

TAGMA TIMES

NEWSLETTER

(Technical Info. on Die, Moulds & Toolroom)

Volume: XXVII / No. 11

(Private Circulation for Members Only)

July 2021

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GST turns 4

Policy makers and researchers have always been curiously interested in how changes to a tax system could affect the economy overall. The thought is very intriguing considering that the structure and financing of a tax change are critical factors that could lead to the main objective — that of achieving economic growth.

Tax collection plays a crucial role. Why? That's because to boost economic growth and development, governments need sustainable sources of funding for social programs and initiatives... for this, the biggest source is tax.

This discussion brings to the fore a very interesting point — the taxation system needs to be a win-win-win for all... a win for the entrepreneurs, a win for the consumers and the win for the government too. One such "win-win-win" taxation system is the Goods and Services Tax (GST). GST has played a very proactive role in the various countries that it has been implemented in. In India, the tax is hailed as one of the biggest reforms in the history of Indian taxation.

GST came into effect in India on July 1, 2017, with the agenda of making the taxation system simple for all to adhere to. It replaced all the indirect taxes, such as service tax, VAT, CST, excise, etc. with a single comprehensive tax. Rolling out this tax was no easy feat. The idea of introducing GST from April 1, 2010, was first proposed in the 2006-07 Budget speech by the then Union Finance Minister P. Chidambaram. After years of study and scrutiny, in 2017, the government announced that it would come into effect from July 1.

Many entrepreneurs believe that GST is business-friendly. The tax has simplified the taxation process and has reduced the time and money that they otherwise spent on administrative hassles. Prior to GST, they say, paying taxes was a very complex and time-consuming process.

July 2021 marks four fruitful years for GST in India. It is also the month in which India collected a gross GST revenue of INR 1,16,393 crore. "The revenues for the month of July 2021 are 33% higher than the GST revenues in the same month last year," stated a government press release.

This issue of TAGMA Times is all about GST. We have featured a detailed analysis on the implications of GST and have shared the views of entrepreneurs on GST too. You could also share your thoughts with us. We will be happy to hear from you. Until then...

Happy Reading!

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amace solutions Pvt. Ltd. launches metal additive manufacturing machine, the ALM-400 metal 3D printer

AMACE solutions Pvt. Ltd., an Ace Micromatic Group company and a Bangalore-based metal AM solutions provider, recently launched the ALM-400 metal 3D printer. The machine is designed and developed to suit serial production applications, including prototype manufacturing. It has a build volume measuring 410mm x 410mm x 450mm, allowing for large-sized parts to be printed. The machine features a dual laser system with full scan field covered by the two high-powered 1kW lasers.

The machine can also print a wide range of materials such as stainless steels, aluminium alloys, Maraging steels, Inconel, and titanium alloys, among others. It can print parts with layer thicknesses varying anywhere between 30 microns and 120 microns. For superior precision in axes' positioning, longer life, and enhanced serviceability, the machine has on-board axes controlled by servo motors.

A lot of research and innovation has been brought about through this machine, which is evident from its many smart features. One such feature is the innovative multi-blade recoating system designed to enhance the productivity of printing, especially during production-related activity. The smart powder management system, in-situ inspection of part dimensions, automatic filtration system, user-friendly digital cockpit format for data display on the Graphical User Interface (GUI), and the remote monitoring & control of the machine are some of the many features that make it smart and suited for production.

This 3D printer has been indigenously designed and engineered to deliver unmatched reliability, high rates of productivity in metal printing along with faster Return on Investment (ROI) for the customer. The Ace Micromatic Group has developed different



configurations of the machine to suit a wide range of industrial applications in the metal-cutting space, mostly catering to the growing needs of the industry.

Through ALM-400, amace solutions intends to address the hesitancy of the manufacturers to adopt metal AM in their mainstream manufacturing activities. "The ALM-400 has been designed keeping high productivity

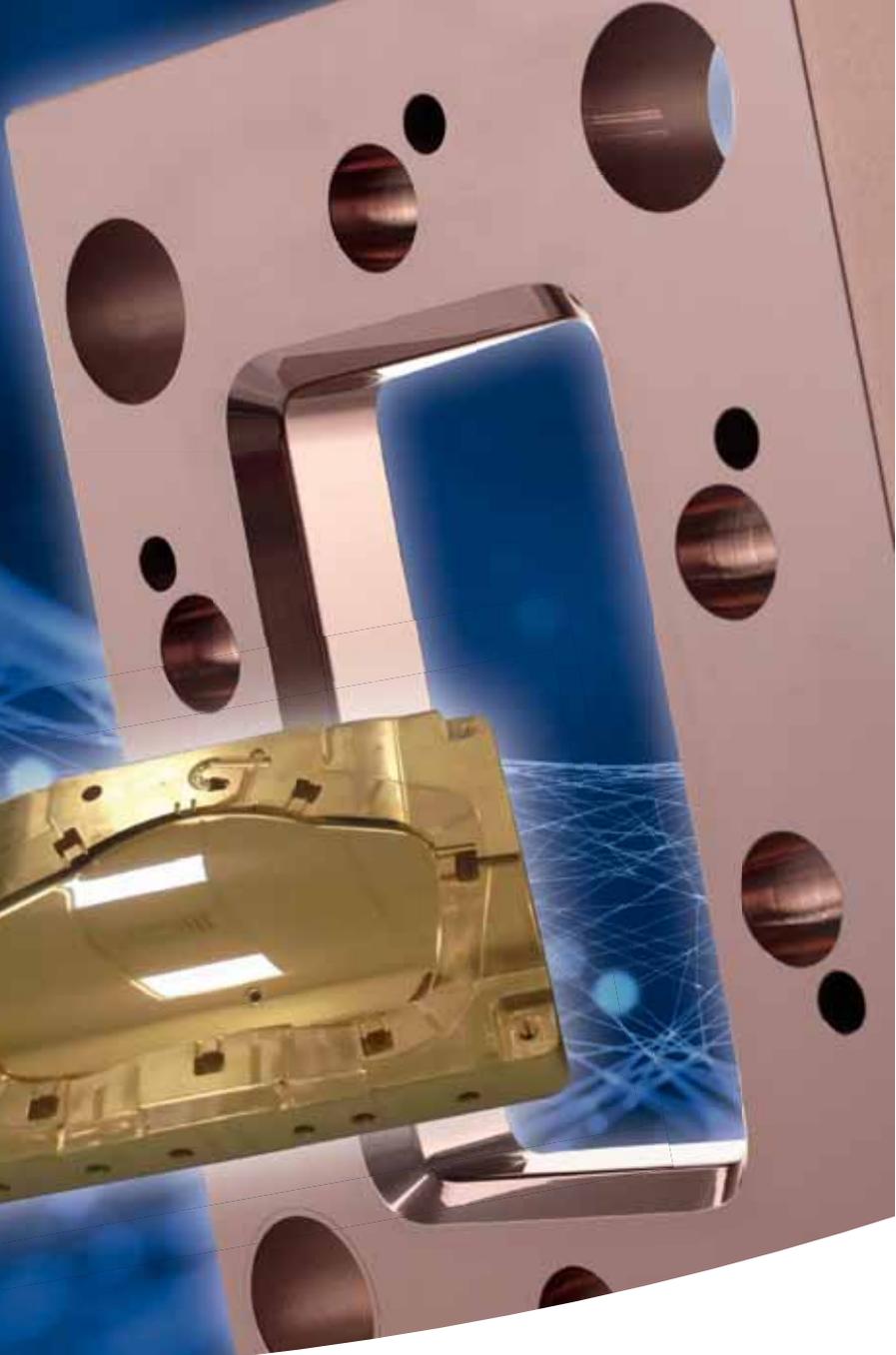
in focus. With some of the unique features of the machine, ALM-400 will meet and exceed the expectations of additive machine users. With enhanced user experience and intuitive feedback, the machine is convenient to operate and troubleshoot," said T. P. Sridhar, CEO & Director, Ace Designers Ltd.

"The versatile machine is developed on the strong foundation of our vast experience in machine building and understanding of metal-working machines. Backed with industry expertise and having involved in the technology for the past many years, amace, today has a better understanding of customer requirements. The team has understood the complexities in manufacturing faced by customers and has the right solution through the AM process," said L. S. Umesh, CEO & Director, Ace Manufacturing Systems Ltd.



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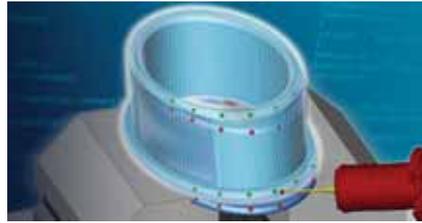
Component alignment at the touch of a button

OPEN MIND's hyperMILL® BEST FIT is a new function that is revolutionizing planning in machining operations. Instead of having to align the unmachined part in the clamping to the NC program manually, the hyperMILL® CAM system aligns the NC program automatically to the component position. This method saves time and increases process reliability, especially with cast, forged, welded, and additively manufactured stocks with small or irregular allowances, when reworking heat-treated parts, and during machine changeovers. Each of these processes requires a delicate touch to calibrate it with the CAD model of the end product.

hyperMILL® BEST FIT takes full advantage of the options offered by the virtual machine in the CAM program and communication with a 5-axis machining center capable of 3D measurements to eliminate the uncertainty that comes with manual alignment.

Real-time alignment for reliable, plannable processes

Up to now, it has been standard



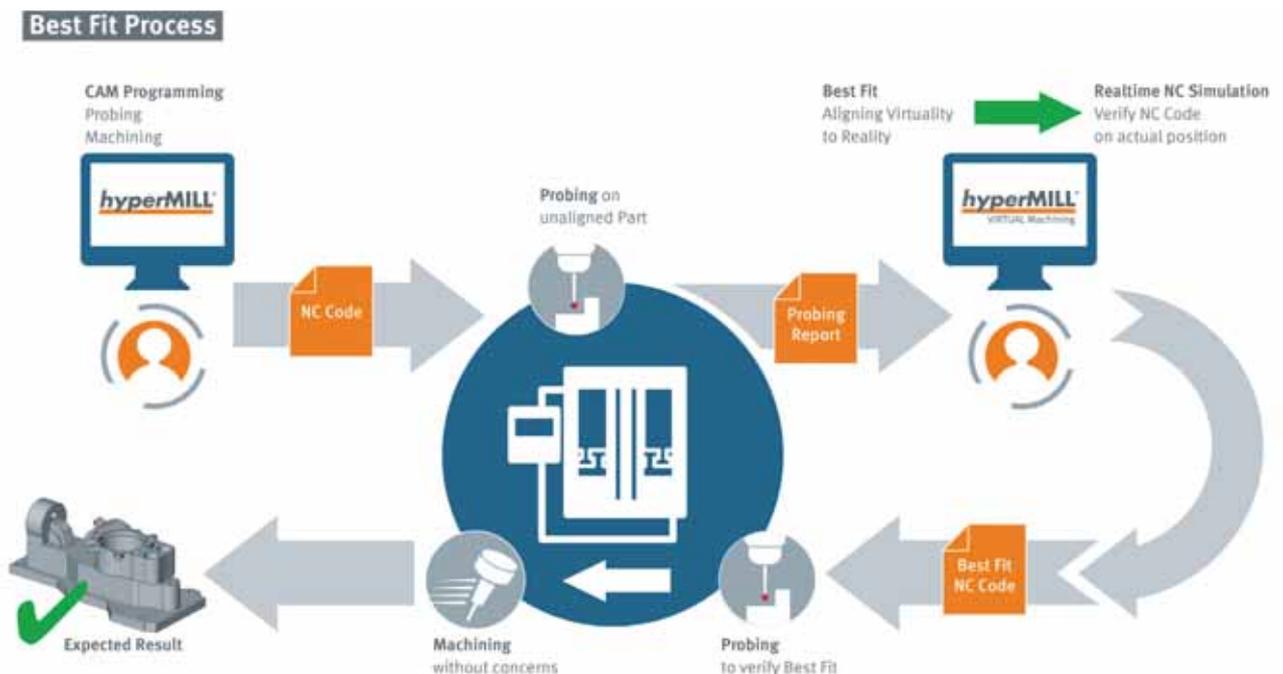
practice to adapt the stock and the clamping in the machine to the conditions of the NC program. The component is aligned manually, using a dial gauge, control cycles, plus a great deal of sensitivity. The actual clamping operation is adapted to conform to the virtual programming. This process was time-intensive, often needed to be repeated multiple times, and involved a number of uncertainties. One way to solve this issue is to align the component in CAM in real time. The unaligned stock is probed on the machine by way of a 3D measurement, the measurement log is sent to the CAM system, and hyperMILL® BEST FIT adjusts the NC code to the actual position of the component. The virtual world (programming) is adapted to the real world (clamping), not the other way around! The adjusted NC code is

then simulated in the virtual machine on the actual clamping setup, and automatically optimized.

