



# Avoiding obsolescence threats for MANUFACTURERS & OEMS

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### EM - Interview

**Ashok Pandey,**  
Director - Automotive,  
Pharmaceuticals &  
Consumer Filters,  
Freudenberg Filtration  
Technologies India (p. 18)

5G in Manufacturing P. 20

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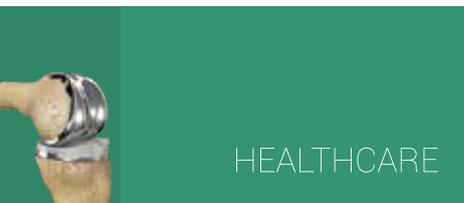
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YOURSELF

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- 12. Food & Beverage
- 13. Textile, Leather
- 14. Building Automation
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*“Technological advancement has created the demand for product upgradation from manufacturers. Thus, crisis management is vital and needs to be addressed effectively.”*

## Accelerating leading manufacturing practices!

The manufacturing sector holds a special mention in the economic development of the Indian economy. Therefore, the manufacturing space is in a continuous spree of adopting integrated approaches to overcome challenges in uplifting business operations.

Uplifting operations also ensures that the industry is at par with the global landscape and is competitive with its technological breakthrough. This echoes the ambitious target of the Indian government to achieve a \$ 1 trillion manufacturing economy in the coming years. To reach such heights, the manufacturing sectors also needs to apply cloud technologies that help maximize efficiency and lowers costs.

Here comes the importance of eradicating obsolescence threats that leads to product, process, or technology pitfalls. Thus, crisis management, because of such unpredictable episodes, must be intelligently accounted in the overall inventory management plans, policies, and practices. This also highlights the Look, Listen and Feel (LLF) maintenance technique that increases the dependability of machinery equipment.

On similar lines, the Cover Story in this issue, features such threats and explains the importance of choosing the right supplier to ensure quick obsolete replacement. In addition, with technological advancement on the rise, 5G is becoming a game changer. According to experts, 5G provides endless opportunities for industries to grow and implement various currently developing technologies in the most effective way. Such upgradations and practices help towards making India the next global manufacturing hub!

Considering such developments, EM will continue capturing and circulating the right information, facilitating manufacturing enterprises, identify and apply new technology adoption strategies to move their business forward towards a brighter future.

*Team EM*

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## CORROSION PROTECTION

Controlling corrosion in a high humid & moist atmosphere



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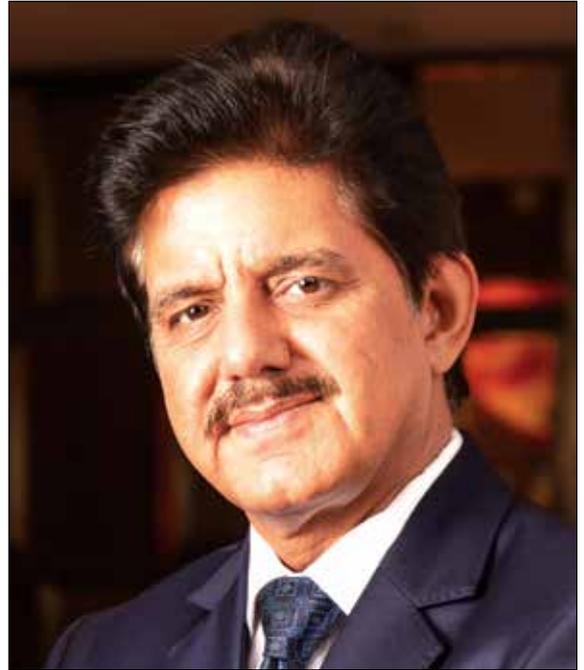


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Vineet Sahni,  
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The world has passed through unprecedented times and the challenges faced have been common from which some countries have still not recovered. India has shown resilience by bouncing back despite constraints. This was possible because of the boost the manufacturing industry has received from the Government of India with initiatives, such as Aatmanirbhar Bharat, Make in India and the PLI scheme.

Automotive industry has been a significant contributor to the manufacturing industry. Over the past few years, it has faced several challenges - rapid changes in emission norms, COVID-19, Russia-Ukraine conflict, shortage of semiconductors, and the list goes on. However, several measures are being taken to ensure that the bottlenecks are resolved efficiently.

We see a significant shift of the industry towards self-reliance in design & development, and also a reduction in the percentage of imported parts. Measures such as thrust on localisation, and creating a buffer of inventories and stocks, are the need-of-the-hour to manage this uncertainty. These are few derisking options to approach issues of rising input costs. Major trends suggest focusing on future management, along with the present, is the path to advancement.

Other key factors are the rapid change of technology and the evolution & adoption of information and communication-related technologies that are taking place

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**“THE INDIAN MANUFACTURING  
SECTOR IS CURRENTLY ON  
THE RIGHT PATH”**

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at an unprecedented scale.

Also, the swift move of the automotive industry towards electric and hybrid vehicles will require manufacturers to equip vehicles with electronic necessities like LED headlamps and accessories, such as infotainment systems and telematics that consumes less power. ADAS features are increasingly becoming popular in the new models. This transition of the Indian automotive industry from ICE to EVs will open doors for opportunities to stabilise businesses and move forward.

Similarly, there is a focus on AI, Big Data, Industry 4.0, digitisation, etc, to make the manufacturing processes more robust and dynamic. This massive shift will also create opportunities for the Indian players. Hence, there should be an enhanced focus on building competencies and putting emphasis on localisation.

Organisations’ needs and outlook have evolved, and so have people competencies that are required to address the evolving ecosystem. It is expected that in the next few years, many businesses will be investing consistently in R&D and skilling

of the personnel to ensure keeping pace with the rapid change in technology and aspirations. These are the imperatives for business continuity and long-term sustenance. Businesses are now looking at manufacturing operations’ safety as a priority along with a zero-defect culture.

The two and four-wheeler industries are witnessing significant changes too. This has necessitated manufacturers to get back to the drawing board stage. The focus, therefore, is on engineering resources and enhancing design and development capabilities. Similarly, despite India being a price-sensitive market, today, we see a major emphasis being put on the safety of vehicles.

Today, crucial local investments and FDIs are being made in the Indian manufacturing industry. To mitigate risk, businesses are looking to transition from China to India. Many new joint ventures are being established with global leaders, which will further help in creating employment opportunities for the large youth population of the country.

All these put together gives India an opportunity to achieve its manufacturing targets. Hence, it can definitely be concluded that the Indian manufacturing sector is currently on the right path. With resilient manufacturers and consumers, the industry is overcoming the bottlenecks, and continuing to be significantly contributing to India’s growth story. □



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# “Manufacturing sector is undergoing a digital transformation wave”

...says **Amit Saluja**, Senior Director & Head, NASSCOM Centre at Gandhinagar, Gujarat. In this interview with EM, he focuses on the current landscape of the Indian manufacturing industry, while highlighting NASSCOM’s initiatives to further strengthen this sector. Excerpts...

## How can Indian companies strengthen their manufacturing potential?

Post-pandemic, the manufacturing sector is undergoing a digital transformation wave. Hence, there is a need for manufacturers to find new ways to overcome challenges in uplifting their day-to-day business operations. It has been facing multiple challenges, such as – managing inventory, improving manufacturing plants, increasing ROI, workforce management, setting up advanced technology solutions, etc. Thus, to boost manufacturing processes, the industry needs to develop flexible manufacturing systems. NASSCOM reports that with \$5.5 to \$6.5 billion spent on Industry 4.0 in FY21, the Indian manufacturing sector has begun to move towards digitalization. NASSCOM has created the first-of-a-kind virtual platform, Smart Manufacturing Competency Center (SMCC) to enable manufacturing leaders experience end-to-end Industry 4.0 solutions.

## How is the government boosting the manufacturing industry’s contribution to GDP?

Manufacturing has emerged as one of the high-growth sectors in India. The government, along with major industry players, has taken every possible step to transform the industry, making it as competitive as its global counterparts with a focus to maximize the manufacturing sector’s contribution to India’s GDP up to 20% by 2025.

We, at NASSCOM, are focused on the development of Indian manufacturers to make them globally competitive. With support from the Ministry of Electronics, IT, and the Gujarat Government, have set up a CoE in Gandhinagar to accelerate industry 4.0 adoption and build the largest collaborative ecosystem to co-create solutions.

## How does NASSCOM envisage uplifting the Indian manufacturing sector?

Currently, there is a disparity in the level of technology adoption, especially by the SMEs within the Indian manufacturing sector. Lack of awareness, accessibility, and affordability contribute to such disparity.

To help the manufacturing industry keep up with the demands of the ever-changing global & Indian landscape, NASSCOM has launched multiple initiatives focusing on integrating innovative technologies like the Smart Manufacturing Forum, aiming to help 100 MSMEs achieve their digital dream with skill, capacity building, mentorship, and avenues to increase their market reach. UDYAM 4.0 – Nayi DISHA is another dedicated programme to guide MSMEs on where and how they can start.

## How is NASSCOM encouraging MSMEs to contribute significantly to India’s manufacturing GDP?

According to the NASSCOM Industry 4.0 report, Indian MSMEs account for 33% of the manufacturing GVA as well as 45-50% of exports. This shows the importance of the manufacturing sector to India’s economic growth and global presence.

We, at NASSCOM, are encouraging MSMEs to move ahead in their digital transformation journey and adopt Industry 4.0 solutions that harness the value of data, computing power, analytics, insights, etc to boost productivity. We believe that through the right tech capability upliftment, ecosystem development as well as financing and investment avenues, the Indian MSMEs will be able to achieve the goal of contributing \$1 trillion through the adoption of Industry 4.0 by 2025.



## “Companies are ready to adopt technology”

...says **Abhijith Bhat**, Co-founder, Abhiwins. In this interaction with EM, he talks about the journey of his company and at the same time highlights the notable trends in the Indian machine tool industry. Excerpts...

**How did you come across the idea of starting your venture with Abhiwins? Looking back, can you trace the journey of your company?**

Abhiwins was started in May 2021, as a Mech Tech start-up. Our objective is to create automatic probes and tool setters for CNC machines. These products are designed and manufactured in line with the Indian operating conditions so that they are highly affordable as compared to imported options. They are also rigid enough to withstand the harsh environment of day-to-day operations. We are on a mission to remove the fear associated with probes in the operators/owner's mind so that probes become a default accessory that they can opt with their CNC machines.

**Mech Tech (or manutech = manufacturing tech) is an uncharted territory for many young entrepreneurs. What made you join this territory and what were the challenges you had to face?**

I was supporting my family business Manleo, and during that time, I decided to get into the business of probes and tool setters and provide solutions that customers demanded. Therefore in 2020, after extensive market research and visiting hundreds of customers across India, we realised the gap between which solutions customers need and which solutions are available today. This drove us to start this Mech Tech, where we are innovating and bringing affordable automation to help manufacturing move from 'feel' based methods to 'system' based method of reference taking through our products. COVID-19 restrictions on travel and exhibitions getting deferred were challenges that restricted face-to-face visits in the past two years. Besides, semi-conductor shortage is affecting the industry worldwide with slow product development.

**You closely work with many machine tool builders and users of CNC machines. Do you think Indian SMEs are ready to adopt high-end solutions?**

Yes, there are several MSMEs who are now more willing to adopt technology & post COVID, several companies have seen operators' shortage escalate. This has hit their operations and profitability forcing them to be more technology-dependent than manpower-dependant. Also, most of the OEMs are expecting their suppliers to comply to tighter tolerances, which means 100-200 microns was acceptable a few years ago, and today 30-50 microns is the new norm. So, companies cannot match the quality standards using crude and conventional methods. Technology is no longer good to have, but a must to have across manufacturing process.

Companies are ready to accept technology, however, acceptance is faster when solutions are affordable as well as have good service assurance associated with them.

**What are the emerging trends in the Indian machine tool industry?**

For customers, there is a wide choice of MTBs, who are manufacturing machines indigenously and this competition has only propelled improved quality at affordable investment. This eases financing options making it the correct time to be present in the manufacturing space. In terms of trends, I see that automation including robotics, Additive Manufacturing, import substitution and digital marketing are going to dominate the industry.

**How will concepts like industry 4.0 shape the future of Indian shop floors?**

Especially with MSMEs, there is still a substantial amount of groundwork to be done before these companies adopt Industry 4.0. The biggest aspect of this is data collection, mining and analysis. Firstly, systems need to be created for data gathering & then we can talk about actions, predictive & preventive as a result of data analysis.



## Alstom India wins order to supply metro trains and CBTC signalling

**Alstom India** recently won the contract by Madhya Pradesh Metro Rail Corporation (MPMRCL) to deliver 156 Movia metro cars with 15 years of comprehensive maintenance for the Bhopal and Indore metro. Valued at €387 million (over ₹3200 crore), the order includes installation of latest generation of Communications Based Train Control (CBTC) signalling system as well as train control and telecommunication systems; each with seven years of comprehensive maintenance. Speaking at the occasion, Olivier Loison, Managing Director, Alstom India cluster, stated, "This collaboration will lay a strong foundation for an efficient and sustainable mass transport system for the cities of Bhopal & Indore. As India moves towards its vision of using green and clean energy for public mobility, Alstom takes pride in being its long-standing partner in this journey and help write the country's growth story. Following the Agra-Kanpur metro project, winning this contract is a strong validation of our commitment to deliver mobility solutions that meet the specific requirements of our customers."

