 , Evershine Industrial Estate, Waliv Road, Chinchpada Junction, Vasai (E) - 401208, INDIA.

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Mumbai - 400072, India

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Shahapur, Dist Thane-421601, Maharashtra, India

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