A real game changer in many application areas

"Thanks to hyperMILL® BEST FIT, time-consuming and unsafe component alignment on the machine is a thing of the past. hyperMILL® detects the situation on the machine and aligns the component virtually," explains Manfred Guggemos, Product Manager at OPEN MIND Technologies.

"Component alignment at the touch of a button is a real game changer in many application areas. This could include reworking refurbished parts and imperfect forged parts, machining parts that are too heavy to be aligned by hand, eliminating the need for high-precision equipment, and more. What makes this unique is that unlike previous solutions available on the market, hyperMILL® BEST FIT does not change the origin on the controller and generates completely collision-checked toolpaths," adds Guggemos.





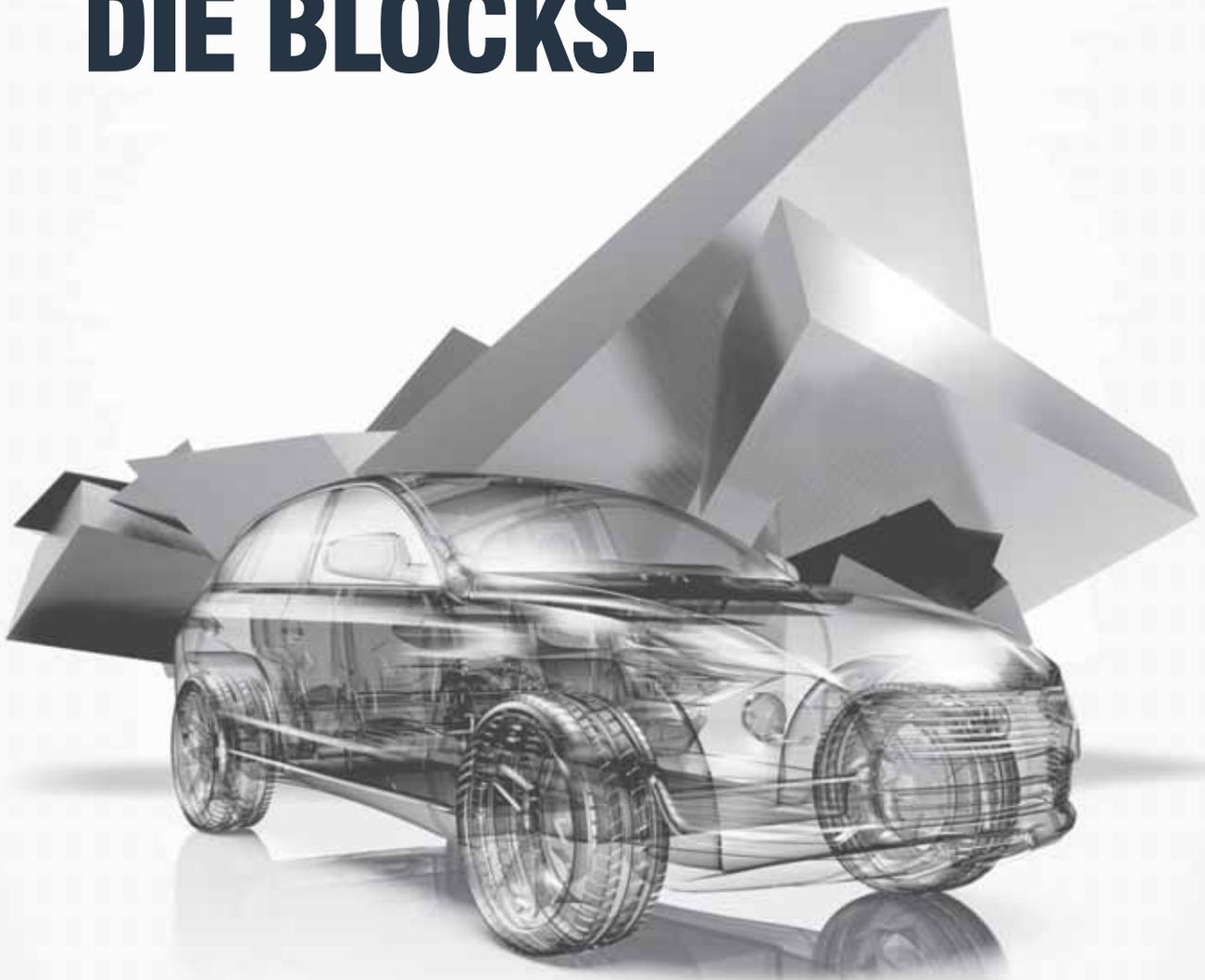
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HASCO SET – The Standard Engineering Tool for mouldmaking

DESIGNERS and builders of injection moulding tools greatly appreciate the various possibilities offered by the HASCO portal. From the mouldmaking assistant, and the generation of parts lists, through to the direct and easy ordering of quality mould units, the online portal simplifies the day-to-day work of the users. With the new HASCO SET Standard Engineering Tool, the internationally leading producer of standard mould units has now come up with a completely newly developed offline software program geared specifically to the needs of mouldmaking designers.

Because CAD computers in design – often for security reasons – are not connected with the Internet, the HASCO SET, as an offline version, offers the optimum solution here. Simply install it and utilise the entire product library comfortably at the CAD workstation. Regular updates guarantee the user

access to more than 100,000 quality mould units, current product data and the very latest information.



Key to success for designers in mouldmaking

The Standard Engineering Tool enables mould designers to utilise the required mould units in the fastest possible way. The already proven mouldmaking assistant from the HASCO portal provides further support. With just a few clicks and with the integrated layout editor, personalised mould structures can be easily configured.

Furthermore, interfaces are available for all conventional CAD systems. Models of the products can be directly imported and exported. The assembly environments of the standard mould units can be called up directly and can be generated and configured with just a few clicks, resulting in considerable time savings and making the design of injection moulding tools even easier.

Unique combination of offline and online

The unique combination of offline and online tools brings the designers numerous advantages. The uploading of parts lists in the HASCO portal makes it possible to place orders easily and quickly. The HASCO SET interface can be adapted without problem to the user's individual needs, allowing mould-making designers to focus on the important aspects and thus significantly increase efficiency.

Phillips Machine Tools creates affordable Additive Hybrid Solution

PHILLIPS Machine Tools has integrated Haas Automation's subtractive machine tool technology with an additive laser head manufactured by Meltio. Engineering a seamless connection between controls, the Phillips Additive Hybrid is capable of traditional machining coupled with an additive manufacturing process using direct energy deposition technology. The result is that Phillips has successfully integrated the power of both subtractive and additive processes for a revolutionary and affordable solution to producing and repairing parts.

Key advantages of this solution include:

- Ability to use and learn subtractive and additive technologies on the Haas standard platform.
- 3D print and complete a part using only one machine.
- Repair or modify parts by adding material and machining it to final

shape.

- Use different materials on the same part for best design, weight and strength.
- Produce high-density parts with good resolution using Wire Laser DED.
- Backed by Phillips applications engineering, service and training teams.

"Meltio is proud to welcome Phillips Corporation as a Haas hybrid integration partner. Hybrid manufacturing offers the benefits of both additive and subtractive processes in one machine, providing cost and complexity advantages that have not been accessible before," said Meltio's Chief Technology & Innovation Officer Brian Matthews.

"Phillips Corporation is pleased to be joining forces with Haas and Meltio to harness the combined power of

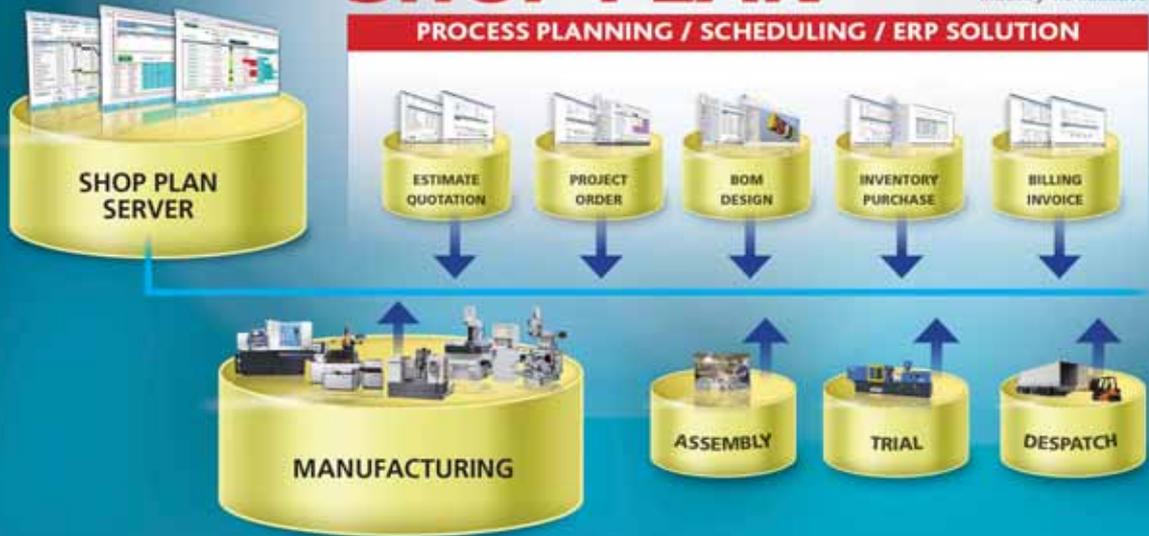
affordable subtractive and additive manufacturing," said Phillips CEO Alan M. Phillips. "The commercial and federal industrial supply chains have accelerating interest, applications and demand for 3D-printed parts. The Phillips Additive Hybrid solution is an optimal fit for customers seeking to add exceptional capability to their subtractive tools while also entering or expanding upon their additive manufacturing capability – all in one machine."

Speaking on this development, Terrence Miranda, Managing Director: Phillips Machine Tools, India, shared, "The Phillips Hybrid combines the ease of use and popularity of a HAAS CNC Mill with additive technology from Meltio all brought together seamlessly by Phillips in a package that is revolutionary in its simplicity, wide applicability and affordability."

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Economy treads cautiously optimistic on pent-up demand: ASSOCHAM

AFTER a tough first quarter, the Indian economy is finding demand back on the back of a strong level of activities in construction-related business, consumer durables like air-conditioners, refrigerators and other electrical gadgets, and rural segments of the fast-moving consumer goods. Even domestic travel and tourism are witnessing an unleash of pent-up demand, giving a pleasant surprise, as per an ASSOCHAM assessment.

The ASSOCHAM note avoided giving any numbers to the growth projections although, both first and second quarters of 2021-22 would be far better than the comparable period of the last fiscal.