## Tata Advanced Systems and L&T to deliver 100<sup>th</sup> missile launcher for Indian Air Force

**Tata Advanced Systems (TASL) and Larsen & Toubro (L&T)** delivered 100<sup>th</sup> Akash Air Force Launcher (AAFL) for Indian Air Force, developed with Defence Research and Development Organisation (DRDO), jointly. This event was flagged off by Dr BHVS Narayana Murthy, DG-MSS, DRDO at the Vemagal facility of TASL (near Bengaluru) on June 21, 2022. Commenting on the occasion, Sukaran Singh, MD & CEO, TASL, said, "This milestone marks the successful establishment of serial production after completing product development. The repeat order of AAFL being executed shows the user's continued satisfaction and confidence in the operational performance of the indigenously developed and produced AAFL system." Further, Jayant Patil, Whole Time Director (Defence & Smart Technologies), L&T, added, "This milestone is testimony to the core strengths of innovation, adaptability, commitment and hard work by the Indian Industry teaming up in a public-private partnership to deliver a force-multiplying Akash Air Defence system to the Indian Air Force."



## Freudenberg Group briefs media at its plant in Pune

**Freudenberg Group** invited the journalists from Mumbai, Delhi and Pune to attend a factory site visit at the Freudenberg Filtration Plant based in Sanaswadi, Pune.

The presentations started with key information on Freudenberg Regional Corporate Centre by Roopa Nagaraju, Senior Manager Corporate Communications, which explained Freudenberg India's decade long business ties with India and the overall manufacturing footprint in the region. This was followed by presentation from Falgun Jani, General Manager, Sales, Freudenberg Medical India explaining Freudenberg's inroads into the medical industry in the Indian market.

Then followed by a presentation by Shailesh Pradhan, Manager, IPC, KAM, Marketing and New projects, Surtec that described Surtec chemicals offerings in the medical, pharma and automotive industry. He also covered the following topics –

1. Chromium plating on monograms
2. Surface cleaning process

3. A brief about other companies under the umbrella of Freudenberg Chemical Specialties such as Klüber Lubrication, Chem-Trend, Surtec, OKS, Capol, etc.

Finally, this was concluded with presentations by Ashok Pandey, Director-Automotive, Pharmaceuticals & Consumer Filters along with Nitin Gangadharan, Chief Technology Officer of the FFT and Chinmay Korad, Specialist Pharma Industry, giving presentations on filters in automotive, pharma and medical industry as well as digitalisation in the factory site and best practice sharing. shared insights on different air filters, cabin as well as engine air filters. He also focused on why cabin air filters are important and shared awareness regarding the particulate matter which is not visible to the human eye.

The presentation was followed by one-on-one interactions with key spokespeople after which the team were taken to the Freudenberg Filtration Factory site in Sanaswadi Pune. Pandey along with Gangadharan lead the journalists for a factory visit around the plant. Various types of air filters, having automotive and other industrial applications were showcased and also, the entire process of manufacturing an air filter was explained.



## IMTMA inaugurates IMTEX FORMING 2022 along with Tooltech and Digital Manufacturing

IMTMA inaugurated the physical mode IMTEX FORMING 2022 along with Tooltech and Digital Manufacturing at Bangalore International Exhibition Centre (BIEC), Bengaluru. Exhibitors displayed forming technologies such as presses, welding and joining, high speed laser machines, robotics and automation in sheet metalworking, Additive Manufacturing, metrology, and CAD / CAM, which are essential for manufacturing. The exhibition was scheduled for June 16-21, 2022. Also, there are two concurrent shows and three special highlights, which are –

- Tooltech: Showcasing parts, accessories and systems for machine tools and manufacturing technology.
- Digital manufacturing: Showcasing 3D Printing and evolutionary Industry 4.0 concepts.
- Aatmanirbhar Bharat pavilion: Display of indigenously built technologies at IMTEX for the first time.
- i2 Academia pavilion: 20 institutions, including IIT Bombay and Madras showcasing R&D.
- Live demo of Industry 4.0 at IMTMA technology centre

The exhibition was inaugurated by Shri Dr Ashwath Narayan C N, Hon'ble Minister of Higher Education, IT & BT, Science and Technology and Skill Development, Government of Karnataka, and Dr K Sivan, Dr Vikram Sarabhai Distinguished Professor and Former Chairman, ISRO. Ravi Raghavan, President, IMTMA; Rajendra Rajamane, Vice President, IMTMA and PJ Mohanram, Principal Advisor, IMTMA were also present. Lauding that around 50% of the machine tool production happens in Karnataka, Dr Narayan stressed, "There is a need to scale up in developing the quality of skilled manpower. The confluence of IT and manufacturing will make Karnataka a leader in digital manufacturing technologies."

Reminiscing about his journey in ISRO, Dr Sivan said, "Machine tool industry plays an important role in manufacturing high precision and complex parts that are required by space and strategic sectors." He added and urged, "INSPACE initiative promotes private participation. Industries to come forward to participate in ISRO activities like building and launching of satellites." Earlier while delivering his welcome address, Raghavan said, "The Indian machine tool industry is expected to reach around ₹9,500 - 10,000 crores in the year 2022-23. The outlook is positive." A comprehensive report on Indian metal forming machine tool industry - 2022 along with the IMTEX FORMING 2022 exhibition catalogue was released at the inauguration.



## Vitesco Technologies inaugurates its plant of the future at Talegaon, Pune

Vitesco Technologies inaugurated its plant of the future at Talegaon, Pune. Klaus Hau, Member of the Executive Board at Vitesco Technologies, and Anurag Garg, MD & Country Head of Vitesco Technologies India attended the event. The all-new facility spreads across 20 acres and contains more than 17.580 m<sup>2</sup> of manufacturing space, including over 900 employees. The first series of productions will be for the two-wheeler market, followed by various powertrain solutions products, such as engine management systems, sensors, and actuators, as well as exhaust management components for passenger cars and commercial vehicles.

During the inauguration event, Hau, asserted, "India plays a central part in our global growth strategy. The country's automotive industry is currently undergoing what is possibly the most significant transformation in its history. The objective is to achieve a twin technological transformation: from fossil fuels to renewable energy, and from analogue - to - digital technology. We embrace this transformation and have already begun to design our strategic course. Also, with the new facility, we will be able to better respond to market demands and developments in the future."

Moving further, Garg, alluded, "Our mission is to develop highly efficient, low-emission technologies for internal combustion engines and electrification technologies for all types of vehicles in India. For this, we have build a futuristic plant, one that is intelligent, sustainable, and predictive. With these key characteristics, we were able to construct this plant of the future in Pune. Several creative projects have been completed at this facility. These projects on digitisation, automation, and sustainability across our manufacturing network have helped us to shape the Plant of the Future."

He further added, "Due to the growing carbon footprint, we also considered the climate change while building this facility. I am delighted to say that the facility in Pune is operating at a carbon-neutral level and has fully established itself as a driver of sustainability."

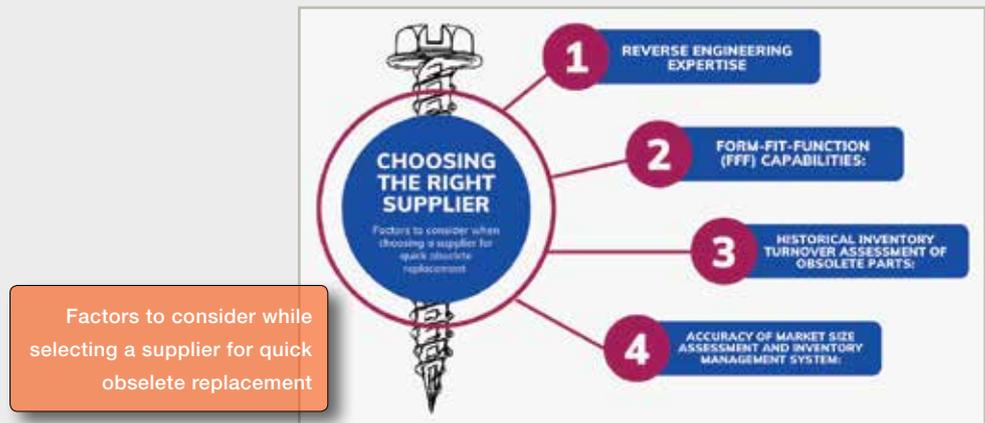


# Avoiding obsolescence threats for manufacturers & OEMs

The obsolescence threat for manufacturers and OEMs has always been there and is here to stay. With technologies themselves becoming obsolete, they must constantly update the technical and management processes in developing a successful product lifecycle. The practical long-term solution to combat obsolescence issues is to adopt proactive OM approaches, that include industry collaborations, R&D, continuous innovations, learning & upskilling, investment in tools & technologies that develop obsolescence-combating intelligent ecosystems at every stage. A read on...



Jegajith PT,  
Director - Embedded  
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Utthunga



Product obsolescence threats for manufacturers arise due to various circumstances. While constantly evolving technologies push existing products to the next level, they are also prone to lose their purpose in the long run.

In the recent context, the pandemic has disrupted supply chains in different industrial sectors. For example, the shortage of semiconductor supply is creating issues for OEMs worldwide. Additionally, the fast pace of technological advancement has created the demand for product upgradation from manufacturers. The crisis management arising out of such unpredictable episodes due to various economic or market conditions must be intelligently accounted for in the overall inventory management plans, policies, and practices.

## The obsolescence threat for manufacturers

Some most dreaded obsolescence threats that OEMs face are:

**Market share:** The two most common threats of obsolescence for OEMs are - losing the market share, and the ability of the suppliers to support in overcoming the imminent threats. While the market share of an organisation can be tuned largely by smart internal strategies, the dependency on suppliers to reciprocate their risk mitigation plans with equal commitment remains a practical challenge even to the best of the companies.

**Non-recurring engineering (NRE):** The traditional one-time approach of NRE is a soft and disguised threat that many organizations fail to recognise. Economic considerations of components purely based on NRE may lead to inaccurate cost management due to an unanticipated scare of obsolescence. While adopting the Obsolescence Management System (OMS) in the early stages of design and planning is an ideal way to arrest future risks, it may add an immediate cost burden on the product, cutting the profit margin. To counter this vicious circle, OEMs must carry out detailed research before adopting a particular style, tools, or strategies for implementing OMS.

**Inventory management:** Inventory monitoring and management of components in the product lifecycle is a constant challenge for manufacturers. It not only impacts an organisation's finances but also influences the obsolescence management strategy in the first place. Incorrect or inaccurate obsolescence management may result in the permanent abandonment of large and non-recyclable inventories, leaving a deep hole in OEM's pockets.

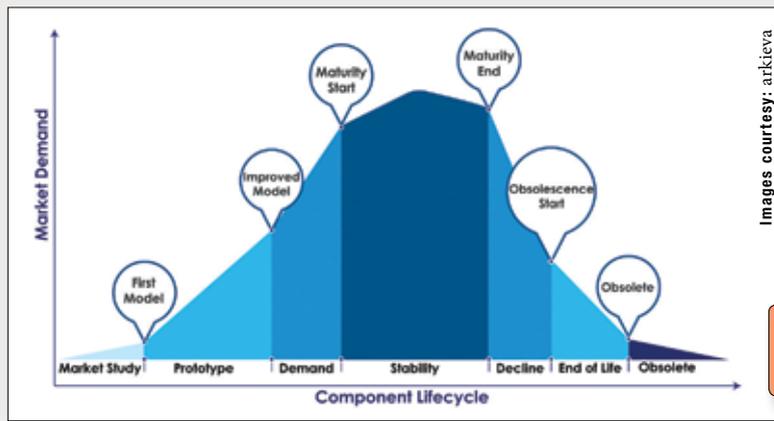
**Regulatory concerns:** Recertification, mandatory regulations, and ever-changing legal obligations can leave industrial OEMs with adventurous nightmares. Moreover, various environmental guidelines, process compliances & risk assessment methodologies are complex but unavoidable measures to adhere to in the global industrial market.

## On-time risk assessment in mitigating obsolescence threat

Obsolescence with long-life products is inevitable. Also, the risks and consequences of lack of timely planning and implementation of OM are enormous. Improper or poor strategies not only impact the immediate revenues of an organisation, but also impact future earnings because of customer dissatisfaction. Hence, risk assessment in mitigating obsolescence and studying its effect on component availability must be ongoing and on-time activity.

The safest approach to combat obsolescence is to make risk assessment a regular practice in product development strategies. Since risks usually arise due to unanticipated business environments, being in constant control through planned risk management at all times will minimise the dangers and impact of obsolescence. Of all factors, inventory management influences the fate of obsolescence the most. The proven industry practices recommend that inventory management must form an integral part of OM right from the design stage.

Longevity visualisation supported by long-term plans helps planned obsolescence. Such approaches are crucial in high



A graph showing market demand and component lifecycle

investment and value proposition products. For example, products designed for defense systems must have a minimum life span of 25 years before becoming obsolete. This, of course, requires rigorous planning right from the R&D stages, transitioning into actual design, manufacturing, and maintenance.

## Product longevity roadmap

The commercial documentation for agreements and contracts between OEMs and suppliers plays a significant role in planning a roadmap for products longevity. Such agreements are not just limited to the supply of parts and components, but also cover important aspects such as logistics, supply chain, and minimum or maximum pricing over coming years.

Considering the widespread needs and practices of international suppliers, compliance and regulatory requirements form very important parameters of agreements and contracts. Though certifications and approvals from internationally recognized associations eliminate a lot of assumptions, risks, and guesswork, thorough assessment based on records and future capabilities must be exercised at all possible levels. For example, ISO 9001 and AS9120 are internationally recognised certifications for quality management and aerospace & defence respectively that establish the credibility of the distributors' capabilities.

## Ideal lifecycle management strategy

For an ideal lifecycle strategy, the OEM must bake the lifecycle considerations into the product design itself. On the other hand, the manufacturer (end-user), should also have a proactive approach to take stock of the situation with the supplier, so that none of the parties are taken off-guard at any stage of the product life cycle.

