

# THE MACHINIST

ULTIMATE GUIDE TO PROFITABLE MANUFACTURING

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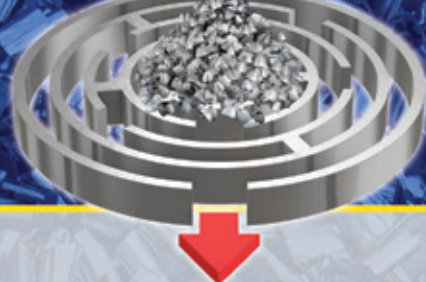
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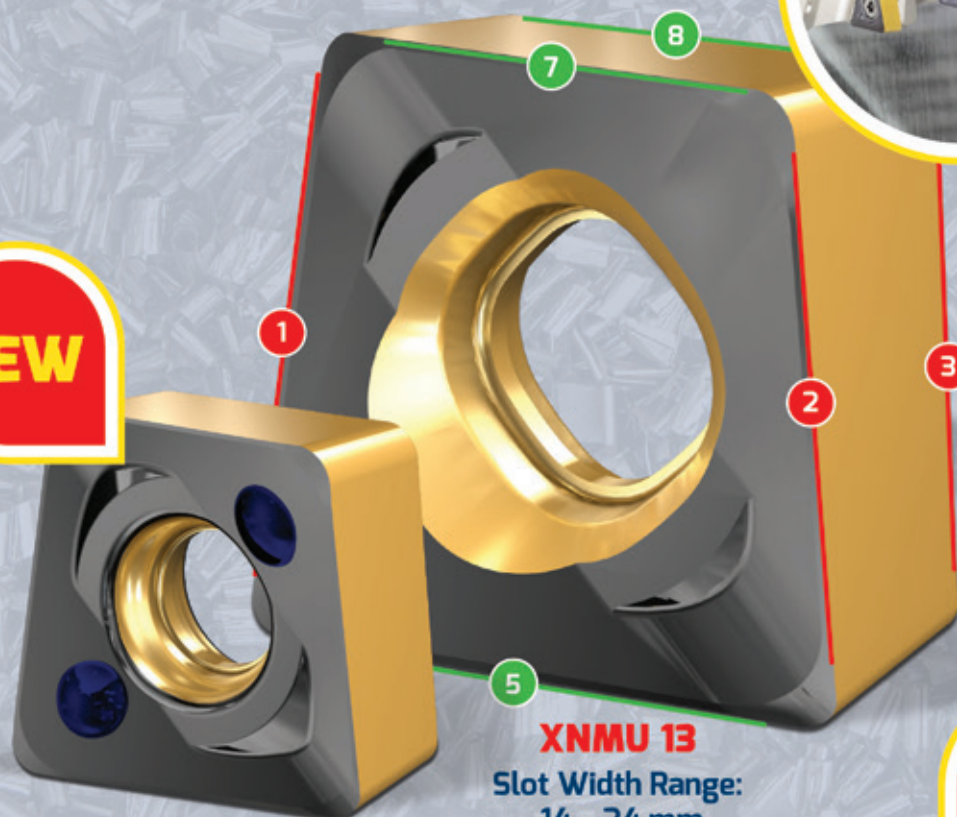
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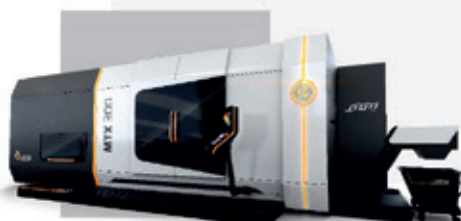
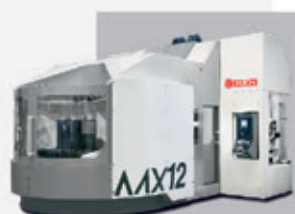
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## PLI SCHEME: ACCELERATING THE LOCAL EV ECOSYSTEM

Ciao Readers!

**A**utomotive is one of the most important sectors contributing to 7.1 per cent of our GDP and employs about 37 million people directly and indirectly. The sector has been under stress even before and then subsequently has been hit hard due to chip shortage. As per a CRISIL overall capacity utilisation rate at the four-wheeler makers dropped to 50-55 per cent at the end of FY21 from 70-75 per cent in FY19. The future of the industry would be driven by new technologies and it is here that PLI pushed manufacturing would come to aid.

The recently announced Production-Linked Incentive (PLI) scheme with an outlay of Rs 25,938 crore will benefit India's auto and auto components sectors in multiple ways. With this, government support for newer technologies and EVs will continue. Post FAME II and PMP, PLI will further unleash the potential for EVs in 2 and 3 wheelers. PVs and CVs will have to wait till they attain viability from a Total Cost of Ownership (TCO) perspective.