“Although, hazarding a guess in the middle of a global pandemic is not desirable, the last 2-3 weeks have been quite encouraging in terms of unlocking of COVID-19 restrictions in most of the states, leading to the restoration of trade, pick-up in industrial activities and inventory going down,” ASSOCHAM Secretary General Deepak Sood said.

Sood added, “While we remain as anxious as all right-thinking citizens about

visible lapses in the COVID-appropriate behaviour, some popular travel destinations for summer months are witnessing a rush of tourists. We would urge the citizens as also the businesses to strictly adhere to the prescribed behaviour, like social distancing, wearing masks, and sanitation. We cannot afford to have another wave of pandemic and must do all it takes to prevent it.”



The ASSOCHAM feedback suggests that construction activities, which were suspended from the middle of April, have resumed in several sectors like road building, repairs and maintenance and residential projects. “Average city dwellers, especially in the upper middle class and affluent segments have taken up their pending construction and repair or upgradation of their homes. The Work From Home (WFH), which is being increasingly adopted across different sectors, has created additional demand for furniture and fixtures at homes,

including computer hardware.

Despite the increase in fuel prices, the use of private vehicles over public transport is adding to the fuel consumption, while the automobile production and sale remains constrained by external issues like global shortages of microchips and semi-conductors.

“We expect the demand for farm equipment, machinery and tractors to remain robust and may pick up traction after the monsoon season,” the chamber note stated.

“What gives us great relief is that the informal sectors, which remain the lifeline of the economy and the people, are returning. We feel reassured when we see masons, electricians, car mechanics, or roadside eateries coming back. Eventually, the informal sector seeps in and gels well with the formal economy, giving us the kind of growth needed for meeting the national aspiration,” Sood added. Migrant workers are fast returning to cities and industrial hubs.

He said while inflation remains a sore point, things should ease with the monsoon becoming active in most parts of India.

TKM signs MoU with ACMA for training auto components’ manufacturers

TOYOTA Kirloskar Motor (TKM), recently announced the signing of a Memorandum of Understanding (MoU) with the Automotive Component Manufacturers Association of India (ACMA). As per the MoU, TKM, through its training arm Toyota Learning and Development India (TLDI), will share its best practices like people development and lean management principles with the industry members of ACMA.

As per the MoU, TKM will impart 131 training programs focusing on principles of lean manufacturing, automobile and electrified vehicle technologies, industrial safety,



environmental management systems, quality and supply chain management and trades such as automobile welding, car painting, mechatronics, automation and robotics. The training programs will be conducted either at the TKM manufacturing plant or at the premises of the ACMA member companies. TKM will deploy trainers

who are certified by the Toyota Motor Corporation (TMC), Japan and Toyota’s Asia-Pacific Global Production Center (AP-GPC), Thailand.

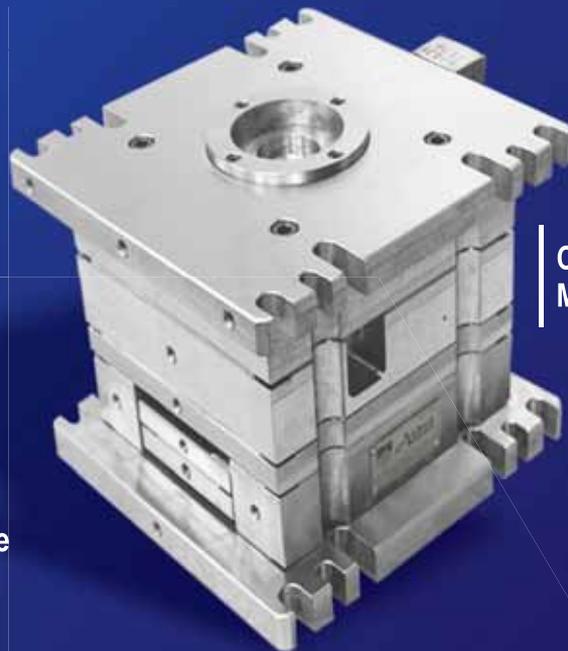
Commenting on the joint initiative, Mr. Vinnie Mehta, Director General, ACMA, said, “The MoU between ACMA and Toyota Kirloskar Motor for people’s development is a step in the right direction to prepare our human resources for the future. It will not only benefit ACMA member companies, but will also help India to become a world-class automotive manufacturing hub through the deployment of efficient, agile, and best-in-class practices.

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Audi, Mercedes-Benz upbeat about electrification journey of PVs in India

LUXURY carmakers Audi and Mercedes-Benz are upbeat about the electrification journey of Passenger Vehicles (PVs) in India with more states coming up with Electric Vehicle (EV) policies that encourage electric four-wheelers, according to company officials. Although the FAME II scheme by the Centre has not offered direct benefits for personal PVs, incentives like 5% GST on electric cars will also help, they said.

While Audi kicked off its electrification journey in India with the launch of three all-electric SUVs under the e-tron brand recently, Mercedes-Benz has been selling its all-electric SUV EQC since October last year.

Audi India Head Balbir Singh Dhillon said while the overall policy at present has focused primarily on two-wheelers and three-wheelers, many of the state governments are also coming forward to give incentives to electric cars. "The states have already declared there won't be a registration cost on the cars. You already know the GST on electric cars is 5%. So, these are already certain incentives the government has put in place, which will also encourage luxury players to also sell cars in the electric segment and these are definitely positive steps," he told PTI.

Recently, states such as Gujarat and Maharashtra announced their respective EV policies. Gujarat has offered demand incentives of INR 10,000/kwh for electric two-wheeler (e2W), electric three-wheeler (e3W) and electric four-wheeler (e4W) over and above any subsidies available from the central government, with the maximum ex-factory prices being capped at INR 1.5 lakh, INR 5 lakh, and INR 15 lakh, respectively, for the three vehicle categories. Maharashtra is offering demand incentives of INR 5,000/kwh on 10,000 electric cars with the maximum incentive per vehicle being capped at INR 1.5 lakh



Image Courtesy: © 2021 © AUDI AG.

besides exemption of road tax and registration charges.

Upbeat about the electrification of personal passenger vehicles in India, Dhillon said, "I firmly believe that electric is the future for sure, especially also on the luxury side. We have decided that our focus is definitely going to be electric cars."

Audi India has already set a target of 15% of its total sales in the country to come from EVs by 2025 and will bring some of the EV models out of the 20 electric cars that it would launch globally by 2025 to India as well. "So, our focus is very clear, short term to long term. We are focusing on electric cars and we have very positive thoughts on this topic," Dhillon said.

Expressing similar views, Mercedes-Benz India Vice-President, Sales & Marketing, Santosh Iyer said, "Mercedes-Benz will play a pivotal role in the introduction of latest technologies and products from our global portfolio for the Indian customers."

The company is very satisfied with the positive customer response to the EQC since its India debut and the subsequent interest and awareness it has created for the luxury EV segment, he added. "We are glad to witness subsequent introductions in the luxury EV segment that will further strengthen and widen the luxury EV segment from a consumers' perspective," Iyer said.

He further said, "We already have a strong order intake for the EQC that indicates a sustained customer interest for India's first luxury EV, and the next batch of EQC is expected to arrive by September."

Globally, the EQ brand is witnessing "massive success" with strong customer response to the EQS luxury sedan, Iyer said, adding in the H1 2021, around 39,000 all-electric vehicles were delivered, including more than 19,000 units of the EQA, EQC and EQV models. "Some of these models will eventually get introduced for the Indian market and we are very excited about the success story of the EQ brand in India as well," he said.

However, Iyer said, "While the government focus on electrification of two-wheelers, three-wheelers and public transport is in the right direction, any additional incentives in form of reduction in import duties will enable commencement of local assembly of world-class EVs like the EQC, which will create a cost parity with ICE vehicles and lead to faster adoption of luxury EVs."

Dhillon agreed that electrification is "going to be a journey where we have to be patient and continue to work on infrastructure, apart from cars to be successful", as it is going to be a technical one.

Courtesy: PTI



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Fitch Ratings cuts India's growth forecast to 10%, says rapid vaccination to support revival

FITCH Ratings recently cut India's growth forecast to 10% for the current fiscal from the 12.8% estimated earlier, due to slowing recovery post the second wave of COVID-19, and said that rapid vaccination could support a sustainable revival in business and consumer confidence.

In a report, the global rating agency said the challenges for the banking sector posed by the pandemic have increased due to a virulent second wave in the first quarter of the financial year ending March 2022 (FY22). "Fitch Ratings revised down India's real GDP for FY22 by 280bp to 10%, underlining our belief that renewed restrictions have slowed recovery efforts and left banks with a moderately worse outlook for business and revenue generation in FY22," it said.

Fitch believes that rapid vaccination could support a sustainable revival in business and consumer confidence. However, without it, economic recovery would remain vulnerable to further waves and lockdowns.

It said that localised lockdowns during the second wave kept economic activity from stalling to levels similar to those during 2020, but disruption in several key business centres has slowed the recovery and dented Fitch's expectations of a rebound to pre-pandemic levels by FY22. India's economy contracted 24.4% in the June quarter of 2020.

Fitch views India's rebound potential to be better than most comparable 'BBB-' peers because it does not expect a structurally weaker real GDP growth outlook. However, there is a risk that India's medium-term growth could suffer if the business and consumer activity were to experience scarring from the pandemic. The agency estimates India's medium-term growth potential at about 6.5%.

Growth projections

- The Indian economy contracted by 7.3% in fiscal 2020-21, as the country battled the first wave of COVID, as against a 4% growth in 2019-20.
- GDP growth in the current fiscal was estimated to be in double digits initially, but a severe second wave of pandemic has led to various agencies cut growth projections.
- RBI, too, earlier in July, cut India's growth forecast to 9.5% for this fiscal, from 10.5% estimated earlier.
- While S&P Global Ratings lowered its growth estimate to 9.5%, another US-based rating agency, Moody's, has projected a 9.3% growth in the current fiscal ending March 2022. For 2021 calendar year, Moody's has cut growth estimate sharply to 9.6%.
- In June, World Bank slashed its GDP growth forecast for the current fiscal ending March 2022 to 8.3%, from 10.1% estimated in April, saying economic recovery is being hampered by the devastating second wave of coronavirus infections.
- Domestic rating agency, ICRA, too, had projected economic growth at 8.5% for this financial year, while British brokerage firm, Barclays, had, in June, cut India's growth forecast to 9.2%.



Image used for representation only.
Courtesy: Envato Elements

Stating that vaccination is key for business revival and relief measures would only provide interim support, Fitch said the low vaccination rate makes India vulnerable to further waves of the pandemic. "Only 4.7% of its 1.37 billion population was fully vaccinated as of July 5, 2021... This poses risks to the prospects of a meaningful and sustainable economic recovery," it added.

Fitch in its report on Indian banks further said that regulatory relief measures have postponed underlying asset-quality issues for now, but

banks' medium-term performance will be dented without a meaningful economic recovery. "The operating environment remains challenging for banks with limited opportunities for business and revenue growth. Problems could escalate in the event that successive

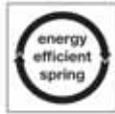
COVID-19 waves and lockdowns prevent a meaningful economic recovery considering that India's full vaccination rate is still quite low," it said.

Fitch expects banks' exposure to stressed MSME and retail borrowers to rise further with the increasing relief outlay, and is likely to compel banks – especially state-owned ones – to slow regular lending in the absence of adequate core capital cushions and weak contingency buffers.

Courtesy: PTI

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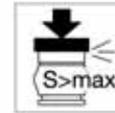
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Foxconn, Wistron, Dell and 16 other firms apply for PLI investments

APPLE'S contract manufacturers Foxconn and Wistron, computer firm Dell, and domestic company Lava are among the 19 companies that have applied for investments under the Production-Linked Incentive (PLI) Scheme for IT hardware manufacturing, the Ministry of Electronics and IT recently said.