It is not for no reason that despite the premium price tag, every single launch of Apple product beats the queue for any similar product from the competitors. For the success of any long-term product life, planned obsolescence is crucial. And with this idea, the concept of the modern product life cycle comes into the picture. The product life cycle for

manufacturers considering planned obsolescence is different from a normal one. Instead of plain study and prototyping in the initial phase of the cycle, the OM is also considered to develop the actual product. Similarly, the obsolescence factor is spread across the inventory management until the end of the product life cycle.

It must be noted that inventory management, supply chain, and logistics are almost situation-dependent during the last leg of the obsolescence. The final stage of product obsolescence is taken over by the 'replacement' or 'alternate' component market.

The typical sequence of the product life cycle in Product Life Cycle Management (PLCM) in an OMS environment is as follows:

**Conceptualisation:** The objective of this phase is to include all possible features and variations in the product based on the current trends.

**Prototyping:** Under this stage, all the variants of the products are prototyped with the desired features and functionalities at a high level.

**Functional evaluation:** The outcome of this stage is the selection of the most deserving product, qualifying all or most of the desired functionalities of the product.

**Alpha product:** The first working product is developed and released under this stage. Based on the functional evaluation, necessary modifications are applied, and an almost ready product is prepared for customers' testing, validation, and acceptance.

**Voice of customers:** The alpha product is put into the actual field of testing by select customers. The feedback is documented and sent back to the product development team.

**Pre-qualification and certification:** To avoid rejections and major modifications in the final product, OEMs must ensure pre-qualification or certification of the component and related processes. This can save them from the major disappointment of surprises towards the end of the product release in the market.



**Beta product:** This is the revised product, developed after field-testing in real environments by the customers. This is the closest version of the product that qualifies all the functional and non-functional specifications.

**Product certification:** The certification process involves various compliance and quality-related approvals for the developed product. While all the requirements of this stage are planned in the early stages itself, any deviation observed is fixed and produced again for the certification covering compliance, safety, and quality-related parameters.

**Release candidate:** Once the product is certified, the final product is termed the Release Candidate (RC). This version of the product is then qualified to be sold in the target market.

Despite decades of expertise, professionals and organizations face newer challenges that are peculiar to certain applications or technologies. For example, the difficulties faced due to obsolescence threats in the aerospace & defence industry can be very different from those applicable to the medical, or electronics industries. However, the voice of every customer is important because it provides real insight into the issues that happen on the field, at the ground level.

The best way to overcome obsolescence is to adopt the Proactive Obsolescence Management System (POMS). Being only reactive to obsolescence issues leads to significant and uncontrolled cost leakages that can be as high as 50 times as compared to that of POMS. The direct effects of reactive or unplanned obsolescence management can be:

- Sudden and complete loss of equipment availability
- Frequent downtime leads to high maintenance costs & efforts
- High support cost in restoring component functionalities
- Customer dissatisfaction and revenue loss
- Negative impact on organisation's reputation

## Enhancing longevity of components & equipment

Based on the industry segment and consequences severity of obsolescence, the POMS can be applied to various levels.

The two most common ways to begin the POMS way are by adopting the following:

**Facility Condition Assessment (FCA):** FCA is detailed on-site observation and review activity of equipment and components working in the industrial environment. This involves assessing the physical and functional condition of parts that may be subject to wear and tear, failing, or malfunctioning due to any reason. FCA carried out at individual and integrated level evaluates overall functioning and recommends which component or systems need to be upgraded or replaced.

**Facility Performance Evaluation (FPE):** FPE focuses on the overall performance of industrial machinery and components. It assesses the availability, dependency, cost-effectiveness, and continuity of individual & interdependent parts and systems. The detailed information and insight provided by FPE at the part-by-part level help develop a robust obsolescence management plan.

## Aligning with global strategies

It is practically impossible for OEMs to implement the best and the latest approaches and technologies on their own. Active participation in global industry collaborations and consortiums helps consolidate the scattered information on the advancement of mechanical, electrical & electronics, hardware & firmware, networking & digital technologies, and management practices.

Technology exchange programmes with leading organisations around the world help OEMs adopt the latest trends and align market strategies in sync with global standards. Obsolescence engineering and management require proactive measures to make informed and timely decisions. This calls for a huge amount of credible data that can be technical, functional, commercial, or even from customer support systems.

Data patterns or value ranking analysis from various tools and methodologies provide a systematic and logical framework to tackle various obsolescence-related challenges. One such method – Obsolescence Value Ranking (OVR) utilises various steps and analyses to determine and prioritise obsolescence issues.

## Choosing the right supplier to ensure quick obsolete replacement

Suppliers play a significant role in mitigating component obsolescence. For suppliers, on the other hand, it takes a lot of effort in establishing credibility as a trusted business partner. As for manufacturers, the suppliers need to constantly upgrade their technologies and management practices to meet the diversified demand of OEMs that are both short term as well as long-term.

Some important criteria to consider in choosing the right suppliers for obsolete part replacement are:

**Reverse engineering expertise:** This is the most important qualifier for a supplier to handle obsolete replacements. It usually involves destructive reasoning to understand how previous component devices or systems accomplish a specific task, with desired performance and efficiency.

A competitive supplier should be able to offer a quick replacement. This requires wide exposure not only in the relevant domain but also in different industries, covering various technologies. Also, the supplier should have good relationships with their principal OEMs to leverage priority delivery of material, minimum inventory support, and so on.

**Form-Fit-Function (FFF) capabilities:** The FFF capabilities of a supplier refer to their ability to produce parts that are the absolute reflection in terms of appearance (form), compatibility, and physical interfacing (fit) that produce the desired outcome (function). The crux of this factor is that the parts must conform to all specifications and engineering rules not only as individual components but also as part of the larger integrated system.

## Historical inventory turnover assessment of obsolete parts

A prospective supplier for obsolete replacement must be thoroughly assessed for its record and performance

concerning the turnover of obsolete parts. High turnover on regular basis, covering a wide variety of parts and components for the specific industrial sector is a healthy sign of a dependable supplier. Industry associations, certifications, and formal recommendations from manufacturers are good checkpoints in assessing the suppliers.

Good obsolete part suppliers should be much more than just a good manufacturer or part producer. They must have a thorough understanding of market size, customer preferences, and inventory management systems.

## Deciding between upgradation or complete replacement

There are three terms associated with overhauling a manufacturing or production process – Upgrade, Modernise, and Replace.

**Upgrade:** Upgrading is rather a simpler and quick-turnaround activity that involves relatively lesser investment. It focuses on the one-to-one replacement of aging components or systems.

**Modernise:** Modernising involves combination of replacing components and processes – and not just the components. The objective of this approach is to take the previous setup to the next level, resulting in at least 2 to 3 times operational and performance efficiencies. This requires detailed analysis, planning, and attracts high investment that can run for the next 10 to 15 years.

**Replace:** Replacement refers to replacing existing machineries and processes with the brand-new infrastructure like machineries, departments, and facilities with realigned processes. This invariably requires huge investments in terms money, time, and efforts. Replacement is called upon only after careful analysis of future business plans and long-term goals. For example, a manufacturer may replace modern lathes with fully automated CNC machines. □

| S. No. | Challenges Faced   | Recommended Option |
|--------|--|--------------------|
| 1.     | Unable to meet customer's changing demands continuously                        | Modernise          |
| 2.     | Replacement parts are hard to find   | Upgrade            |
| 3.     | Productivity, repair & maintenance costs, and downtime to be improved          | Modernise          |
| 4.     | Increased competition for quality and production volume                        | Modernise          |
| 5.     | International business in niche products and technologies requiring automation | Replace            |
| 6.     | Expected or unforeseen regulatory factors                                      | Modernise          |
| 7.     | Compatibility with alternate and replaceable products                          | Modernise          |
| 8.     | Systems not meeting minimum market requirements                                | Upgrade            |
| 9.     | Prevailing and future condition of 'legacy' systems                            | Modernise          |
| 10.    | Legacy component/systems hampering productivity                                | Upgrade            |

Some examples in upgrading, modernise or replacement the existing infrastructure

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# “A rapid rise in the demand of air filtration solutions”

...says **Ashok Pandey**, Director-Automotive, Pharmaceuticals & Consumer Filters, Freudenberg Filtration Technologies India. In an interview with EM, he shares his thoughts on the changing demands of consumers in the manufacturing industry. At the same time, he highlights the growing trends & technologies in the automotive industry. Excerpts...

**Freudenberg Filtration Technologies India serves some of the biggest names in the industry. Can you brief us on the recent technological developments in filtration systems? What are consumers demanding in this area?**

Industries have different filtration needs & Freudenberg Filtration Technologies offers various solutions according to customer needs. We have solutions that can be integrated to current systems for energy enhancement & we call it as easy (Energy Efficiency Enhancement Systems). These are optimal solutions for users looking for an integrated capacity rather than going in for new machine & works well for various industries like power, fertiliser etc. Besides we also provide normal air filters, customised air filters & air filtration solutions for customers.

**Freudenberg has been in the Indian market for 24 years now. Can you trace the company's journey?**

Freudenberg Filtration started its operations in year 1998. Before this, we were serving the Indian industry via nominated

agencies. Our presence in India has long history & goes back to times when automotive business in India was just starting, we had our installations in OEM lines.

We had our plant & office at Mumbai which later shifted to Pune which happens also to be main

automotive hub. Initially we started with trading activity and ventured into manufacturing later with different types of air filters for the industry.

We import few materials from our Parent companies globally to convert it to finished Goods required over here.

Our journey started with surface treatment business & then progressed to other segments like turbo machinery, automotive cabin air filtration, food & beverage industry, gas phase filtration & with acquisition of an Indian company back in 2012 also stepped to pharmaceuticals.

**The Indian government has set an ambitious target of achieving a \$1 trillion manufacturing economy. What is your take on this?**

The government has set ambitious target to achieve \$1 trillion by 2025, this like considering 30% growth. Today we are around \$700 billion & this additional opportunity will be big boost to manufacturing industry as several companies will try to invest. As investment grows, it creates opportunity for every sector including where Freudenberg Filtration is present. In a way, whosoever needs air will have some or other requirement of filtration & that is where we will contribute.

**Given that we have achieved \$700 billion so far, now, the manufacturing industry's target is 300 billion US dollars over the next few years. How do you oversee this scenario?**

The initial timeline to hit the target was around 2030. The government has tried to make it a bit shorter to have more stringent and close control, for reaping the benefits as early as possible. I believe that this target can be achieved as several industries are potentially looking up to India for their manufacturing operations. In addition, a lot of Foreign Direct Investment (FDI) is happening in sectors like aeronautics, pharmaceutical & others. This





*Ashok Pandey has an experience of working in Mecon India, followed by a four-year tenure with Kalyani Technical & Management Services. Thereafter, Pandey worked in the industrial filtration, automotive, pharmaceuticals & consumer Freudenberg Filtration Technologies India, and has been the head of Automotive, Pharma & Consumer in Freudenberg Filtration Technologies India.*

is certainly a great push for the Indian manufacturing space as there will be high investments in these sector helping the Indian industry reach desired target.

**Emerging trends such as EVs, growing demand for safe vehicles, and connected cars will have a direct impact on component suppliers. How component suppliers such as Freudenberg is gearing up to serve the growing demands from the OEMs?**

As far as Freudenberg is concerned, we are present in various segments like filtration, sealings and backup lining for car interiors. For filtration, we have solutions that will continue till existence of passenger vehicles & mass transit. When the trend started wherein EV's played a important role in replacing IC engines, it was challenging as well opened new avenues for Freudenberg.

Freudenberg adjusted fast to changing demand and has solution ready for use. An upside with EV is that it will have more space due to IC engines being replaced & hence advance air conditioning systems with bigger, better filtration efficiencies can be installed. For this we have products lined up and this will be beneficial for users and of course our company.

**Industry 4.0 is another trending topic among manufacturing professionals. How much sense does it make in a frugal market like India? What is your take on this?**

In the current scenario, Industry 4.0 should be a balanced work-frame. This means that addressing internal requirements are more critical. This means that a frugal approach could be a short-term approach for addressing challenges. But on the other hand, it is also a long-term approach, especially when one wants to establish as a global supplier or a company producing products & solutions that are beneficial for mankind. Thus, to

create such solutions, digital technologies like Industry 4.0 are essential to integrate into the existing product line.

This is also about being at par in the industry with competitive industry standards. Therefore, quality becomes

quintessential here. Now, to arrive at this desired level of quality, if the market must be frugal, there is nothing wrong. The ultimate objective is to find a solution. So, if this can be achieved with a frugal market, this can potentially become a foundation for tomorrow's technology. This essentially means that the industry doesn't have to adopt solutions just for

the sake of it, but rather find a balance. That is where I believe that Indian industries should adopt Industry 4.0 solutions, even if it is for the frugal market.

**Going forward, what are your short-and long-term plans?**

Currently, we are largely focusing on the Indian market, especially with localising solutions as per consumer demand. In this process, we have also started manufacturing in India for the global market. In addition, we plan to focus on R&D, new products, and innovations. With the growing innovation around, consumers have become tech-savvy, and that is why we will also cater to new markets based on emerging applications.

We, at Freudenberg, are eyeing customers who demand quality and want to improve their lifestyle. One of the finest examples here is home air purifiers. This is a new market with major demand. Two years back, people were not aware of such solutions. But now, with the growing concern of pollution and health-safety measures, it has started generating consumer demand. Therefore, we will strongly be focusing in this area and will continue to do so, going forward. This also applies to the automotive industry where air purifiers are growing in demand. □

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## Instrumenting 5G in the manufacturing space

In today's ever-changing technological world, it has been a norm that communications and network technologies keep evolving faster than ever before. Every new generation of smartphones and computers encourage innovations in this variable field. Like every other revolutionising technology in the past, 5G is also a game changer. With the help of 5G, there will be endless opportunities for industries to grow and implement various currently developing technologies nicely.