As you all know the PLI incentives are sales-linked and are expected to range from 13-18% on determined sales values for OEMs and 8-13% on determined sales values for auto component manufacturers. An additional 5% is to be given for manufacturing components for battery electric vehicles and hydrogen fuel cell vehicles. It will be effective from FY23 for five years. The scheme has the potential to make India an export hub in the global auto supply chain and increase cost competitiveness. The Ministry of Heavy Industries, Government of India, estimates that the scheme has the potential to bring fresh investments of over Rs 42,500 crore and result in incremental production of over Rs 2.3 lakh crore.

The PLI scheme will increase localisation, accelerate investments towards a local EV ecosystem and has the potential to make India an export hub in the global auto supply chain. It aims to promote an indigenous global supply chain of advanced automotive technology products which is low compared to that globally. As tier-1s scale up, the tier-1Is will also benefit, resulting in a multiplier effect and cost competitiveness. The scheme is also likely to attract foreign investments into India, capitalising on global economies de-risking their supply chains. The production and export of advanced automotive components will also help compensate for potential loss of revenues from traditional components to an extent as overseas markets move into EVs in the future.

Key beneficiaries in the auto component space will be mostly global MNCs such as Bosch, Continental, Delphi Automotive, Denso Corporation. From India, Minda Industries, Endurance Technologies, Varroc Engineering and Schaeffler can benefit from this scheme.

The PLI will accelerate India's transition into new technologies. Incumbent OEMs will benefit from the scheme. Most mid-size auto component suppliers supplying or targeting to supply advanced technology components will gain from the scheme.

I hope you enjoy this reading this edition as much as we enjoyed putting it together. Do share with us your opinions, comments and thoughts at [Rahul.kamat@wwm.co.in](mailto:Rahul.kamat@wwm.co.in)

*R Kamat*  
Editor

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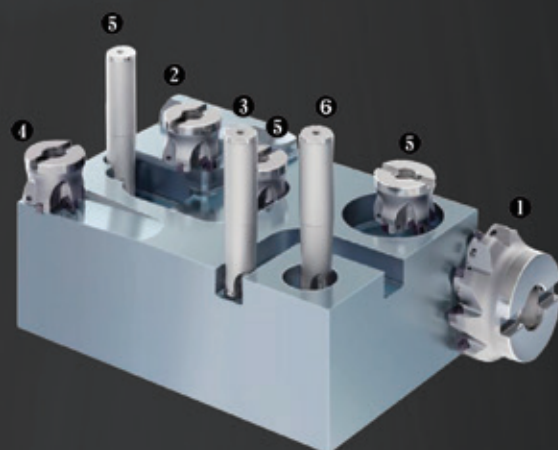


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YOUR GLOBAL CRAFTSMAN STUDIO

## Vedanta Aluminium Shines

### VEDANTA ALUMINIUM BUSINESS,

India's largest producer of the aluminium and value-added products, has bagged top spots at Perform, Achieve and Trade (PAT) Cycle-II among the Indian Aluminium Industry. Perform Achieve and Trade (PAT) scheme is a regulatory instrument deployed by the Ministry of Power, Government of India, to reduce specific energy consumption in energy intensive industries with an associated market-based mechanism to enhance cost effectiveness through certification of excess energy savings, which can be traded.

Among Aluminium Smelters in India, Vedanta's subsidiary Bharat Aluminium Company (BALCO) secured the coveted top spot with the highest Energy Saving Certificates, followed by Vedanta Jharsuguda's Smelter I. Vedanta's Alumina Refinery at Lanjigarh, ranked highest among peer alumina producers. An alumina refinery is a plant



where bauxite is refined into aluminium oxide or alumina, and an aluminium smelter is a plant where aluminium is produced from alumina. These achievements bear testimony to Vedanta Aluminium's robust endeavours towards energy conservation for business and environment sustainability.

Speaking about Vedanta's energy stewardship, **Mr Rahul Sharma, CEO – Vedanta Aluminium Business**, said, "Being India's largest aluminium producer, our aim at Vedanta Aluminium is to be the best in all facets of business, including Environment, Social and Gov-

ernance (ESG) sustainability. Maximising energy conservation and minimising carbon footprint are two key pillars of our sustainable business development agenda. A three-pronged strategy of ensuring judicious resource usage, energy-efficient operations, and renewable energy sourcing, helps us further our energy sustainability and climate action goals. Towards this, we have adopted global best-practices in energy and resource management and deployed cutting-edge solutions to reduce our carbon footprint."