According to the ministry, the scheme is expected to lead to total production worth around INR 1.6 trillion. Of the total production, IT hardware companies have proposed production worth over INR 1.35 trillion, and domestic companies have proposed production to the tune of more than INR 25,000 crore, Meity said in a statement.

"The electronics hardware manufacturing companies that have applied under category IT Hardware Companies are Dell, ICT (Wistron), Flextronics, Rising Stars Hi-Tech (Foxconn) and Lava," Meity said.

'PLI scheme a huge success'

The PLI scheme for IT Hardware was notified on March 3. The scheme provides an incentive of 1% to 4% to eligible companies on net incremental sales over the base year of FY19-20 of goods under target segments that are manufactured in India for a period of four years (FY 2021-22 to FY24-25).

Electronics and IT minister Ravi Shankar Prasad said the PLI scheme for IT Hardware has been a huge success in terms of the applications received from global as well as domestic companies engaged in manufacturing electronics hardware products. The industry has reposed its faith in India's stellar progress as a world-class manufacturing destination and this resonates strongly, he added.

Fourteen other companies have filed applications under the category of domestic companies. They are Dixon, Infopower (JV of Sahasra and MiTAC), Bhagwati (Micromax), Syrma, Orbic, Neolync, Optiemus, Netweb, VVDN, Smile Electronics, Panache Digilife, HLBS, RDP Workstations, and Coconics.

"These companies are expected to expand their manufacturing operations in a significant manner and grow into national champion companies in IT

Hardware production," the statement said.

The scheme will generate approximately 37,500 direct employment opportunities in the next four years along with creation of additional indirect employment of nearly three times the direct employment, the statement said.

Courtesy: PTI

Tata Motors bags order of 15 hydrogen-based fuel cell buses from IOCL

TATA Motors recently announced that it has won a tender of 15 hydrogen-based proton exchange membrane (PEM) fuel cell buses from Indian Oil Corporation Limited (IOCL). IOCL had invited bids for the supply of PEM fuel cell buses in December 2020, and Tata Motors was selected as the winner following a diligent evaluation process. All the 15 buses will be delivered within 144 weeks from the date of signing of the Memorandum of Understanding (MOU).

In addition to supplying the buses to the Research & Development Centre of IOCL, Tata Motors will also collaborate with them to

undertake R&D projects and collectively study further the potential of fuel cell technology for commercial vehicles. This will be done by



jointly testing, maintaining and operating these buses for public transport in real-world conditions in Delhi-NCR. The buses will be refuelled by hydrogen, generated and dispensed by IOCL.

S. M. Vaidya, Chairman, Indian Oil, stated that Indian Oil has been pioneering the national

efforts towards ushering in the hydrogen economy for various applications, including mobility. This first-of-its-kind project in the country is bringing the country's largest fuel supplier and largest commercial vehicle manufacturer on board to take the hydrogen & fuel cell technology to the next level. This initiative would also act as a stepping stone for various other key programs of Indian Oil, which proposes to introduce hydrogen-based mobility on different iconic routes and important sectors in the country. These futuristic steps are in the right direction for making hydrogen as the ultimate net-zero fuel.

Speaking on the occasion, Girish Wagh, President, Commercial Vehicle Business Unit, Tata Motors, said, "We are delighted to win this prestigious tender from IOCL for it adds to Tata Motors' rich legacy of introducing future-ready technologies for cleaner and greener public transport. We have successfully supplied 215 EV buses under FAME I and won orders for 600 EV buses under FAME II. This order to supply PEM Fuel Cell buses from a company as respected as Indian Oil Corporation, further encourages our ongoing efforts on developing India-focused alternative sustainable fuels to transform the future of mobility in India."

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The GST Impact

July 1, 2021, marked the fourth anniversary of the Goods and Services Tax (GST) regime in India. GST was introduced to revolutionize India's tax system by replacing its indirect taxes with one single tax. The idea behind implementing GST was that businessmen would not have to worry about the number of taxes, consumers would not end up paying much more for goods and services, and the government would earn more revenue. Four years down the line, has GST had the desired impact?

Kimberley D'Mello

On July 1, 2021, the Goods and Services Tax (GST) regime completed four years. More than INR 66 crore GST returns have been filed so far, the Finance Ministry tweeted. "It is now widely acknowledged that GST is both consumer and taxpayer-friendly. While high tax rates of the pre-GST era acted as a disincentive to paying tax, the lower rates under GST helped to increase tax compliance, with around 1.3 crore taxpayers registered," said the Finance Ministry in a tweet.

As per the GST norms, all the businesses with an annual turnover of up to INR 40 lakh are exempt from the tax, while those with a turnover of up to INR 1.5 crore can opt for the

In Focus

Composition Scheme and pay 1% tax. For services, businesses with a turnover of up to INR 20 lakh in a year are exempt from paying GST, while a service provider with a turnover of up to INR 50 lakh in a year can opt for the Composition Scheme for services and pay 6% tax.

Tweeting with the hashtag '4yearsofGST', the ministry added, "GST has reduced the rate at which people have to pay tax. The revenue neutral rate as recommended by the RNR Committee was 15.3%. Compared to this, the weighted GST rate at present, according to the RBI, is only 11.6%."

Pre-GST era

Prior to GST, every state across the country charged a different tax rate, which led to great inefficiencies and costs of compliance. In the pre-GST era, the total of VAT, excise, CST and their cascading effect led to 31% as tax payable, on an average, for a consumer. However, under GST, a four-rate structure that exempts or imposes a low rate of tax — 5% on essential items and a top rate of 28% on cars—is levied. The other slabs of tax are 12% and 18%, said a news report.

Recounting the pre-GST era, Kirit Chheda, VP – Marketing, TTB Tooling, said, "Earlier, excise was charged on basic and then VAT was applied on the total of excise + basic value. Hence, indirectly the end customer was getting all products at a higher value. Also, many used to file returns of excise as well as VAT twice in a month, which consumed a lot of administrative time."

Trading inter-state was a complicated process too, say businessmen. "Whenever a manufacturer bought or sold to other states, he had to deal with complicated state and national taxes. This led to lengthy paperwork and additional expenditure on tax professionals," highlighted Anant Jain, Proprietor, Anant Engineering.

A brief history

The idea of introducing GST from April 1, 2010, was first proposed in the 2006-07 Budget speech by the then Union Finance Minister P Chidambaram. According to the GST Council website, "The Empowered Committee of State Finance Ministers (EC), which had formulated the design of State VAT, was requested to come up with a roadmap and structure for GST. Joint Working Groups of officials having representatives of the States as well as the Centre were set up to examine various aspects of GST and draw up reports specifically on exemptions and thresholds, taxation

Did you know?

France was the first country to implement the GST in 1954; since then, an estimated 160 countries have adopted this tax system in some form or another. Some of the countries with a GST include Canada, Vietnam, Australia, Singapore, United Kingdom, Monaco, Spain, Italy, Nigeria, Brazil, South Korea, and India.

Source: Investopedia

of services and taxation of inter-State supplies. Based on discussions within and between it and the Central Government, the EC released its First Discussion Paper (FDP) on the GST in November, 2009. This spelt out features of the proposed GST."

What is its significance?

GST represents an unprecedented exercise in fiscal federalism. The idea of introducing it was looked at as "a significant step in the field of indirect tax reforms in India", stated the website. Here are the reasons:

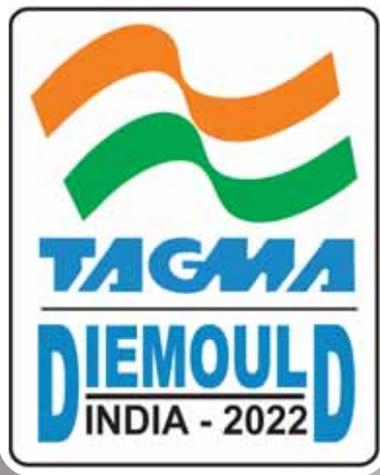
Transparency in the taxation process: GST merges a large number of Central and State taxes into a single tax. As a result, GST aims to "mitigate ill effects of cascading or double taxation in a major way and pave the way for a common national market". From the consumers' point of view, reduction in the overall tax burden on goods is an advantage. "It would also imply that the actual burden of indirect taxes on goods and services would be much more transparent to the consumer," states the website.

Economy benefits: Policymakers opined that by omitting input taxes across the value chain of production and distribution, GST would make Indian products competitive in domestic as well as international markets, thereby offering a boost to economic growth.

Easier to administer: Owing to its transparent and self-policing nature, GST would be easier to administer and "would encourage a shift from the informal to formal economy".

GST is introduced

Prime Minister Narendra Modi introduced GST — which subsumed 17 local levies, like excise duty, service tax, value added tax, and 13 cesses — with effect from July 1, 2017. "GST is a result of a long-thought process. States and Centre equally discussed