In April 2018, South Korea was the first country to roll out 5G networking services to a wide customer range. The speed of 5G networks in South Korea peaks up to 902.7 Mbps depending upon carriers, network providers, and geographical locations. Since then, the emergence of 5G is widespread.

In fact, smart factory, also known as Industry 4.0, will shift from conventional technologies to a set of highly advanced and connected technologies. Here, 5G will create Industry 4.0 models possible, as suggested by experts and scientists. As such, Industry 4.0 will rely on communications and information technologies to create and manage cost-efficient large-scale businesses.

### Application benefits of 5G

**High speed work remotely:** Devices with 5G connectivity will have high-speed networks and data transmission rates, resulting in superfast work from remote locations. Using such networks, employees can work efficiently and rapidly without any barriers.

**Useful IoT Adoption:** Internet of Things (IoT) is a system consisting of software and mechanical hardware used to transfer data over a network without requiring human interference. Using IoT, businesses can plan to create an entire business IoT ecosystem. IoT generates a lot of data and allows

transmitting this data in real-time so that it can be used by the organisation. For this, there must be high-speed uninterrupted connections using 5G technology. We can create a solution for this and IoT can be used efficiently.

**Lightning-fast data speed:** The most anticipated benefit of 5G networks over the current technologies is the data speeds that they will offer. Most 5G service providers promise data speeds around 300-400 Mbps. At its maximum capacity, a 5G network can deliver speeds up to 10 Gbps, which is around 100 times faster than a currently running widespread 4G network. Nowadays, a huge amount of data is generated by companies in their operational activities and such data can be tackled for use by 5G networks easily.

**Supply chain improvisations:** 5G technology in manufacturing will improve the supply chain of industries greatly. As 5G enables to connect up to one million devices in one sq km range, it will be useful for coordinating all the automated processes in a supply chain. Processes, such as order placement and delivery schedules, can be programmed to be entirely automated. Such processes to work efficiently need to gather real-time data and have to transmit data at extremely high speeds. So, the 5G network can help this. Using 5G technology, manufacturing procedures are getting smarter day by day enabling advanced communication between interconnected devices resulting in the overall improvement of supply chain and production processes.

### Crucial technologies for Industry 4.0

After having known the benefits of 5G technology in the manufacturing sector, now it's time to look at the technologies which will be helpful in creating the Industry 4.0 model.

**Autonomous robots:** Using this, robots will be able to work

with each other in a cooperative manner. Robots used here can be equipped with greater performance abilities at a cost-effective price. These smart robots can also work alongside humans by adapting to the organisation's environment.

**Simulation:** Simulation technologies will be used to get an insight into the real-time data and modelling the product virtually. Simulation technologies will help organisations to test their products prior to launch in a real-time environment. This will benefit the organisation to make changes prior to the implementation of the production of the product.

**Internet of Things:** Using IoT in the Industry 4.0 model will allow devices to communicate with each other over networks remotely using unified controllers as and when required. It will also support quick and efficient real-time decision making.

**Cybersecurity:** While the Industry 4.0 model relies mostly on information technology and communication networks, it is very important to create and deploy efficient cybersecurity measures to avoid any awful circumstances. Data generated through IoT and other devices should be stored, managed and extracted in such a way that there are no loopholes for the data to be tweaked. Any fault or loose end in cybersecurity can create unfavourable circumstances for the company.

**Cloud computing:** Industry 4.0 will be implemented mostly by large scale factories and manufacturing units; these will be the units that will be generating a large amount of data just from their operational activities. So, to cater to these large and ever-increasing storage demands, it is important and necessary for companies to move towards cloud storage and computing services. Cloud computing and storage services prove to be cost-effective in the long run.

**Augmented reality:** Augmented reality-based systems can help



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workers know where to find the products in the warehouse and mapping necessary product configuration becomes easier. They can be used for training new interns and employees about how a product can be manufactured with correct steps and order.

**Big Data & analytics:** In the Industry 4.0 model, large amounts of data will be generated from operating activities using the technologies, collecting such data. Doing a meaningful evaluation of the data generated is a must to streamline activities of an organisation. Analysis of the data generated should be done to predict future changes and corrective measures, which can be then taken to increase the efficiency of the systems.

## Implementing 5G in manufacturing

Following are some implementations possible through the usage 5G networks in manufacturing:

**Smart logistics:** In the Industry 4.0 model, it is proposed that the internal transportation systems and logistics systems inside a workplace, like a factory, should be entirely automated. Robots should be used for transporting products from one part of the plant to another. Driverless transportation vehicles can be used for the timely delivery of products. All the interconnected robots and DTV require high-speed data transmission for communicating with each other & 5G networks in manufacturing setups help to achieve this.

**Smart maintenance:** Smart maintenance refers to the planning of Maintenance and Repair Operations (MRO) in such ways that it rounds the downtime to the lowest possible. Data analysis plays an important role while planning out such MROs. While carrying out maintenance operations smart devices, such as tablets and connected cameras, can be used to instruct remotely or to supervise the work.

**Smart control for plants:** Smart control systems for plants can be created using sensors and IoT. Every machinery in the plant should be connected to a central controller system to make smart control systems work efficiently. These central control systems can then be automated using different procedures to work without human intervention.

**Virtual manufacturing:** Virtual manufacturing refers to the usage of Virtual Reality and Augmented Reality in production processes and research & development stages to know the real-time outcomes of the product the organisation is working on. Using virtual reality technology can help industries save

so much money that might get wasted during the research & development stage.

**Robots:** Using robots is very beneficial because it will result in faster production. Organisations will require fewer spaces to operate. Risks regarding workplace accidents can be reduced greatly as robots work as they are programmed. There will be lesser chances of stoppage in production due to no conflicts arising.

Some implementations are possible only with the foundation and rise of 5G networks. Using these, along with 5G technology together in industries and manufacturing will take us to a completely functioning Industry 4.0 model.

## Addressing manufacturing use cases

In an ever-evolving environment, telecom operators need the best technologies to assist their business requirement. The onset of 5G will improve many existing use cases and prepare new use cases that cannot be satisfied by existing technologies. This, in turn, needs evolving the network to convey high reliability and low latency that are key to addressing manufacturing use cases.

The enhanced network evolution highlights the following developments:

- **5G NR** – A new radio interface/access that extends far beyond those of past generations of mobile communication. Capabilities incorporates ultra-high reliability, very high data rates everywhere, very low latency, massive system capacity, and availability, very low energy consumption and device cost, and energy-efficient networks.
- **Network slicing** – This helps operators to give dedicated virtual networks with consumer-particular functionality.
- **Distributed cloud** – This helps setting up workloads closer to the edge for better QoS, for example latency.
- **Artificial Intelligence (AI) & real-time Machine Learning** – Analytics will be significant in creating self-optimised networks so as to secure SLA fulfilment for services.

## Going forward...

The time to act is at present. We do not need to wait to begin testing new business models, catch emerging chances like IoT, and create extra revenue streams. LTE-based technologies for example, CAT-M1/NB-IoT help massive IoT use cases already in current networks. By rethinking and experimenting what role to take, operators will eventually secure the benefits of 5G. □

*Courtesy: Truventor AI & Robotics*

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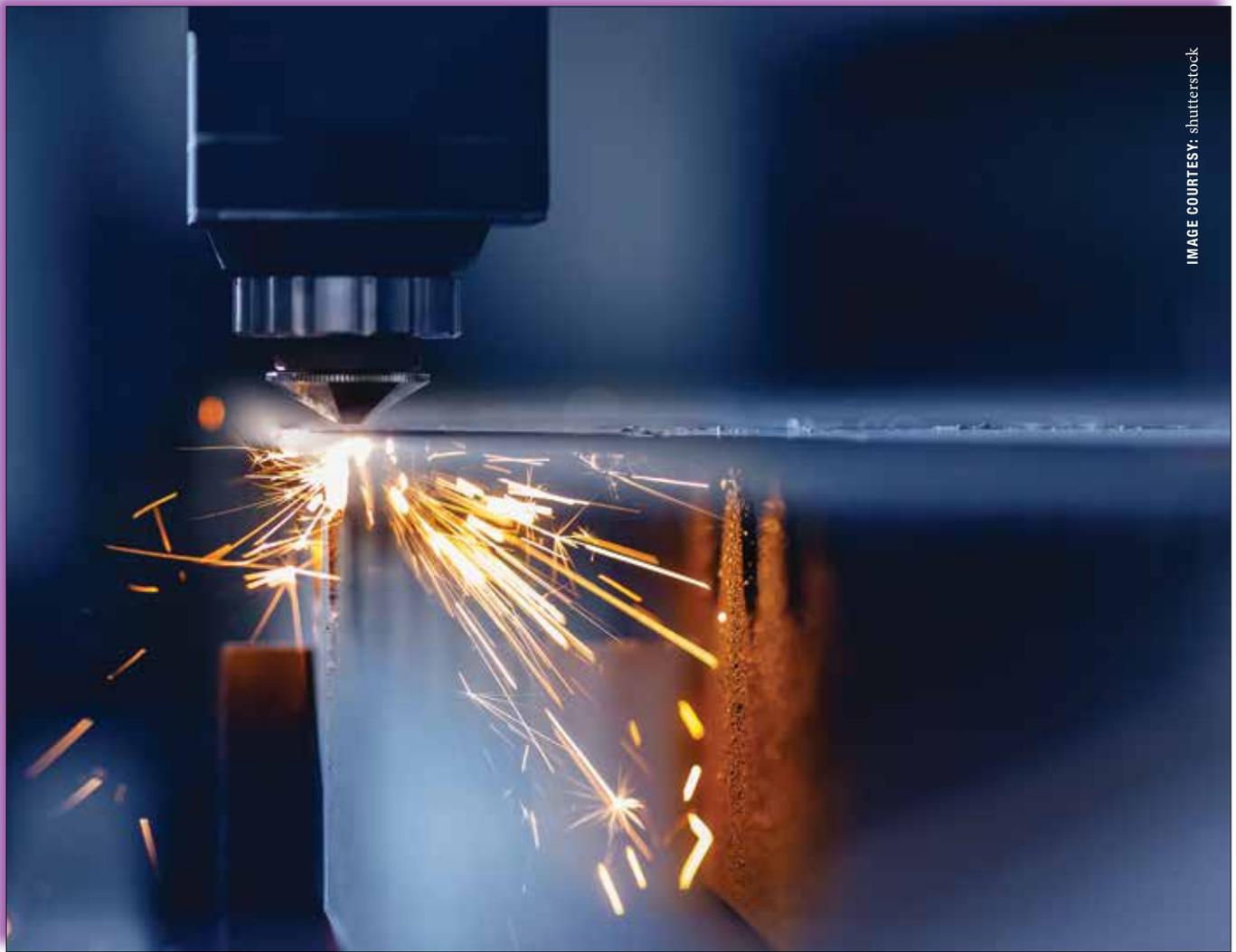


IMAGE COURTESY: shutterstock

## Defining beam shaping in laser cutting

The application story explains the usage of S7 Variable Beam Parameter Product (V-BPP) offered by Mazak. With this, the article highlights the evolution of laser cutting technology and illustrates the difference between a standard fibre vs V-BPP fibre.

Laser cutting technology, like most modern technology, is constantly advancing. From CO<sub>2</sub> lasers to fibre lasers, to advanced cutting heads with beam diameter control, and now generators that perform beam shaping. The next development in laser cutting is here.

### Laser cutting technology evolution

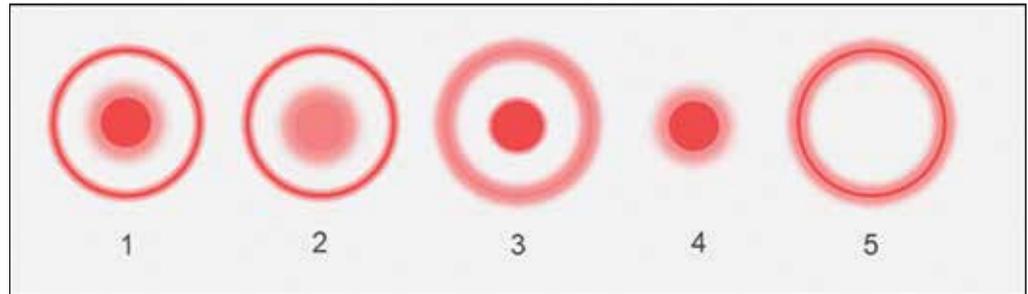
When laser-cutting technology was first introduced for fabrication, in the 1980's, CO<sub>2</sub> was the only option. By the early 2000's, laser manufacturers started to evolve the laser source and fibre laser technology began.

Fibre lasers gave fabricators increased cutting speed, especially

in thin gauge material. Fibre lasers also helped the bottom line with a reduced cost for consumables and energy consumption.

The next laser cutting advancement was high power lasers. Before 2015, the standard configurations for laser cutting machines were 2kW and 4kW. By 2015, high power lasers hit the centre stage. High power lasers offered fabricators the ability to cut at high speeds with a reduced bottom line in a greater range of material thickness.

While the thin gauge material was covered, many job shops cut more than just that. Often, these fabricators cut a large range of materials up to thick plate. This expansive range of material meant that thick plate cutting needed to be accomplished on the same fibre laser as thin gauge.



This shows 50% power in the centre core and remainder of the laser power is on the ring core. Example 2 is much more power on the outer ring core and only a little bit of power on the centre ring core. Through you can see how this power distribution changes.

## Offering edge quality

By 2018, 6kW became the new standard for laser cutting and the introduction to 8kW, 10kW, and 12kW started. The increased power not only gave fabricators an increased material cutting range, but it also offered improved edge quality through advanced cutting head technology. Right around the corner was high power lasers.

Initially, fibre laser cutting heads only used one lens with one focal length. Advanced cutting head technology changed that. Now many fibre lasers have sophisticated cutting heads with multi-lens, automated focus, and beam diameter control. This advanced cutting head functionality allows fabricators to process almost any material of almost any thickness on a single fibre laser.