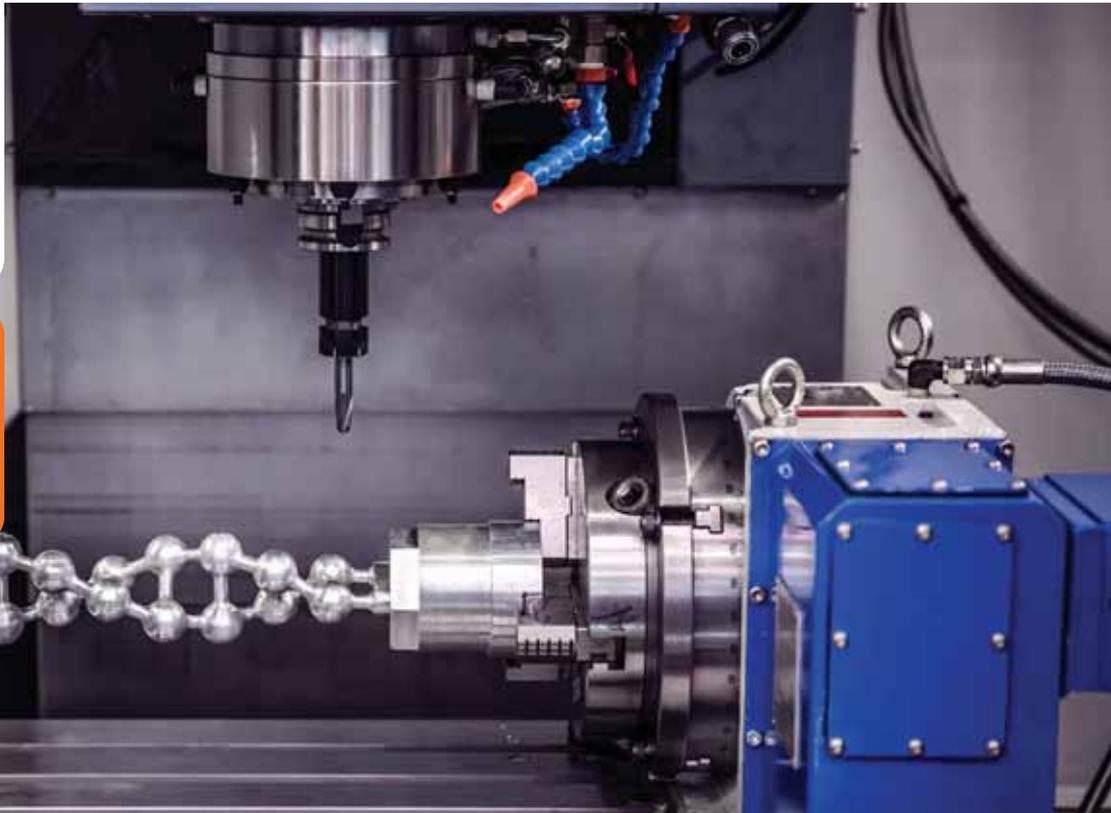


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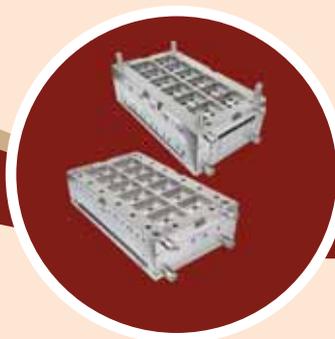
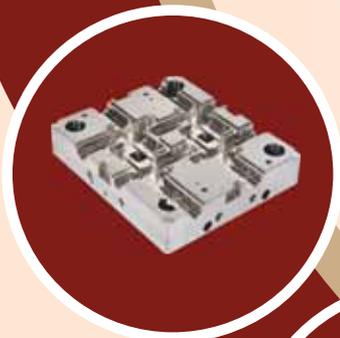
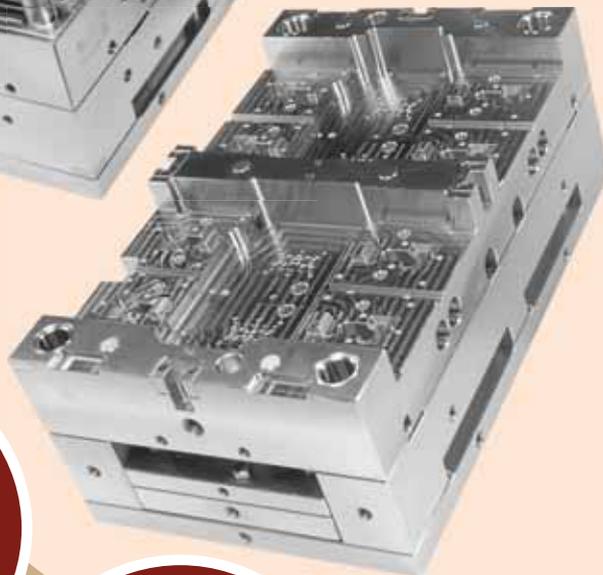
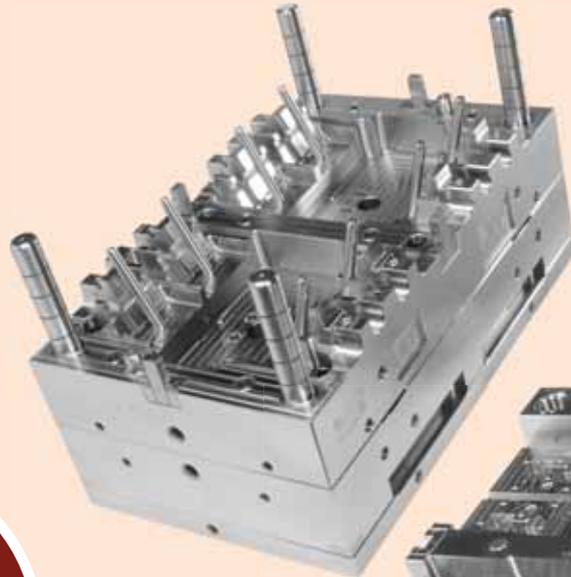
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What are the different types of GST?

Central GST (CGST): This is levied on each transaction. The revenue generated from CGST goes to the Centre.

State GST (SGST): SGST is levied on every transaction that takes place within the state. The revenue generated from SGST goes to the State.

Union territory GST (UGST): Here, the Union Territory gets the revenue generated from a transaction that takes place within a Union Territory (UT) without a legislature.

Integrated GST (IGST): IGST is levied whenever there's a transaction between two states and UTs, or between a state/UT, and any foreign territory.

this for years. The best brains of the country have worked on it. And it is the result of that that we see as the fruition of GST," said the Prime Minister at the launch.

"GST is not just tax reform, but it's an economic reform. GST is a way forward in the ease of doing business. In the language of law, it is called the goods and services tax, but the benefit of GST is really a Good and Simple Tax. Good because multiple taxes will be removed. Simple because it requires just one form and is easy to use," he elaborated.

Advantages and disadvantages

According to a government press release, GST has the following advantages:

- ▶▶ GST benefits all the stakeholders of industry, government and the consumer. It lowers the cost of goods and services, boosts the economy and makes the products and services globally competitive. GST aims to make India a common



Ministry of Finance tweets

"GST has significantly eased one of the most complex indirect tax systems in the world. A company looking to do business in every state had to make as many as 495 different submissions. Under GST, that number has reduced to just 12."

"GST has replaced the complex indirect tax structure with a simple, transparent and technology-driven tax regime and has thus integrated India into a single common market."

"With the continuous simplification of procedures and rationalisation of rate structures so as to make GST compliance easy for common man as well as the trade, we have been able to achieve economic integration of the country with a humane touch."

market with common tax rates and procedures and remove the economic barriers, thus paving the way for an integrated economy at the national level.

- ▶▶ GST is largely technology driven. It reduces the human interface to a great extent and this would lead to speedy decisions.
- ▶▶ GST will give a major boost to the 'Make in India' initiative by making goods and services produced in India competitive in the national as well as international markets. Also, all imported goods will be charged integrated tax (IGST), which is equivalent to Central GST + State GST. This will bring equality with taxation on local products.
- ▶▶ GST will bring more transparency to indirect tax laws. Since the whole supply chain will be taxed at every stage with credit of taxes paid at the previous stage being available for set off at the next stage of supply, the economics and tax value of supplies will be easily distinguishable. This will help the industry to take credit and the government to verify the correctness of taxes paid and the consumer to know the exact amount of taxes paid.
- ▶▶ The taxpayers only need to maintain records and show compliance in respect of Central Goods and Services Tax Act and State (or Union Territory) Goods and Services Tax Act for all intra-State supplies (which are almost identical laws) and with Integrated Goods and Services Tax for all inter-State supplies (which also has most of its basic features derived from the CGST and the SGST Act).

According to various research papers, the following are the disadvantages of GST:

- ▶▶ Earlier, the process to prepare invoices, file returns and make payments were done using pen and paper. Smaller businesses were familiar with this process. But with GST going online, some of them found it challenging to keep up with the change.
- ▶▶ GST has taken the tax process online. This means that businesses will either have to spend money on making their existing software GST-compliant or they will need to buy it.
- ▶▶ Businesses will have to employ GST-complaint tax professionals. This is likely to put a financial strain on small businesses, as they will have to bear the additional cost of hiring experts.

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Image Courtesy: Envato Elements



- ▶▶ SMEs will have to issue GST-complaint invoices, keep a track of their digital records and file returns in time even if they are unable to understand the nuances of GST.

Hiccups along the way...

Like most reforms, GST went through an elaborate scrutinizing process until its implementation. The ideas behind a reform like GST have a strong foothold, no doubt. However, the progression to a new structure is always challenging, and the implementation of GST is no exception.

The manufacturing industry has its share of hiccups too. For instance, Yogini Medadkar, Finance Controller, FIBRO India Precision Products Pvt. Ltd., said, "Sometimes, we face technical glitches on the GSTIN portal, which prevent us from accessing it at critical times, like when we have to file GSTR-9 on priority. Also, the government may announce certain relief measures for returns, tax payment, levy of interest due to the pandemic, etc. However, there are no amendments available through notifications, circulars, etc."

"Transacting with a GST non-complaint supplier can be very tedious. In spite of making the payment to the supplier, the ITC is denied. This puts pressure on the cash flow. And, if a supplier has not made the payment and not filed the GST return in time, on such invoices the ITC availed becomes ineligible. This affects our cash flow, as we have to pay the deficit amount using our cash account," added Medadkar.

Amit Kumar Parashar, Sr. Vice President - Operations, Tool Room, Service, Subros Ltd., said that even though GST is a welcome move, there are still some factors that need to be taken into account. "In the central excise law, the threshold limit was

INR 1.5 crore, and with GST it is INR 20 lakh. There is a need to review this limit, as this reduction will significantly impact MSMEs' working capital. For example, if a manufacturer, who traded at INR 20 lakh prior to GST was without any tax levy, he will now be paying GST. As the threshold is low, most MSMEs are paying a chunk of their capital towards tax. Even after 3 years of rollover of GST, the assesseees are still facing many issues in complying with the GST requirements. The government has to give relief and amend the GST Rules," he explained.

Room for improvement

No doubt GST is among the noteworthy reforms in the Indian taxation system, which has garnered appreciation from many. However, experts are of the view that there's always room for improvement.

GST, just like a newborn child, has to go through many phases before maturity is reached, believes Abhay Desai, Chartered Accountant, Partner at Yagnesh Desai & Co. "The GST law is evolving based on the need of the industry and also of the government. GSTN portal is also evolving to accommodate the new requirements from time to time. The said processes (evolution of law as well as of the GSTN portal) will continue for some time to come before it can reach stability. The industry, with the help of professionals, also needs to keep pace with the ever-changing environment and keep evolving. The industry needs to focus on (a) processes (b) people and (c) technology to align it with the requirements. Any lag in the digital era may entail unwarranted costs," said Desai.

"We, as a country, are surely moving in the right direction by adopting technology and innovatively solving the problems," concluded Desai. 🌈

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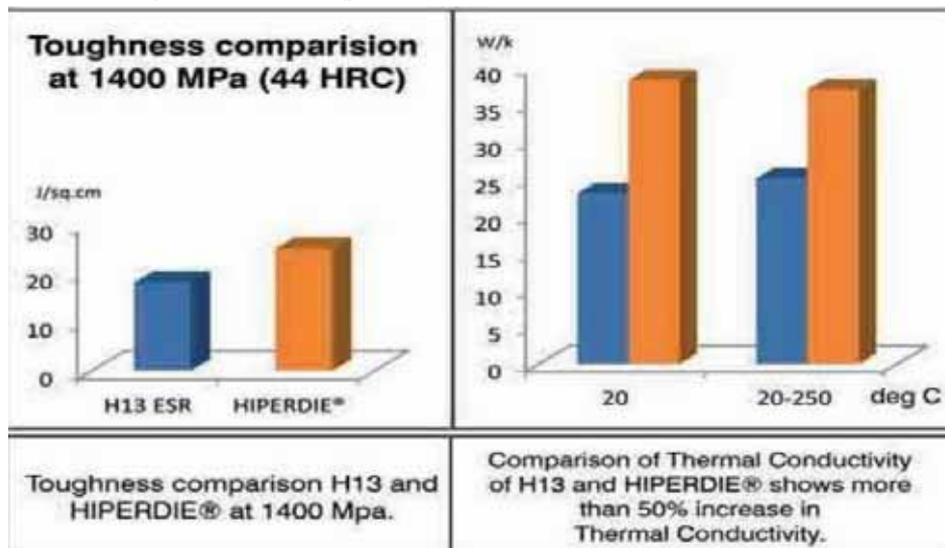
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GST: The Game Changer

The Goods and Services Tax (GST), which came into effect on July 1, 2017, has been hailed as one of the significant tax reforms in India. GST has combined a large number of Central and State taxes into a single tax. Four years down the line, MSMEs talk about their tryst with the tax.



One Q, Many Views



Abhay Desai,
Chartered Accountant,
Partner, Yagnesh Desai & Co.

“GST has certainly helped MSMEs by making India one common market and hence, removing the rate distortions, which were prevalent in the erstwhile regime (wherein the same product was liable to a different rate of VAT based on the State involved). Further, it has also helped by way of reducing the cost (as the input tax credits are broad-based). Further, GST has resulted in the ease and a reduction in compliances (as compared to the previous regime where different returns were to be filed under separate indirect tax laws). GST has also ushered in transparency, which facilitates improving the creditworthiness resulting in a reduction in the cost of capital. Transparency shall also result in bringing greater certainty and thereby reducing the risks of harassment. Therefore, GST has certainly helped the tax compliant MSMEs by making them more competitive.”

“Goods and Services Tax is a world-class tax structure. It has replaced several indirect taxes in India such as VAT, excise, service tax, etc. It has made the process of filing taxes online, but initially the GST portal was not equipped to receive the huge data inflow from the industry. We faced a lot of issues while filing the GST returns and could not submit them on time. But over time, these teething issues have been redressed. There are several other issues like, for instance, there is no provision for revision of GST returns. In case if any error is done by the assessee and it came to his notice, it cannot be rectified immediately. The error can be rectified through further additional entries.”



Amit Kumar Parashar,
Sr. Vice President - Operations,
Tool Room, Service, Subros Ltd.



Anant Jain,
Proprietor,
Anant Engineering

“Multiple indirect taxes had increased the administrative costs for manufacturers; GST has eased this burden for them. Previously, several businesses were not registered because they did not fall under the tax bracket. But GST has ensured that these businesses are registered, which will lead to lesser tax evasion. Earlier, when a manufacturer had to buy from or sell to other states, he had to deal with complicated state and national taxes, which led to lengthy paperwork and spending money on tax professionals. GST gives manufacturers the freedom to choose vendors with the best prices. The vendor could be located in any corner of India, but the manufacturer still has to pay the same GST rate.”

“‘One nation, one tax’ is definitely a welcome move by the Indian government. GST has simplified many administrative processes, as it reduces the burden of dealing with multiple taxes. I feel GST has immensely benefitted MSMEs, as the cash flow in small companies has become smoother. Owing to the stipulated timeline to file GST, customers have started releasing payments on time. This has proved to be very helpful for MSMEs.”



Ankit Sahu,
Director,
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Kirit Chheda,
VP – Marketing,
TTB Tooling

“Being an MSME, we have been receiving tax payment at least within the stipulated time, as the supplier as well as the customer have to pay and file the returns to avail of credits. The only hitch is that the filing of returns for various categories of suppliers is not mandatorily made monthly. As a result, some small suppliers end up facing cash outflow issues. Additionally, GST has reduced the input cost due to the cascading effect of double taxation; we are able to compete in the domestic as well as export markets. As we have a turnover of almost 40% of exports, we get the tax refunds on time, which helps us manage the cash flow better. It has also reduced the liability of collecting ‘C’ / ‘H’ Forms, which costed us heavily if ever there was a case of non-submission. Its other plus points are that the export process has become simpler, faster and saves us a lot of time and money.”

“It’s been four years since GST was implemented and, in my opinion, it is a great move towards making businesses more transparent and efficient. Before GST, companies had to deal with many types of taxes. As a result, they ended up spending lots of administrative time and effort on getting the job done. Also, it was complicated for new-age entrepreneurs to understand. Since GST has come into the picture, taxation-related work has become smooth. Of course, there are some glitches and corrections that need to be redressed, but I believe, in time, they will get resolved.”

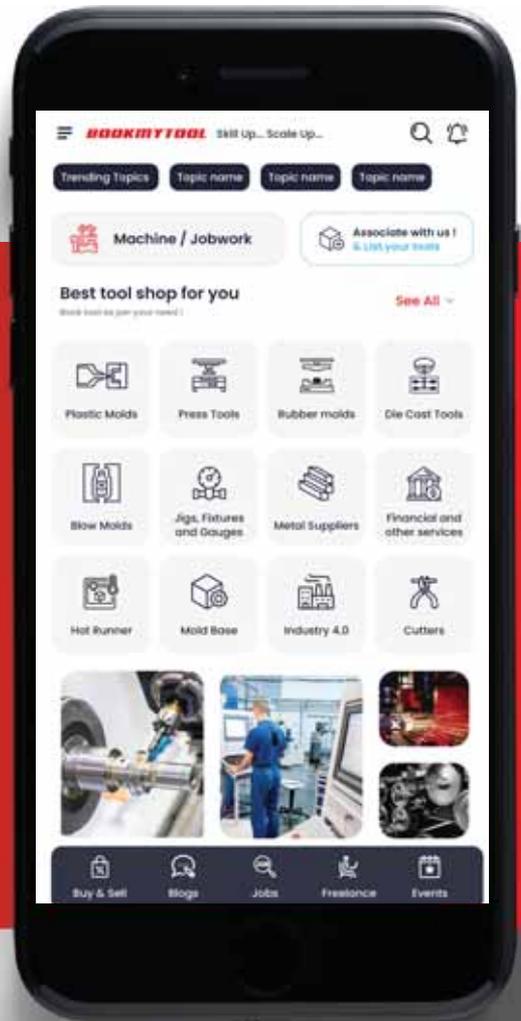


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Head - Business,
DIJET India



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Sachin Nirgudkar,
Director,
Industrial Interface India (3i)

“GST has proved to be a game changer for our business. It is simple and easy to implement. As a result, we do not need an expert to calculate and pay the GST. Moreover, the online portal is user-friendly. GST has had a positive impact on our business. Small firms, like ours, are able to complete the statutory requirements of the tax department without any external support. GST has definitely supported MSMEs in a big way. The tax structure is clear and transparent, and you have access to all the markets in India. Besides, the standard rate for goods and services makes it very easy for small companies to adopt it. Also, there are no tax returns to be filed or any issues with cash flow.”

“GST has brought in the ‘one nation, one tax’ system. It has provided the much needed boost to the competitiveness and performance of the Indian manufacturing sector. Due to GST, businesses, which were not under the tax bracket previously, will now have to register. This will lead to lesser tax evasion. GST will make MSMEs more competitive in the long run. However, the process must be reduced so that businesses can operate efficiently in the best interest of the people and for economic growth. The facility to file quarterly returns should be extended to assesseees with up to INR 10 crore turnover. Also, the rates should be rationalized and reduced to make India competitive and in the interest of compliance and economic growth.”



Sanjay Gupta,
Manager - Tool Room,
PPS International



Sunil Desai,
Director,
DESIGNCELL CADCAM Solutions Pvt. Ltd.

“Earlier, too many taxes such as excise duty, sales tax, octroi, local body tax, etc., were levied. But when GST came into the picture, the tax scenario changed for the better. GST has saved us a lot of time and effort as we only have to deal with a single taxation. No longer having to deal with many bureaucratic departments has saved our administrative time and money. The fundamental of GST is that the tax will be borne by the end-user and not by the processor in the value chain. This is the clear advantage for MSMEs. Besides this, GST is user-friendly, easy to manage, and system driven, which are some of its benefits. With GST, I feel there is a sense of transparency and clarity.”

“As per the earlier tax law, while filing returns was online, most of the assessment and refund procedures were offline. Now, in the GST regime, all procedures are carried out almost entirely online. Everything is done with the click of a button, from registration to return filing, to refund, to e-way bill, there’s no dependency on other states to ask for C Form, or H Form for tax concessions. Also, with the online system in place, the documentation part has been entirely minimised. The GST law has helped us eliminate the cascading effect of taxes and contributed to the seamless flow of input tax credits across both goods and services.”

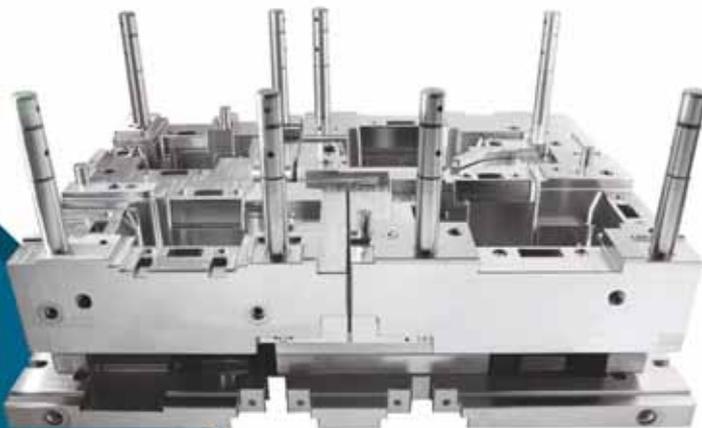


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GST:

Boon or bane for SMEs?

The government introduced Goods and Services Tax (GST) with the aim of reducing the number of taxes that businesses would end up paying for goods and services that they offer. GST has facilitated the ease of doing business, but it still has certain elements that pose challenges for SMEs.



It's been 4 years since the introduction of Goods and Service Tax (GST) in India. GST implementation is a watershed moment in the Indian economy. The entire world was watching India and the country successfully implemented the wholly digitised, 'One Nation, One Tax' System.

GST subsumed many archaic goods and services taxation laws and, as a consequence, a number of compliances were reduced. The impact of GST was significant on the SME sector. The SME sector is the backbone of the Indian economy and contributes significantly to the economic growth, creates maximum employment opportunities and also contributes heavily to the exchequer.

Salient features

GST has been introduced to facilitate ease of doing business for all businesses and SMEs, in particular. Let's take a look at the salient features of GST and understand if they have worked for the SME sector.

1. **One nation, one tax:** GST repealed the local sales tax (LST)/ VAT and central sales tax (CST) laws. Entry Tax at the states was removed. This created a level playing field for businesses across India. Earlier, due to Entry Tax, LST and CST, there were many restrictions for businesses that sought to trade outside their home state. With GST, there are no such restrictions; one can trade anywhere in the country without

Management Mantra

having to worry about any additional tax or compliance burden.

2. **Input Credit:** GST is one tax for goods as well as services. The eligible input tax credit of the business can be fully availed and utilised without having to maintain a separate record of input credits received for goods and credits received for services. This is a game changer for SMEs. Earlier, there was a loss of input credit due to the requirement/ restriction under VAT and service tax. This provision of GST has enabled SMEs to reduce the cost of their output and also eased the working capital requirements. The benefit, in turn, is passed on to the consumer as reduction in price in many cases. Tooling and allied industries are some of the beneficiaries of this provision, which has eased the working capital pressure on these businesses to some extent.
3. **Capital Goods Credit:** Under the erstwhile provisions, the input credit on capital goods was permitted to be utilised in two financial years equally. The credit was not allowed to be utilised fully in one financial year and 50% of the credit was deferred. Due to this, SMEs had to plan their capital goods expansion in the last quarter of the financial year. However, addition to capital goods in the last quarter resulted in the loss of depreciation at full rate under Income Tax. GST has removed this obstacle and enabled the entire capital goods input credit availment and utilisation immediately, which is a relief on the cash flow.
4. **SME-specific provisions:** GST law has provided certain reliefs exclusively for SMEs, such as, option for filing GST returns on a quarterly basis and exemption from quoting HSN code in the tax invoice. The latest one is the relaxation in audit requirements. Smaller businesses having a turnover of less than INR 5 crore have the option to file their return quarterly and pay taxes on a monthly basis (QRMP Scheme). These are definitely welcome measures aimed at enabling the ease of doing businesses for smaller entities. These have reduced significant compliance requirement.

SMEs are permitted to opt for Composition Scheme of tax. Under this scheme, SMEs pay a

fixed percentage of GST on their output. They are not allowed to avail of or utilise input credit. Smaller businesses will be largely benefited by this provision as they do not have to track their input credits.

5. **Digitisation:** The biggest differentiating aspect of GST is the entire process being online. The registration, return filing, processing, refund application, etc. There were initial teething issues and glitches, most of which have been resolved.

The flip side of digitisation is that not all businesses are equipped to handle the online process. The internet/broadband connectivity in rural areas remain a challenge, availability of skilled staff is another issue. There is a delay in the processing from the department side. This has increased the cost of compliance for smaller businesses. There is a need for the government to examine this and to further simplify the process, return filing utility so as to on board more businesses and to increase the level of compliance overall.