While the combination of high-power fibre lasers and sophisticated cutting heads have an increased edge quality, it still is not the CO<sub>2</sub> quality that many fabricators were striving for, until now. V-BPP, also known as beam shaping, now offers unrivalled edge quality with the fibre laser speed, low maintenance and reduce bottom line advantages.

## What is V-BPP?

V-BPP stands for Variable Beam Parameter Product, often referred to as beam shaping. V-BPP offers beam shaping technology that comes directly from the generator rather than having to make beam diameter and shape changes in the laser cutting head. V-BPP is a way to command to the generator from the CNC a variety of shapes, sizes and power distributions that can be used for different cutting techniques and applications.

V-BPP can start with a very small diameter beam with the heat profile directly centre to that beam. This shape is often referred to as fibre mode. But the beam can get wide and create a 'donut-shape' mode. While V-BPP alters and changes the beam diameter, it is also altering the shape of the beam, where the power density is concentrated, and where the heat resides in the total spectrum of the beam profile.

## Fibre cable delivery

From inside, the generator and proprietary beam types are created. But from there, that beam type is delivered through a fibre optic cable. With this next level V-BPP technology, a standard fibre cable cannot transfer these beams effectively. Now Mazak has paired both, a new generator technology and a new multi-core fibre cable for the OPTIPLEX NEXUS FIBRE S7. This new multi-core fibre cable has an inner core and an outer ring core.

By having a dual fibre core, it directs power to both the centre core and the outer ring core allowing for a balance in power distribution. In doing so, the power can switch from the centre core for rapid piercing through heavy plate, then switch and balance out that power to the outer ring core and reduce the power in the centre ring core. This gives a wider kerf width but maintains the heat profile needed to get through heavy plate. By doing so, it gives an advantage in thick plate cutting in edge quality, straightness of cut and speed of cut.

## Standard fibre vs V-BPP fibre

For applications of thin stainless steel, thin mild steel or



A diagram showing the S7 beam shaping quality advantages

thin aluminium, a smaller beam diameter with a higher power density in the centre core is ideal, fibre mode. But for thick, heavy material it is necessary to have the beam substantially larger in diameter. An example, 1-inch mild steel cutting with oxygen.

A traditional fibre laser, the beam directed out of the laser is a fixed diameter, while the beam diameter can be increased through cutting head technology, it is not possible to change the heat profile of the beam. A standard fibre laser going from 0.250" to 0.500" to 0.750" it is still using the same type of parameter product out of the generator because that is all that is possible, just one fixed beam type.

With V-BPP users command to the generator not only a different size diameter of beam, but also where the heat resides in the total spectrum of the beam profile. For 0.250" mild steel utilising V-BPP, all the heat is directed to the centre core of the beam and the diameter is rather small. When climbing to a thicker material, the beam diameter is increasing along with a changing heat profile.

Comparing standard fibre to V-BPP, even with a standard fibre increasing its beam diameter, there will still be heavy striation and the speed is limited due to the diameter of the beam. With V-BPP, using a much larger diameter and the heat not in the centre core but on the outer edges of the beam, gives a much smoother edge, a straighter edge and faster speed.

From left to right: 0.375" stainless steel with high performance air, 1.000" mild steel with oxygen, 0.188" aluminium with high performance air, 0.375" mild steel with oxygen, 0.750" mild steel with oxygen, and 0.625" aluminium

with high performance air.

## Choosing the right solution

Since advanced cutting head technology started, there is slang regularly used which causes confusion. Much of this confusion is around beam diameter control, mode and beam shaping.

Beam diameter control is not changing the mode and is not beam shaping. Mode is both the thermal characteristics of the beam and the three-dimensional shape. The mode is not focal length change. Focal length is just changing the convergent point of the beam. This is not beam shaping.

True mode changing is different, it is changing the shape of the beam and the heat profile in the beam. With standard fibre lasers, whatever comes out of the generator, it is. It is not changing beams in the generator. It is not different shapes.

## Moving ahead with a unique solution

One question that may be asked with the introduction of V-BPP is, are advanced cutting heads technology of the past? The answer is a hard no. There are even more advantages to beam shaping technology when combined with an advanced cutting head.

Overall, V-BPP is much different than a standard fibre laser. V-BPP provides a variety of beam shapes, sizes and power distributions that can be used for different cutting techniques and applications. □

*Courtesy: Mazak Optonics Corporation*

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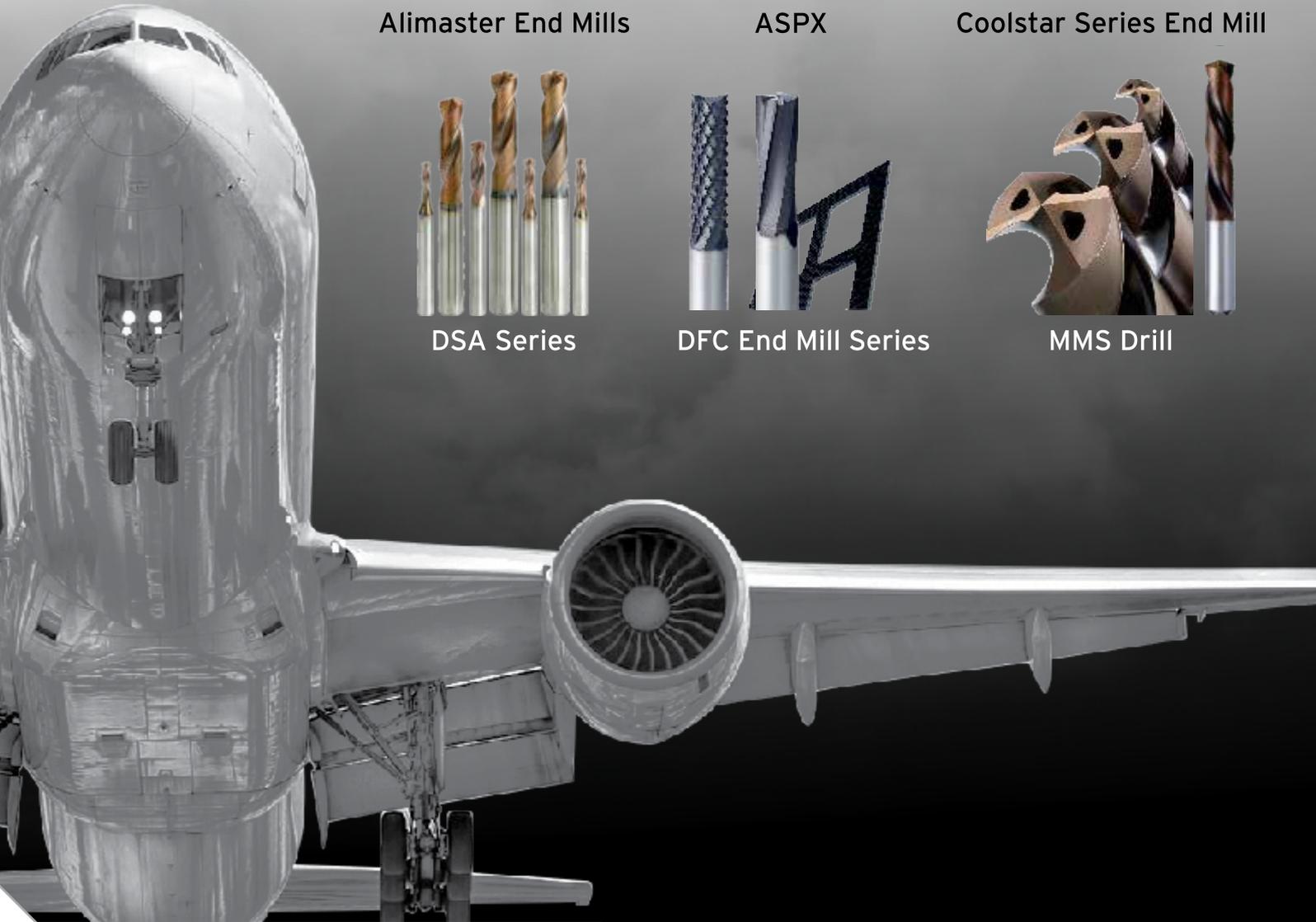
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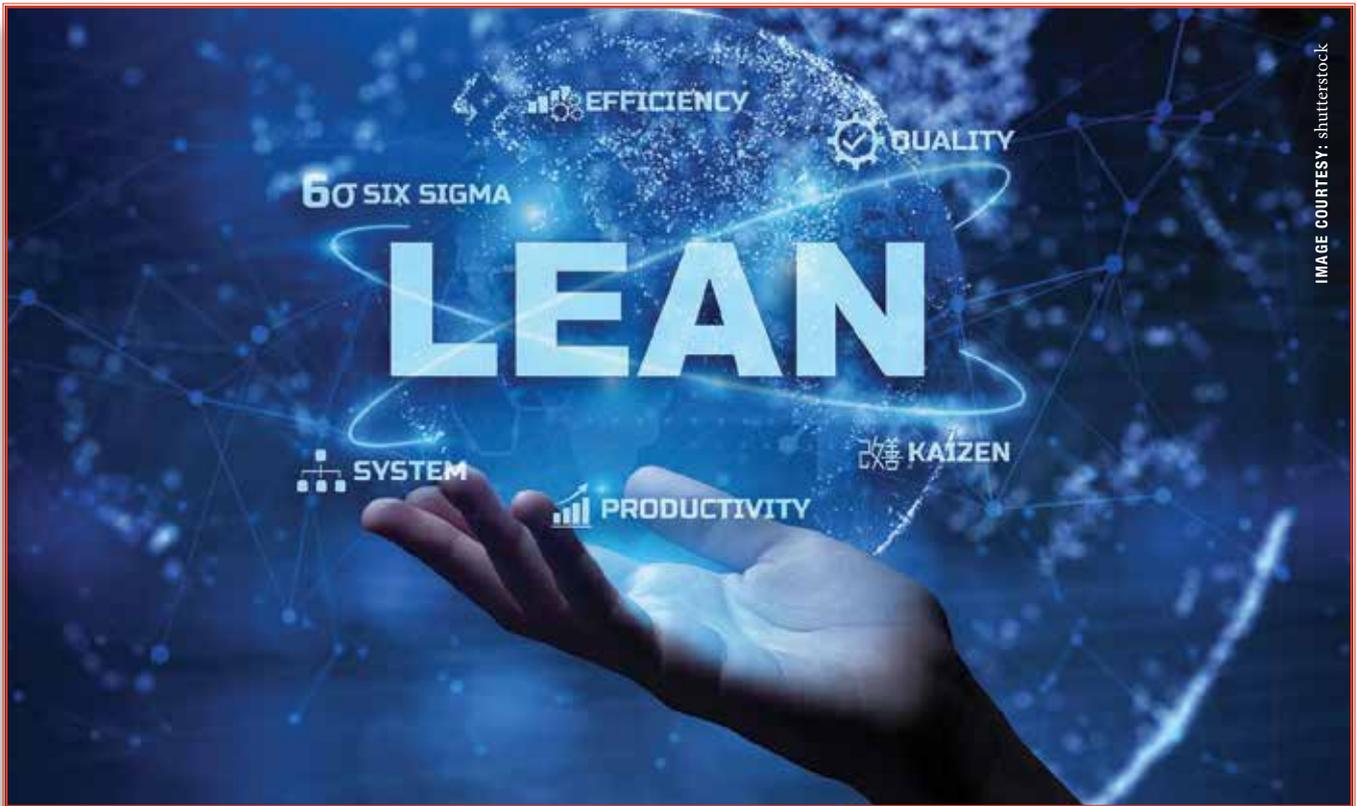


IMAGE COURTESY: shutterstock

## Emphasising quantum improvements with lean management practices

The primary objective behind adopting lean management measures is to serve customers in the best manner as well as ensure consumer delight. The article lists out concepts that the lean manufacturing managers must practice in their companies to achieve production, productivity, efficiency, and waste reduction.



R. Jayaraman,  
Head – Capstone Projects,  
Bhavan's SPJIMR

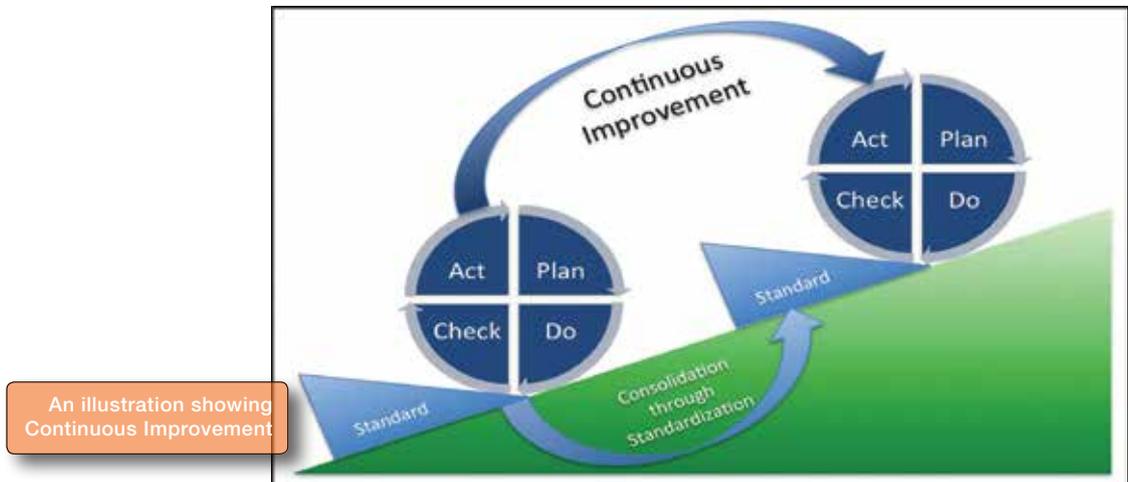
Dr Edwards Deming could never have imagined the results that would ensue from his visit to Japan in 1950. That it had a tremendous effect, which can be felt even today, is now folklore in industry. Many were the days that Dr Deming would lecture to industries in America, but, while they adopted some of his recommendations, like the practice of statistical process controls, they ignored many of his other principles, which were altogether thirteen in number. Led by Toyota and supported & co-ordinated by the Union of Japanese Scientists and Engineers (JUSE), Japanese companies started the systematic adoption of Dr Deming's principles.