6. **Turnover Limit:** The turnover limit for registration under GST is INR 20 lakh for services and INR 40 lakh in the case of goods. Any business having a turnover exceeding the limits specified above in a financial year is required to register under GST. Earlier, this limit was INR 2 crore for manufacturing units and INR 10 lakh for service entities. GST has increased the compliance requirement for those manufacturing units like the ones in tooling industries, who were earlier exempt from Central Excise law.
7. **GST Remittance:** As per the provisions, GST is required to be remitted on an accrual basis, i.e. as and when the invoice is raised. This is one of the biggest blockers of working capital. Most of the SMEs get paid only after 60 days. However, they are required to pay GST immediately on raising the invoice irrespective of whether they have or haven't received the payment. This is hurting SMEs in a big way. There could be bad debts at times and these are quite common in the tooling industry or other industries where the projects spill over multiple years.

Secondly, the service businesses are required to remit GST even on advance receipt. Most often, these advances will be returned and paying GST on advance creates the cash flow issue. The concept of advance is to ease the cash flow. However, due to the requirement of remittance of GST and TDS (Income Tax) requirement, what business gets on hand as advance will be 70% only. There is a need here to amend the provisions to ease the operations.

8. **Higher Rate:** Overall, the rate of tax under GST is higher. This has increased the cost to the ultimate consumer and poses a challenge to the businesses. While there has been a thought process to tax essential goods at lower rates and luxury goods at higher rates, the definition of essentials and luxury vary from the business/ consumer perspective and that of the government.
9. **Stock transfer subject to tax:** Stock transfers one location to another location of the same entity is subject to GST. This is a strain on the cash flow to SMEs.
10. **Place of supply:** The GST law introduced the concept of 'Place of Supply'. This is relevant in the case of exports. Though the services/goods are sold to a business outside India and the consideration for such sale is received in foreign currency, the same need not qualify as export due to the place of supply concept. Every transaction needs examination in light of the definition of place of supply and then to be qualified as export.
11. **AAR Rulings and multiple updates:** The biggest challenge of doing business in India as of today is keeping track of the changes in the law. There have been numerous amendments and it is becoming difficult to keep oneself abreast of the changes. GST is not an exception. In addition to the amendments to the statute or rules, there are multiple advance rulings on a daily basis, which are creating confusion on the final provision. Added to this is the fact that AAR of one state is not accepted by another.

This is an area of utmost importance and this is not really giving any ease to business. There is a need to bring in uniform advance rulings and simplify the statute as much as possible

and the amendments to be introduced in a structured way.

12. **Delay in processing of refunds:** Exporters and other dealers are eligible for refund of input credit. These refunds are not being processed at the expected pace. The refund applications are sent back for trivial reasons, refunds are denied, rejected without appreciation of complete facts of the case. The dealer is left at the mercy of the department in this particular aspect. The system and the process of issuing refund should be standardised across India and issues addressed and resolved in one state should not be re-opened in another state.

The way forward

In essence, GST has worked both the ways for businesses. It has benefited SMEs largely. This can become a boon with some more modifications. The law is drafted and intended to provide ease in running a business. It is the implementation which has posed these challenges. The vision of the government needs to be converted into action by the authorities on ground. The gap in this is the bane. Larger businesses will somehow manage and find their way out and that's not the case with SMEs who always struggle with a hand-to-mouth situation. 🇮🇳

About the Author

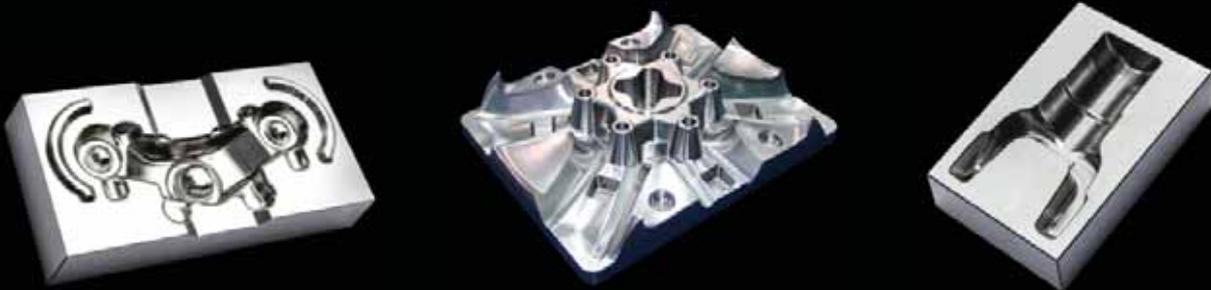


Kavitha Paramesh is a fellow member of the Institute of Chartered Accountants of India, a senior partner heading the Direct Taxes, Corporate Law and Advisory divisions of T Sriram, Mehta & Tadimalla, Chartered Accountants. Her experience includes tax advisory, tax litigation management, cross border transactions, transfer pricing, international taxation and corporate tax structuring across industries. She advises multi-national corporates on joint ventures, inbound and outbound investments, and transaction structuring. Her specialisation lies in offering solutions by relating the business strategies to the tax and regulatory environment. She has vast experience in dealing with taxation, finance and corporate governance matters of companies, LLP, partnerships, trusts, etc., and mentoring and advising start-ups.



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‘Smart manufacturing is the future’

“The sooner you adopt it the better,” says **Asim Tewari**, a Professor in the Department of Mechanical Engineering and a faculty member of the Center for Machine Intelligence and Data Science (C-MInDS) at the Indian Institute of Technology - Bombay, Mumbai.



Basically, smart manufacturing is a bigger set of activities, as compared to Internet of Things (IoT). IoT is a sensing and communication device, integrated with various sensors, to communicate with other devices and share information. On the other hand, smart manufacturing and Industry 4.0 are a combination of IoT devices, machine learning and mechanical knowledge.

It is important to note that the definition of smart manufacturing will vary from group to group, sector to sector and country to country.

Q Smart manufacturing has become a buzzword in the industry. How would you define this concept?

Smart manufacturing is a very comprehensive word. It is essentially a collection of different technologies, which, as an entire offering, can be called as smart manufacturing. Autonomous robotics, simulation, which is a virtual model, vertical & horizontal integration, Industrial Internet of Things (IIoT), cyber security, cloud, Additive Manufacturing, Augmented Reality, and Big Data are among the key pillars of smart manufacturing.

Q What are the components of smart manufacturing? How can tooling suppliers benefit from IoT or smart manufacturing?

The word ‘smart’ is something that challenges the traditional way of doing things and does not follow conventional methods. Similarly, our minimalistic definition of smart manufacturing refers to a smart and network-linked intelligence system application in manufacturing. Now, this definition essentially takes the entire aspect of robotics out of smart manufacturing. We are trying to suggest that smart manufacturing doesn’t mean automation. Automation & smart

Tool Talk

manufacturing are two different aspects. So, you could have smart manufacturing with automation and vice versa.

Now, coming to specific aspects of what it can do for the tooling industry. Before that, let's understand what it could do for the manufacturing industry at large. So, there is a very common term, known as cyber physical systems, which have a lot of connected virtual entities. The smallest entity of a cyber physical system is a digital twin. So essentially, a digital twin can be considered the smallest entity of a smart manufacturing system and that is something, which can work for every manufacturing scenario, including aspects of the tooling industry. So, I feel, the challenges on the shop floor of the tooling industry are no different from those in the manufacturing industry.

In any manufacturing facility, the common mantra is to build good quality parts/products at a faster pace, and at a reasonable price. Smart manufacturing can definitely help here. Basically, smart manufacturing will look into your major cost drivers beyond just the raw materials, and resources, among others. In the production environment, you could face failure of equipment, downtime of equipment, unavailability of human resources, etc. All of these could be optimized using smart manufacturing.

Q Could you please elaborate on this with a hypothetical example? Let's assume I have a small tool room with about 5-6 CNC machines and design facility along with a CMM machine for inspection and everything else that is needed in a tool room. How I can implement smart manufacturing in my facility?

The most expensive equipment in a tool room is the CNC machine, then you have the machine tools. These depreciate over time and so, you don't want them to remain idle. You want to ensure that your machines work at 100% efficiency. But how do you ensure that? For that, you need smart IoT devices installed on your machines. These devices can track simple aspects like when a machine is switched on, when it is actually cutting metal or when it is lying idle. Based on this, you could look at the data and understand the cause for the same. So essentially, at the end of the day, we are trying to create data and then analyse it to get information about losses.

Now coming to the big picture! IoT devices on your machine can help you predict a possible

It's a myth that you need a highly advanced setup to be able to embrace smart manufacturing. Smart manufacturing is not one technology that you buy off the shelf and implement. It is a smart way of doing things for which automation is certainly not needed.

spindle failure. You can also predict if the tool life is nearing its end and you want to change the tool, rather than experience breakage. This data can be available beforehand for the management to take decisions. There are three ways to look into it. They are:

- 1) Informative analytics:** Here, you can get information and generate data from the machines.
- 2) Predictive analytics:** Here, you are not only able to know what's happening, but you are also able to predict what's going to happen in future and thus, you are more informed.
- 3) Prescriptive analytics:** Under this, we not only provide prediction but also offer an overall general prescription for better health of the machine.

All these three ways can change the way tool rooms operate. Tool rooms can immediately benefit from smart manufacturing. This doesn't require automation; it only requires smart devices and smart management.

Q What are the key components of Industrial Internet of Things (IIoT)?

IIoT is essentially like the eyes and ears of your intelligent system, which is the smart manufacturing system. IIoT devices have witnessed phenomenal advancements. You can find sensors that have the capability to do on-board processing & transmit that data. IIoT devices are used in various sectors — be it military, medical, agriculture, smart cities, automation or manufacturing. There are IIoT devices for every

“Don’t rush to get your “smart manufacturing tag”. Sit back and create a roadmap. It is important to understand that you cannot expect dividends from an AI or IoT device until you are clear about the context or the built in subject expertise. Calculate the impact on top line & bottom line for that purpose.”

sector. Their prices depend upon the criticality of the data you are obtaining.

Q What are the various challenges in implementing IIoT in the existing system?

Let’s divide the challenges to understand why they make implementing IIoT in the existing system difficult.

Technological challenges: The Internet Protocol version 6 (IPv6) has a limitation in terms of the number of unique addresses you could have. The world has seen IPv6, yet most of our devices are still working on IPv4. This is one of the technological challenges for which we already have a solution. But we have to move out of IPv4 to IPv6. It’s only then that we can have more devices.

Communication: We don’t have a standard way of communication, which makes it a unique problem. Different devices from different manufacturers will interact with 10 different applications & dashboards, and each device will use a different language. In the near term, this issue can be addressed by creating standards. We need big players to come onboard and set up a standard. That’s going to be a big challenge.

Cost: This is one of the areas, which has dramatically changed over the past 5-10 years. Initial investment is a huge challenge. But, in recent years, the cost of IIoT devices has reduced. The cost increases depending on the level of data criticality, and authenticity. For instance, installing a pacemaker inside a body will incur a certain cost. But installing a pacemaker that communicates with the person, will require the person to invest in a much more expensive one.

Human resource: Based on the actual requirements, India does not have sufficiently trained and skilled manpower to execute the work. This is not the case in countries like Europe or the US.

Q You have highlighted the overall challenges the industries are currently facing. However, if we talk specifically about the tooling industry, many companies are still operating in a conventional manner. How feasible is it for them to opt for smart manufacturing?

It’s a myth that you need a highly advanced set-up to be able to embrace smart manufacturing. Smart manufacturing is not one technology that you buy off the shelf and implement. It is a smart way of doing things for which automation is certainly not needed. Europe is chasing automation because they are facing a human resource crunch; they don’t have sufficient people to run the factory and so, they want to automate.

But, in India, we have a lot of manpower; we do not require to go through a cycle of automation. My suggestion is that they need to look at the key ingredients which are preventing them from advancing in terms of production, and in terms of losses. They need to introspect and find what factors they need to improve upon. They then need to create a roadmap, which can help them achieve their goals without necessarily opting for automation. Each business, irrespective of the industry it belongs to, must create its own roadmap. If they install IIoT devices, it is possible for them to get their manpower to work smart.

Q What are the things to avoid while adopting smart manufacturing?

One thing you should certainly avoid is opting for proprietary. If you’re going in for a proprietary software or hardware, you are bound to that smart solution provider. It’s advisable to have systems that are open. Even if you are buying it from same proprietary, you should ask for open protocols.

The other thing you need to keep in mind is don’t rush to get your “smart manufacturing tag”. Sit back and create a roadmap. It is important to understand that you cannot expect dividends from an AI or IoT device until you are clear about the context or the built in subject expertise. Calculate the impact on top line & bottom line for that purpose. Also, invest in good human resources.

Q Can you elaborate with any real-life examples?

Of course! We recently did a pilot project with a Bangalore-based company. Since the company deals with aerospace components, it is equipped

Tool Talk

with a large CNC machining centre, which runs for 24 to 36 hours and sometimes, for over a week. As you already know, this machine must not be disturbed while on the job.

We realized that we could improve the efficiency of the human resource allocation by implementing an IoT device, which continuously monitored the machine's usage pattern. The IoT device generated live data, which helped the management make informed decisions. It is a large company and the IoT device helped enhance the company's efficiency.

We are currently working with a mould manufacturer in Chennai called Classic Dies & Moulds. They already have smart devices installed in their machines and are generating data. The data is giving them insights such as downtime, ranking of machines based on their performance on a single dashboard, etc.

Q What would you suggest Indian tooling suppliers to do regarding the implementation of Industry 4.0?

Indian tooling suppliers need to embrace this technology as it will result in better quality products being manufactured cost-effectively & quickly, and also ensure transparency. They need to revisit their business objectives and find ways to mitigate their deficiencies, which are affecting the aforementioned basic aspects.

Only once these things are defined, they should approach smart manufacturing with an open mind. The adaptation of smart manufacturing should be such that they are able to integrate their customers. The customers would certainly want to know the status of the order. Customers will definitely want to do business with a company that will provide the insights they are looking for.

Smart manufacturing will bring accountability and transparency, especially in the medical devices and aerospace sectors, where you need to track everything — right from the raw material, tooling to the manufacturing process. In my opinion, smart manufacturing is the future. The sooner you adopt it the better it will be for you. 🌈

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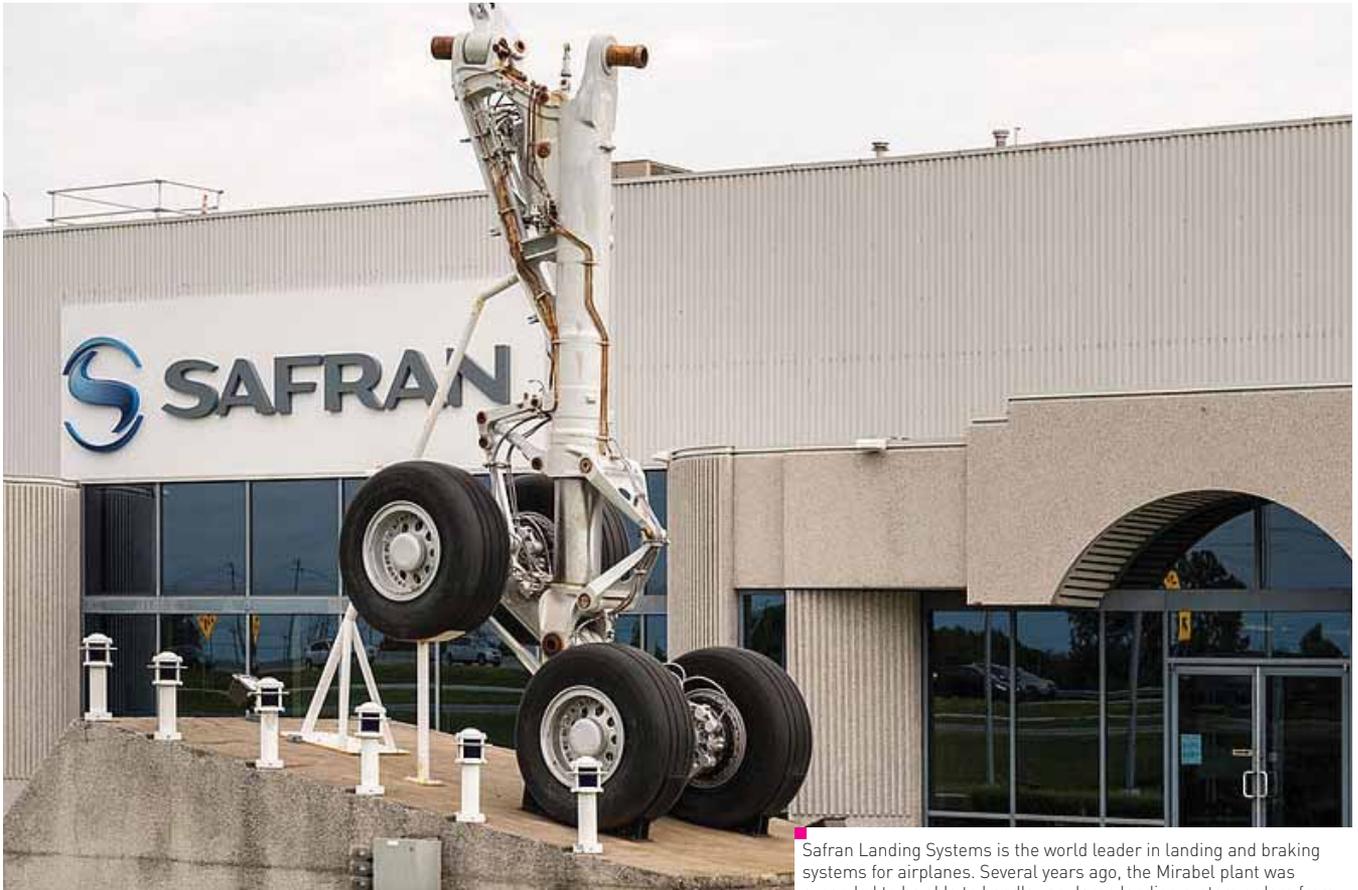
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A safe landing – with measuring technology from BLUM



Safran Landing Systems is the world leader in landing and braking systems for airplanes. Several years ago, the Mirabel plant was expanded to be able to handle very large landing system orders from Airbus and Boeing.

As the world’s largest manufacturer of landing systems for airplanes, Safran Landing Systems counts Airbus and Boeing among its customers. Blum-Novotest plays an important part in ensuring that the passengers of hundreds of airliners equipped with Safran products reach their destination safely day by day. With the roughness measuring system TC63-RG from Blum-Novotest, the Canadian company was able to achieve higher levels of safety and quality in their production process while at the same time greatly reducing production times.

Safran has long been using production measuring equipment from Blum-Novotest to ensure that every assembly that leaves the plant meets strict customer requirements. Initially, Safran mainly employed laser measuring systems in their CNC processing centres to measure the length and radius of tools and to monitor for wear and tool breakage. “For some years now, we have been relying on the CNC probe TC63 for measuring

workpieces in our processing centres. We recently added the BLUM surface roughness measuring system TC63-RG, which we now use to monitor surfaces automatically. Surfaces are a particularly critical feature in the high-tech systems that Safran manufactures,” says NC Coordinator Shawn Page and adds, with a view to the production of landing gear components: “The machining process is very work intensive. This is because precision is essential

Case Study



Surface roughness gauge TC63-RG from BLUM quickly and reliably detects the surface roughness of landing gear components.



The components are first prepared using rough cutters and then machined in a finishing process that gives the parts their final dimensions. The last step is to check the surface quality.



TC63-RG is supplied with a special stylus. Unlike the manual measuring devices, measuring movements are possible along two axes, which is useful for measuring rounded shapes, for example.



NC Coordinator Shawn Page: "We are dealing with a very intensive machining process that results in high precision to meet the exacting demands of our customers. The surface quality is particularly important in this case."

to our customers and surface quality is of utmost importance."

The Challenges

The main component of each landing system is a massive forged piece that can weigh up to eight tonnes. Each of these parts is machined in CNC processing centres, first using rough cutters and then by means of a finishing process that gives the part its final dimensions. The last step is to check the surface quality. Because the surface test had to be performed while the finished part was still clamped in the processing centre, this measurement had an impact not only on the operator's time, but also on the cycle time of the machine. On each workpiece, ten different areas had to be tested in a process that took about 45 minutes. Because the accuracy of the measurement depended on the operator holding the measuring device in the correct position, the potential for human error also had to be factored in. Due to the high amount of effort involved, Shawn Page, who normally supervises production at Safran, had to check a certain number of surfaces himself.



Shawn Page (left) together with Jamie King, Regional Sales Manager of Blum-Novotest, in Canada next to a fully machined landing system part.

To be able to handle the growing volume of work, to reduce manual processes and to maintain and improve the high quality control standards, it became necessary for Safran to automate the process. Examination of the surface quality was an area in



At its plant in Mirabel, Canada, north of Montreal, the company builds landing systems for commercial airliners from Airbus and Boeing.

which Shawn Page saw potential to improve accuracy and increase the rate of workpieces examined – while also freeing up operating personnel. In addition, the NC coordinator wanted to increase the amount of data collected during production, and to enable this data to flow back into the production process. There was no doubt that there was a need for action, and so Shawn Page contacted Blum-Novotest.

The Solution

After several convincing product presentations, the right decision was made to have the main

components of the landing system examined using the TC63-RG. Since then, TC63-RG has proven its worth at Mirabel, where it monitors surface quality quickly and reliably. The gauge is mounted in the machine spindle just like a normal CNC probe is, and measures the surface roughness at predefined locations. The workpiece surface is examined to the nearest μm and the roughness parameters Ra, Rq, Rt, Rz and Rmax are determined within seconds.

The End Result

The Canadian company is planning to integrate BLUM measuring equipment even more closely into the machining process to detect tool wear and deviations before serious problems occur. The next step will be to expand to other machines and processes at Safran. “We are very happy to finally have found a solution with the TC63-RG that greatly reduces the time needed to examine the surface roughness... while also eliminating human error in the measuring process,” Shawn Page summarizes. “This enabled us to markedly increase the productivity of our machining process. Not only that, but we can now use the time saved for more intensive workpiece inspection and we test far more surface areas than before. Thus, our production process has become much more reliable and yields higher quality products.” 🌈



The main component of each landing system is a massive forged piece that can weigh up to eight tonnes. Despite the cooling agent in the working area, the surface roughness gauge TC63-RG delivers reliable results.

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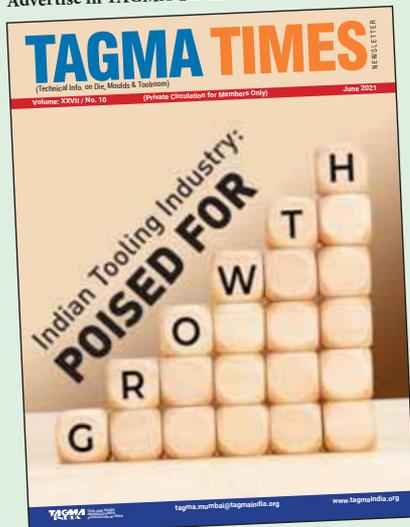
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