### All about the Toyota Production System

One of the key outcomes of all the frenzied action was the

Toyota Production System (TPS). Also called the 'Toyota Pyramid', it had a deep impact in the world of quality. It was the first system in the world to do things as the customer wanted. The end of WW II led to the development of buyers' markets all over the world, and Toyota seized the opportunity, using Dr Deming's principles, to design and use a new paradigm. Thus, was Lean Management born, as a part of the TPS.

In its efforts to address customer needs as and when they arise, and as per their requirements, TPS became a mantra to run manufacturing and management in a totally quality driven way. Along with TPS came TQM – Total Quality Management. TQM and TPS were two sides of the same coin – for manufacturing and market driven excellence. Lean Management was central to the TPS. If we look at the TPS, which was also called the '4 Ps' of Toyota, it is evident that



Toyota put human endeavour at the heart of management.

## Lean management

Lean Management (LM) is understood in the west as 'elimination of waste'. As can be seen it is only one part of the TPS, but LM became synonymous with waste elimination. The central concept in adopting LM is to serve customers in the best manner, and, as desired in the Kano model, the purpose is to delight customers. In combination with TQM, the idea is to create a company which can gain the respect, love, admiration, and loyalty of customers. Delighting the customer was always primary.

To do that, LM managers have to learn some concepts which they will have to practice all across the company. The first is JIT – Just In Time. This is widely used in the automobile, iron & steel, cement, and many other industries. The auto industry was where this idea took firm roots. Today, with Andon and automation (or Jidoka), Toyota assembly lines are the best run in the world.

For example, the Toyota plant in Kentucky. From the beginning, the plant practiced JIT – with all the parts for a car being received at the plant a few hours prior to production. In fact, the seats for cars were delivered online, real-time. Such was the efficiency built in through JIT that wastages, such as, rework, defectives, etc, were minimised or eliminated.

This enabled Toyota Kentucky to produce cars much faster, make model changes in the production line to suit customer demands speedily, which, in turn, led to market capture through customer delight. Same practices were adopted by the then Big Three – Ford, GM and Chrysler. Today, in India, all the auto plants – Maruti, Tata, M&M, Hyundai use such practices to keep the prices low, to build customer confidence through total quality, end to end.

## The '5 Why' analysis

Another key element of LM is the 'Why Why' analysis or the

'5 Why' analysis. This is a simple but effective way of solving problems. One should ask the question 'Why' five times, to get to the root cause of the problem. There is the famous example of a company finding its pumps frequently under stoppage and breakdowns. The 'Why Why' analysis went thus:

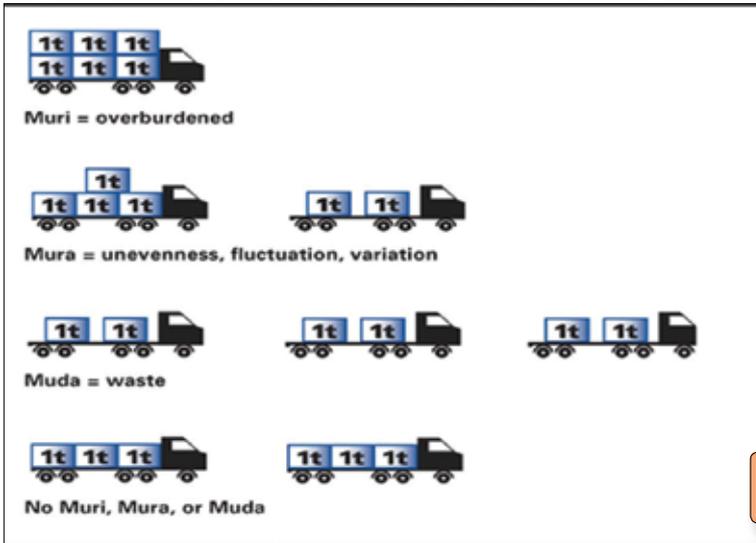
- Why did the pump stop – because the circuit breaker stopped it for excessive current drawal.
- Why was the current in excess? Because there was resistance to the flow of fluid inside the pump.
- Why was the resistance high? Because there were some fine, hard particles in the fluid.
- Why were the particles in the fluid? Because at the suction end, these particles were being sucked in when the compressor pulled in the air.

It was, thus, realised that the root cause was that air was being sucked in at the entry of the compressor pump without a FILTER. When the filter was introduced, the pump ran smoothly.

'Why Why' analysis will always lead to the identification of root causes. And root cause analysis is an essential part of LM. By using this analysis, companies deploy quality circles to solve problems, and then make suitable process changes, so that the mistakes are not repeated. Many companies in India, which practice LM, use 'small groups' (variously called quality circles, improvement groups, value engineering circles, etc.) to run 'continuous improvement' or 'PDCA' movements.

## Ensuring continuous improvement

LM uses the PDCA extensively. Plan, Do, Check and Act is the heart of TQM, and LM is built upon TQM. PDCA is nothing but continuous improvement. Groups of people get together to identify problems, use tools and techniques to solve them, record them in the process documents, and then continue to look for more problems. Every problem solved will lead to new problems, and problem solving is a continuous process. Only, with every solution, many parameters improve



LM recognises three types of waste – Muda, Mura and Muri

from their previous levels, and this ‘virtuous cycle’ leads to cost reduction, improved quality, faster rates of production, better customer servicing, and so on. Continuous Improvement is a way life in LM. Waste elimination is another feature.

As shown in the figure, all three types are frequently observed, especially in logistics, warehousing and inventory management. A special case is the ‘uneven production’ which is also called ‘heijunka’. Heijunka is production levelling. Most factories and service establishments have to cater to sudden surges and lean periods in operations. For example, railways often face the ‘rush’ phenomenon during holidays, which they manage by running specials, longer trains, etc.

Similarly, local buses in Mumbai face the peak hours during morning and evening. Uneven loading leads to several problems, especially capacity design and utilisation. Due to the ‘unstable conditions’ which characterise uneven loading, defects, inventories, manpower utilisation are all adversely affected. In one word, the ‘momentum’ is interrupted, which leads to uneven results. To avoid this, LM recommends ‘heijunka’, which is levelled production. A system for manufacture or supply chain logistics and distribution wherein activities are ‘levelled’ is possible in LM.

Value Stream Mapping was a signal contribution of LM to manufacturing industry, as well as others. VSM, as it is often referred to, is a way of mapping the current supply chain activities, using symbols unique to LM, and study the areas which are wasteful. This is a powerful technique, which has led to quantum jumps in production, productivity, efficiency and waste reduction on a scale not imagined before. Such quantum improvements are possible only due to LM. Given below is an illustrative example of what was achieved in a Japanese

Mattress manufacturing company using LM.

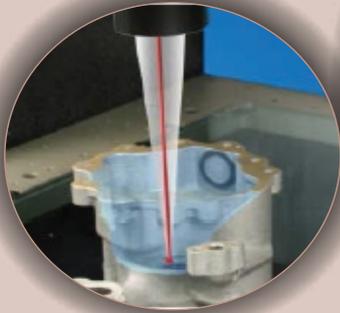
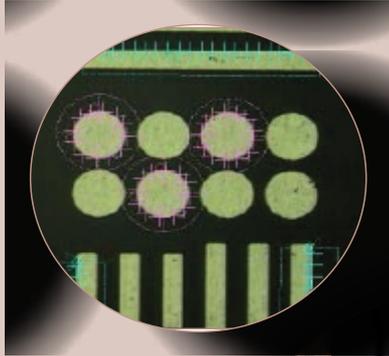
LM uses the ‘Pull’ approach, as against the ‘Push’ approach used in management. Pull is customer facing, responding to customer requirements, and ensuring that these requirements are more than met, to create customer delight. Such delight includes value for money, on time delivery, Six Sigma manufacturing and support, all of which lead to low to zero waste. In the current situation of emphasis on sustainability, as defined in the 17 Sustainable Development Goals (SDG) of the UN, introduced in 2015, LM is the single best tool to speedily comply with all the SDGs. In fact, James Womack and Daniel Jones, in their book, ‘Lean Thinking’, describe several case studies of the usage of LM and the enormous business benefits achieved by a variety of companies in the USA.

### Way forward: ‘Five Point’ formula

In summary, today’s global industries need to adopt LM far more intensely and seriously if they are to comply with SDGs. The way to move forward is to use the ‘Five Point’ formula, given by Womack and Jones, as below:

- Eliminate muda (Types of muda: actions that are currently not adding any value but are required by the product development, order filling or production systems (Type 1 muda) and actions which don’t add value to the customer and hence can be eliminated immediately (Type 2 muda)
- Identify the Value Stream - VSM
- Flow
- Pull
- Perfection □

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Images courtesy: shutterstock

## Why reduce the weight of an EV?

Automotive players in the Indian EV market are always trying to improve their products, either in terms of cost, security, design or battery functionality. In addition, the vehicle's energy efficiency attracts consumers and is on the top of the priorities for an EV manufacturer. According to research, one way of improving the performance of the electric vehicle is by reducing the weight of the vehicle. The article talks about reasons why electric vehicle makers need to reflect on automotive lightweighting.



Mayur Mishra,  
Director and CEO,  
Corrit Electric

The range of the vehicle is the king, especially for the Indian market. By reducing the vehicle's weight, the manufacturers reduce the pressure on their already stressed battery packs, giving them better mileage. The optimum temperature of a lithium-ion battery is between 20-30°C. In India, this temperature range remains only for a few months; hence it has become almost compulsory for EV makers to keep their vehicles lightweighted to give their customers the best range possible.

According to the Material Technologies Shaping the Future of Electric Vehicles research by Frost & Sullivan, a typical powertrain electric motor is 125% heavier than a combustion engine. As a result, the battery is one of the fattiest parts of an electric vehicle. Global automotive and environmentalists are researching how to reduce the size and weight of a standard lithium-ion battery pack. Apart from the usual benefits of lowering the vehicle's weight like better acceleration, research suggests that reducing the weight by

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just 10% for electric cars can improve the battery and vehicle performance by at least 6%. There have been a few developments in this respect, but none have been used in the Indian market yet. Reducing the size of a battery pack is a matter of cellular chemistry level R&D. Hence, vehicle manufacturers have come up with new ways to reduce the weight of their vehicles.

### Ways to reduce an EVs weight

The first way to reduce the weight of an electric vehicle is by simply cutting down on the overall body framework. Rather than using the standard auto-grade iron, replace it with aluminium. Aluminium is an EV manufacturer's dream metal, as it has a higher strength-to-weight ratio compared to other metals. It also can soak up the energy coming out of the battery, and last and most importantly, it costs less without any throwback to safety. The chassis size in the upcoming electric options is getting leaner. This reduces the vehicle's weight and makes the vehicle easy to handle and suitable for different terrains. Along with aluminium, automotive players are also researching other components like carbon fibre reinforced polymer. However, the research is at a very nascent stage.

The result of these studies might sound good but reducing the weight of an electric vehicle comes with its challenges. Government of India is very supportive of the mission to electrify vehicles. Still, the truth is to lighten the weight of the vehicle, the alternative materials are difficult to source and cost a lot. So, if we build a lightweight EV with good range, but it costs a fortune to the end consumer, it somehow defeats the primary purpose.

Along with this, trying and adopting new materials will bring quality control challenges, and some of these materials might even be unrecyclable as they bond and sync with other materials. The complex chemistry of material will make adopting any new lightweight material difficult.

India stands at a crucial automotive manufacturing stage, which will pivot and challenge the traditional structure, but this is what the electric revolution is all about. □



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## Making machines safe and reliable

Predictive, or condition-based maintenance is replacing preventative maintenance, thanks to the recent technological advancements. The article highlights one of the most efficient maintenance techniques, the ‘look, listen and feel’ approach. Look, Listen and Feel (LLF) is a monitoring activity that increases the dependability of equipment and machinery multi-fold.

The basics of safety come from good maintenance. The first step in maintenance comes from the careful, systematic, periodic inspection of equipment and system elements. Recording of observations is the second step. Analysis of the observations by a maintenance team leader would be the third step. It is not cost-effective to implement online condition monitoring solutions for every piece of equipment. Look, Listen and Feel (LLF) is an effective condition monitoring technology that detects important signs of machine faults and maintenance requirements just in time, even if an organisation’s offline condition monitoring programme is in place. The idea is to examine, listen to, and feel the machines to determine what they are capable of.

### Necessary safety precautions for performing LLF

All employees working in the factory are required to wear

personal protection equipment as advised for each installation. Examples – for high noise areas, ear defenders are a must; while eye protection is required in areas where there is a lot of dust, gases, vapours, flying sparks, and so on. In all circumstances, safety shoes must be worn. When working on electrical panels and equipment, wear rubber-soled shoes with fibre-reinforced toes. Individuals must only be deployed for such duties after passing certification tests in safety and equipment capabilities.

### Visual inspection (Look)

Users and maintainers must be encouraged to conduct a thorough visual check of equipment and systems before putting them into service each and every time. Such a visual check might show signs of oil or lubricant leaks, overheating-related decolouration of protective paint, corrosion spots,

broken components, missing items such as belt/chain protectors, dust and debris accumulation, physical blockage, and so on. The equipment or systems will be more reliable if all irregularities are removed before they are used.

### Auditory inspection (Listen)

This is mostly true for machinery that has moving parts (motor driven pumps, fans, compressors, etc). The equipment may make an audible rattling noise due to loose components or sub-elements. These might result in serious harm if left neglected. This inspection necessitates considerable competence on the part of the operator or maintainer, as well as a long period of interaction with the equipment. The operator or maintainer must learn ‘what to listen for’ and how to recognise ‘wrong sounds’. This is based on personal experience. In the long run, an operator will be able to detect a change in noise caused by blade wear at a motor bearing or a fan air cutting noise, for instance. It may be subjective at this stage, but before severe harm occurs, examination for more precise data may be conducted.

### Inspection through touch and smell (Feel)

Safety is very important as the ‘feel’ actions are generally done on running equipment. It’s important to avoid putting your palm too close to moving parts. The feel gives some idea on the difference in temperature, non-visual vibration level changes, flow quality, etc. Presence or absence of flow, presence or absence of liquid in containers and pipes, weight and lightness of objects, rigidity and flexibility of objects, changes in velocity, etc. The human nose can discriminate different smells. For example, the smell of burning oil in a diesel engine has a very different odour. So, the nose can act as a reliable sensory organ in equipment / system condition monitoring.

LLF comes under the element ‘mechanical integrity of process safety management’.

### Implementation of Look, Listen and Feel (LLF)

First, we must identify the unit’s important PSM equipment. PSM critical equipment is any piece of equipment that, if it fails, might result in a loss of containment or a process safety event. Safety, regulatory compliance, cost, and operational throughput are all impacted by critical equipment. Vessels, machinery, pipes,

blowout preventers, crucial valves, flares, alarms, interlocks, fire protection equipment, and other monitoring, control, and response systems are examples of this type of equipment.

Depending on the industry or equipment, LLF observations may change. Plant reliability will always be related to the efficacy of the care provided by the operators and maintenance employees who operate on the plant, regardless of the policies and programmes put forth by the management. We can save lives (by preventing accidents), money (by reducing maintenance costs), quality and productivity (with on-time maintenance).

### LLF in a solar manufacturing plant

LLF is especially important for a solar manufacturing plant like Goldi Solar.

- **Look:** Stains in the cell cutting, lamination machine, pre-lamination machines indicate an underlying problem; it will also help us check if we are getting the required output. At the pre- and post-lamination stages, visual inspection is required to check if there are gaps or cracks in the module. The stringers connect several cells together. Soldering flux is a chemical component that is used in the making of string, and is also highly flammable chemical. The drum and the place where the soldering flux is stored need to be checked for any abnormal smell, as the vapour in the atmosphere can catch a spark causing fire explosion.
- **Listen:** Machine operators should know about look, listen and feel. Those who are in the routine shift engage with the machines for eight hours every day. Any noise abnormal sounds, activities or movement can be discerned by the operators by playing close attention to sounds.
- **Feel:** If the temperature or vibration of the machinery is too high, machine needs to be checked for optimum functioning. In case of chemical leakage during transportation of the flux, it needs to be addressed immediately.

The LLF inspection might be made more systematic with the use of appropriate signs put in important spots. Place images of eyes in areas where visual examination is required. The listen and feel activities would be represented by images of ears and palms. In addition, station markings arrows might be painted on the ground to indicate which positions the operator or maintainer should take and which way they should face the equipment to observe it. Arrow marks might be added to indicate the direction to be taken while making the observations. □

*Courtesy: Goldi Solar*

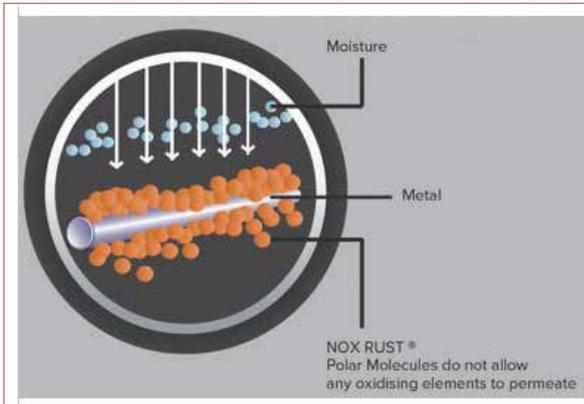


## Controlling corrosion in a high humid & moist atmosphere

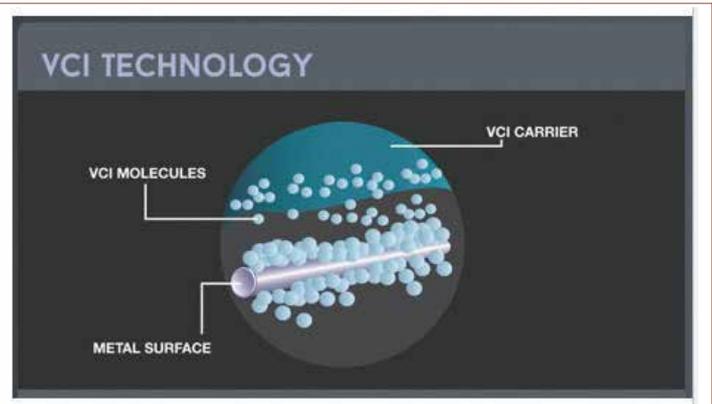
High moisture content is one of the major contributing factors that lead up to corrosion. Thus, it becomes extremely challenging to control corrosion in a moist atmosphere. Areas that receive high rainfall or are in proximity to a sea usually have fluctuating temperatures and very high moisture content. Thus, corrosion protection is an important issue in the metal fabrication industry serving automotive & OEM, where parts are dispatched for machining, assembly, or storage.

Corrosion is a process that converts a manufactured metal into its naturally occurring oxidation state. Corrosion leads to gradual destruction by catalysing chemical and/or electrochemical reactions. Atmospheric corrosion is defined as an electrochemical process that depends on the presence of electrolytes when dissolved in a polar solvent, such as water, which may be in the form of rain, dew, humidity, or melting snow. The dissolved electrolyte separates into cations and anions, which disperse uniformly throughout the solvent, making corrosion prevention further complicated.

The moisture acts as a carrier that facilitates the flow of electrons. Corrosion does not occur in dry air because of the presence of air alone. However, a problem arises when the metal reacts with a certain amount of water vapour present in the air. This water vapour or moisture in the air is measured in terms of relative humidity (RH). Metal tends to corrode when water molecules present in the air condense and settle on the surface of that metal due to a relatively lower surrounding temperature. Higher humidity leads to higher condensation on the metal surfaces.



Contact Corrosion Inhibition technology



Volatile Corrosion Inhibition technology

## Corrosion prevention methods

Corrosion can occur at any stage, during the input, or the manufacturing process, storage, shipment, or usage. Below mentioned are some of the most popular corrosion prevention methods:

- **Barrier coatings:** Paint, plastic, or powder.
- **Surface coatings:** Tin plating, galvanisation, copper plating, etc.
- **Metallurgy:** Alloyed steel, stainless steel.
- **Temporary barrier protection:** Rust preventive oil, VCI or Volatile Corrosion Inhibitor, etc.

Temporary barrier protections are conventional rust prevention methods that offer effective corrosion control over a short time in the automotive and auto component industry. This is because it allows for flexibility in application, excellent confluence with upstream and downstream requirements, and is very economical.

NOX-RUST® rust preventive oils, wax, coatings, etc are based on the CCI or Contact Corrosion Inhibition technology and have proven to be instrumental in temporary corrosion prevention and control for automotive and engineering parts. Based on the concept of polarity and thin-film technology, the Daubert proprietary polar molecules do not allow any oxidising elements to permeate even under condensing climates and can survive thermal stresses beyond

most other rust preventive oils.

## Eliminating corrosive effects

The exceptional ability of NOX-RUST® to remove pre-existing moisture and light alkaline coatings from the metal surface further augments its performance. NOX-RUST® offers a broad range of rust preventives which, besides corrosion prevention, can also be selected based on needs such as water displacement properties, film thickness, upstream and downstream compatibility requirements, and many more.

Similarly, Daubert's VCI® technology is based on the concept of volatility and polarity and performs favourably even in the presence of moisture. This unique technology enables Daubert to form a complex with moisture and negate its corrosive effects. Products based on this technology are available in various forms such as VCI oils, packaging papers and films, emitters, and powders, which allow their use in multifarious applications across a broad spectrum of industries and at different stages in the life cycle of a product.

An optimised and effective corrosion protection method can be developed by the Daubert Solution Engineering team which can further get validated by various accelerated corrosion tests and field trials. □

*Courtesy: Zavenir Daubert*



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## Leveraging efficiency through cloud technologies

It was not long ago when we saw pictures of giant cloud facilities built by Google, Amazon, Microsoft, etc, and wondered what they are going to use them for. Today, in some way or the other, everyone is using cloud technology. Similarly, in manufacturing, there have been several developments in the software used by design & manufacturing industries to use cloud infrastructure. These software tools have made manufacturers more powerful and efficient in their processes, giving them the advantage to meet the increased demands of the market.



Vipul Agrawal,  
Technical Specialist,  
Autodesk

According to usage, cloud technologies can be majorly categorised into three segments – cloud storage, cloud computing, and cloud services. These three technologies are making the world of manufacturing simpler day by day in a full circle.

Cloud storage is providing solutions to product data storage and management with cloud-based PDM and PLM. Cloud computing is ending the need of having a big IT infrastructure or waiting for days to generate complex data or getting a complex problem solved. Cloud services allow you to use technologies when required without investing upfront turning your CAPEX into an OPEX.

### Application benefits of cloud technologies

The need for the development and application of these cloud technologies has been brought by the change in market demand of increased complexity in the products and shorter go-to-market time. Some of the top benefits that manufacturers get by the implementation of cloud technologies can be described as follows:

**Collaborative working - Single source of data:** With the need for different expertise in product development and manufacturing, bringing all of them together in a single

workplace is difficult. But it is also important for all the stakeholders to have real-time data when they are working together from different workplaces. For this, a cloud-based CAD/CAM/CAE solution can help the users to pull/push in data from a single source cloud from any part of the world adding the expertise of their respective domain.

**Cross-functional capabilities:** Cloud allows the user industry to bring in cross-functional advanced capabilities across all the related technologies. If a design engineer quickly checks with the manufacturing analysis tool to understand if the design is manufacturable or not, this can make his design more efficient, or a manufacturing engineer might need to get the details of the design to check for the manufacturing process optimisation.

**Reduced IT infrastructure:** As the complexity of the design increases, the task of handling data at the back end becomes more challenging. Also, the data needs to be in a form where every stakeholder can access it, according to the need mentioned in point one. Developing such a solution on-premise will be a challenging task. With the increasing cost of semiconductor products, it can be a costly affair. To achieve this, a cloud-based PDM and PLM can provide an easy solution.

**Flexibility:** It is important to add scalability and flexibility to the complete model, according to the requirements of the user. The cloud infrastructures in all three categories are developed in such a way that they are flexible to add or remove functionalities with a click. Brining the investment of the manufacturing industry from the CAPEX model to the OPEX model makes it more cost-effective.

**Analytics:** With cloud connectivity, recording, and measuring, monitoring data becomes a quick and easy task. With all the platforms connected to a single source of data, doing analytics of the state of the data can simply lead us to the real-time scenario of the product development.

## Addressing security risks

Seeing all the benefits of implementing cloud technologies, one should not forget to investigate the dark side of it. It should

be noted that while adopting cloud technologies, manufacturers need to take care of security concerns and steadiness of the cloud data. Cloud data always has a risk of data breaches. There have been many laws developed by governments across the world to make cloud data safer and accelerate the use of it.

Multi-national corporations follow the standards and laws in their development process keeping users' data safe and secure. Adopting technologies from such mature companies shall bring these concerns nearly to zero.

## Adopting cloud technologies

In India, cloud technology is at a very initial stage and is pacing up nicely. This makes it the best time to adopt cloud technology for Indian manufacturing industries. MSMEs are the biggest benefiter from cloud technology as they will be able to implement higher functionality tools that were only possible for OEMs to have. This will help them to shorten lead times in product development, increase efficiency and monitor real-time data around the company. With these benefits in hand, they can concentrate on innovating their product, manufacturing methodologies and grow bigger.

The reason behind cloud technologies being in the initial stage in India is because of two reasons - internet infrastructure and skilled personnel. The most important requirement for cloud infrastructure is good internet speed. It can range from a few megabytes per second to a few hundred megabytes per second depending on the size & quality of data handled. The average broadband speed still lies below 100 Mbps, which lies in the medium segment. However, this dependency is region-based and differs from company to company.

Another major factor for adaptation is that the knowledge of the employees are just the basic IT tools. Implementing a cloud structure needs an all-hands on deck from the manager to foreman to individual contributors for using cloud tools. This is an easier problem that can be resolved with basic-level training.

The exports of India rose by 16.78% in June 2022. The Indian government is facilitating manufacturers with new markets, like defence and toy industries to capture. To reach to heights of these manufacturing sectors, one needs to implement technologies that help them maximise efficiency and lowers costs. The answer lies in cloud technologies. □

## High-penetration drill system

Wohlhaupter India recently expanded its T-A Pro high-penetration system with the launch of the T-A Pro M geometry insert, which targets stainless steel and heat resistant super alloy (HRSA) materials. The new insert geometry produces the best results with the newly designed T-A Pro holders but is also compatible with T-A holders and is offered in Z-3 series with diameters ranging from 0.437 inches – 1.882 inches (11.10 mm – 47.80 mm). The design elements of the T-A Pro M geometry allow larger diameters—1 inch and above—to be used on smaller or under-powered machines where additional setups on other machine tools would be needed or where parts would need to be contracted out. Machining components in-house cost-effectively while meeting specifications every time ultimately increases throughput and profitability. The new M geometry T-A Pro insert has been engineered to provide a winning combination of tool life, penetration rate, and process reliability so that user can feel confident when applying the tool to the specific needs. The addition of the M geometry solidifies the T-A Pro line as a comprehensive, industry leading solution when it comes to holemaking.



T-A Pro M geometry insert

Wohlhaupter India | New Delhi

Email: [info.in@wohlhaupter.com](mailto:info.in@wohlhaupter.com) | Tel: +91 11 4182 7044

## High rigidity and productivity turning machine

Tsugami Precision Engineering India introduced the M08SY-II, which is a turning mill centre with sub spindle and Y axis (M08SY) for completing the workpiece in a single set-up. The process aggregation by the turret is with the Y-axis. For accurate and powerful milling capability, the main and back spindle are equipped with built-in spindle motors. It has an overwhelming cost performance. User can opt for the 'MANUAL GUIDE i' software, which is completely optional. The abnormal load detection function helps in decreasing the damage in case of machine crush. The debug mode has a function – interference prevention function – helps in setting up the safety. The thermal distortion compensation function realises the accurate machining. Few of the standard specification of M08SY-II are

- Maximum machinable diameter –  $\Phi$  280 mm
- Main spindle speed – 200~4,500 min<sup>-1</sup>
- Back spindle speed – 200~4,500 min<sup>-1</sup>
- Number of turret stations – 12 station turret
- Rapid traverse rate – X: 24m/min Y: 12m/min Z: 27m/min A: 30m/min
- Main spindle motor – 7.5/11 kW
- Width x Depth x Height – 2,470 × 1,865 × 1,930mm
- Weight – 5,900 Kg



M08SY-II

Tsugami Precision Engineering India | Chennai

Email: [info@tsugami.co.in](mailto:info@tsugami.co.in) | Tel: 91-44-6717 6717

## CNC vision measuring machine

ATQ Metro has launched a new machine that offers a powerful 3 axis measurement solution with high accuracy & precision. It provides fast & accurate measurement of complex precision parts. The image processing technology & high-speed stage control enable high-through output measurements, which make the machines optimal solution for work piece that have many features to be measured. Along with the measuring software, the machine is capable to offer powerful 2D/3D composite measuring function. the machine can work with touch probes & non/contact measuring sensors, which gives more possibilities and efficiency to the series. Three models currently available are - STD 3020, STD 4030, and STD 5040. Various features of the newly introduced machine are –

- Ergonomic design
- Classic model
- High image quality
- Auto zoom lens
- Very robust granite base
- Programmable ring light
- High performance auto focus
- Advanced illumination system
- Touch trigger probe option
- Highly accurate measurements
- High magnification with distortion free image
- Various options like probe, laser, whitelight etc



STD 3020

ATQ Metro | Pune

Email: [enquiry@atqmetro.com](mailto:enquiry@atqmetro.com) | Tel: +91 78754 44909

## Extrusion crosshead with MAGS

Guill Tool has introduced the NEW 500 Series crosshead with MAGS gum space adjustment. The 500 Series is designed specifically for the flow characteristics and unique processing challenges of elastomeric compounds. One of the key features engineered on this new crosshead design is the mechanically assisted gum space (MAGS) adjustment system. This new method of gum space adjustment allows the operator to make an

effortless adjustment from a single point using a common socket wrench. The visual indicator on the core tube allows the operator to see how far the gum space has been moved, making those adjustments much more accurate and repeatable. The hardware-free and patented cam lock design of the NEW 500 Series means no time is wasted unbolting and resealing fasteners for disassembly and reassembly. The NEW 500 Series also features the latest centre-stage concentricity adjustment system that significantly reduces pressure on the tooling, allowing easier and more precise concentricity adjustments without loosening the face bolts.



Series 500 crosshead with MAGS adjustment

Guill Tool & Engineering | USA

Email: [sales@guill.com](mailto:sales@guill.com) | Tel: +1-401-828-7600

## Iron powder for flame cutting

Höganäs India has introduced the C100.29 iron powder for flame cutting. Powder cutting, in which iron powder is added to the flame, has a two-fold effect. This powder is designed for high affinity for oxygen at the cutting temperature, high burning temperature, excellent flow characteristics and reduced nozzle wear. The C100.29 is truly dedicated for flame cutting, as the particle size distribution is carefully



**C100.29**

controlled. Large particles may block tubes and pipes, and interrupt gas and particle flow. On the other hand, too many fine particles will adversely affect the flow characteristics of the powder. Also, it is designed to minimise inconsistencies between batches and manufactured using a highly stable and robust production method – the sponge iron powder process. The result is an exceptionally stable powder. Two different C100.29 packages are available, 20 kg Nonseg bags packed on 800 kg pallets or the 1000 kg Flexbag. The powder can achieve equally good results cutting stainless steel, riners on castings, scarf stainless steel ingots, and can also be used in the powder lancing of heavy scrap.

Höganäs India | Pune

Email: [india@hoganas.com](mailto:india@hoganas.com) | Tel: +91-20-6644 4600

## Shrink chucks with coolant jet channel technology

ISCAR recently expanded its X-STREAM coolant jet channels technology with the introduction of SRK-CX. It is a unique and extraordinary product line. These are the slimmest shrink chucks in the market with direct coolant to the cutting edge. The pre-set CX screw allows coolant supply via jet channels but it is not to be removed. Few features of the new shrink chucks are –



**SRK-CX**

- Coolant directed to cutting edges
- Prolonged tool life
- Eliminates chip sticking to the cutting edges
- Suitable for high-speed milling
- Effective chip evacuation prevents chip recutting

Also, the applications and advantages of this new product line include –

- CNC milling machines with poor external coolant flow
- Milling cavities and pockets
- Semi-finish and finishing profile milling of titanium blisk blades
- Milling applications with intensive heat generation, such as very hard alloy steels, high-temperature alloys, etc.

ISCAR India | Mumbai

Email: [crao@iscar.in](mailto:crao@iscar.in) | Tel: +91 7700 963 707

## Turret punch press

LVD Company nv has introduced the Strippit V30 1550, a heavy-duty 30 metric ton turret punch press featuring a 5 m X-axis. With an exceptionally long X-axis, the Strippit V30 1550 is engineered to allow the processing of worksheets up to 5000 mm long by 1500 mm wide without multiple sheet repositions, excessive sheet handling or extra shearing operations. By reducing non-value part handling time,



**Strippit V30 1550**

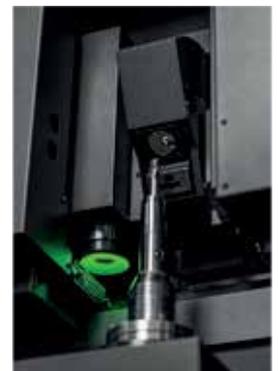
punching, & forming operations are more productive and cost-efficient. The ability to process a large sheet size also reduces welding and other secondary tasks, decreasing the cost per part. A rack and pinion design delivers precise motion and rigidity over the full length of the 5-meter axis. The X-axis traverse speed is efficient at 3150 IPM (80 m/min) with a combined axis traverse speed of 4095 IPM (104 m/min). The Strippit V30 1550 has a maximum hit rate of 440 hits per minute on 254 mm centres in material thicknesses up to 635 mm. The advanced table positioning system of the Strippit V30 1550 produces a finished part accuracy of 0.1 mm with a repeatability of +/- 0.05 mm over the entire table travel.

LVD-Strippit India | Bengaluru

Email: [info@lvdgroup.com](mailto:info@lvdgroup.com) | Tel: +91-80-4837 2568

## 3D sensor option for measuring machines

WALTER recently offered a 3D sensor for fully automatic measurement and digitisation of tools and workpieces for the measuring machines HELICHECK PRO, HELICHECK PLUS and their LONG versions. The customer can have two measuring machines of which the 3D sensor visualises the workpiece as a point cloud. Measurements can then be carried out using this image. Deviations in the tool can be detected by superimposing the image over the 3D design drawings. Customers with multiple production sites can compare scans from different machines to see at which operations manufacturing differences occur. The optional laser sensor is the latest generation of scanning technology. The new 3D sensor has a four times higher resolution and the measuring machine with an integrated high-end PC can process four times as much data at the same time. The swivel angle of the scan head has also been extended to -55° making a complete scan of indexable inserts possible.



**3D sensor inside the measuring machine HELICHECK PLUS**

United Grinding India | Bengaluru

Email: [info.in@grinding.ch](mailto:info.in@grinding.ch) | Tel: +91-80-3025 7600

# Highlights - August 2022



» **Casting & Forging**  
The current scenario in the castings/ forgings supply market requires optimisation of operational costs and faster reaction to an unpredictable market. The upcoming edition throws light on the applicability of Industry 4.0 in the forgings and castings supply chain, the possible benefits & suggestions for implementation strategies, etc.



» **Grinding Machines**  
Grinding is an extensive production process and is a part of almost every industrial production setting. Grinding machines play a pivotal role in the quality of the final product. The subsequent issue explores the challenges that can occur in the grinding process and how to overcome them.

» **Engineering Materials**  
Engineering materials in manufacturing focus on the application of materials, including process and production technologies in high-tech products within several fields, such as, energy production, automotive and aeronautical industries, medical devices, etc. The following issue explores the challenges of engineering materials in manufacturing.



» **Blockchain in Manufacturing**  
Blockchain is being considered as the solution to pertinent challenges being faced by the manufacturing sector. The next edition shares insights on how it may accelerate the supply chain management, advance product customisation options, reduce counterfeiting and more.



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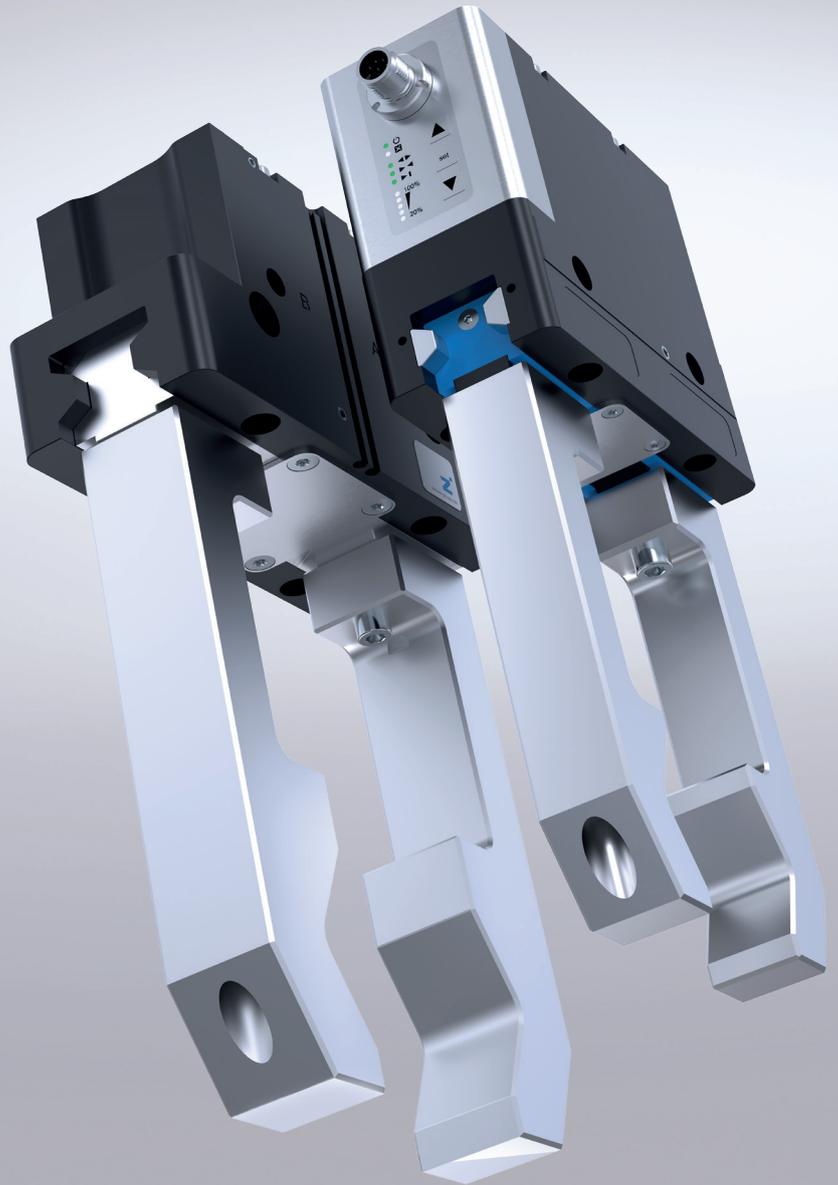
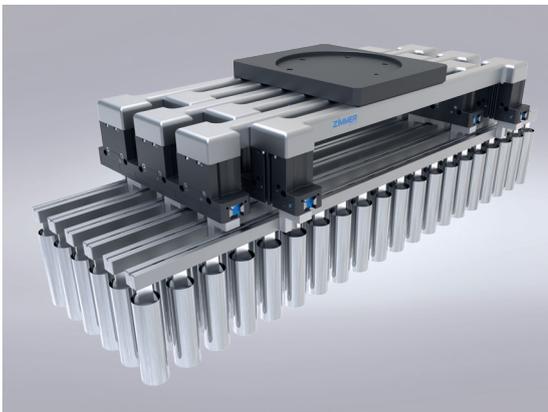
# TECHNOLOGIES & COMPONENTS



## Technologies and Innovations

- Handling technology
- Damping technology
- Linear technology
- Machine tooling technology
- Process technology
- System technology

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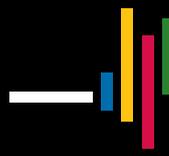


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If you had to make a choice right now – between maximum tool life, uncompromising process reliability and optimum productivity – which one would you pick? Why not choose the freedom to never have to choose again. Stay true to your own high standards in every way.

Choose Tigertec® Gold.

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