**Mr Prafulla Behera, Site In-Charge of IGSEC Heavy Engineering Limited, which is the Operations & Maintenance partner for Power Plant at Lanjigarh**, adds, "With our engineering and domain expertise, we have been working with Vedanta on their energy efficiency and energy sustainability targets. We are proud to be playing a crucial role in Vedanta's journey towards being a forerunner in the field of energy conservation and ensuring maximum energy optimization at its world-class refinery operations."

## Continental Tires Launches New "Conti Premium Drive" Stores

### LEADING PREMIUM TYRE MANUFACTURER CONTINENTAL TIRES

inaugurated two new Conti Premium Drive (CPD) stores in Thane District, Mumbai. The stores will feature the brand's premium tyres with a new range of products for their customers. The stores will also offer the latest equipment and technologies in tyre-related services for wheel balancing, wheel alignment, nitrogen, among other services.

Along with their new range of passenger tyres, including the Generation6 - CC6, UC6 and AX6, the stores assure the best customer experience and after-sales service. Apart from CC6, UC6 and AX6, the stores will also feature products like CSC5, CCUHP, SC5 SUV which have cutting edge technology in the higher RIM Inches (17 inches and above).

Engineered in Germany and designed in India, the Generation 6 tyres are made specifically for Indian roads. The stores promise to cater to the requirements of automobile enthusiasts and their customers.



Conti Premium Drive stores are Continental Tires' Flagship stores. The store format has allowed the company to have a significant presence and influence in the Indian market since 2014. The new stores in the Mumbai region will help bring Continental India one step closer to their commitment "In the market, For the market" approach. Continental Tires will continue to focus on the Indian market with next-generation and innovative stores to serve their customers better.

Speaking about two new CPD

additions in Mumbai city, **Rajnish Kochgave, Head Sales and Marketing, PLT division, Continental India** said, "The two new store openings in Mumbai are sure to usher in a seamless, Integrated buying experience for tyres for automotive enthusiasts here. Stores are equipped not only with the latest technical know-how, but also with the expertise

to recommend appropriate tyres after assessing customer needs. We are happy to have partnered with Liberty Tyres and Pal Tyres, who have about 30 and 50 years of understanding of this market, respectively. We wish to serve our customers with our modern technology and enhanced products."

Continental also recently launched two CPD stores in the city of Surat, Gujarat. The recent launches will assist Continental Tires India strengthen their western India retail presence and enable a deeper brand interaction with customers.



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## Inovance Technology India Certified By The Great Place To Work® Institute

### INOVANCE TECHNOLOGY

**INDIA**, a pan-India industrial automation company, has been certified as a 'Great Workplace' by the Great Place to Work Institute. The certification was made in recognition of the high-trust and high-performance culture™ that has been created amongst Inovance's Indian employees.

Great Place to Work certification is awarded by taking a snapshot of the trust levels between an organisation and its employees and takes extensive direct employee feedback into account. Inovance was able to achieve the award because the company has gone the extra mile in providing employees with a top quality work experience, as well as strong opportunities for career development. The company also strongly encourages team bonding and runs regular teamwork and other employee training sessions.

The Great Place to Work Institute has its Indian HQ in Mumbai, but it is part of a global network of institutes who operate under the same brand and it



is considered to be the gold standard in employer brand recognition globally. To receive the award, Inovance had to complete an intensive assessment and survey process that lasted almost two months.

**Anil Kumar, Director of Inovance Technology India**, said, "I'm very proud that Inovance Technology India has been certified as a 'Great Workplace' by the Great Place to Work Institute in India. At Inovance, we strive to make sure that everyone constantly feels appreciated and supported, with the aim of ensuring our

people have high levels of job satisfaction and productivity.

"Participating in the extensive Great Place to Work survey process was an incredible opportunity to analyse our own strengths when it comes to our employees and our work culture. This wouldn't have been possible without the continuous effort and support of our employees. And this certification has given us inspiration to continue to try make our company an even better place for employees to work in the years to come."

## Leading Brake Pad Manufacturer Reduces Energy Consumption

**ELGI COMPRESSORS EUROPE**, a subsidiary of ELGi Equipments Limited, one of the world's leading air compressor manufacturers, has provided a turnkey solution to a global brake pad manufacturer based in Hartlepool, United Kingdom. ELGi, together with its authorised channel partner Compressors and Pipework Systems (CAPS), replaced the existing compressed air system resulting in improved operational efficiency, reduced site air pressure by 0.5 bar and an approximate 3.5 per cent decrease in energy consumption.

The brake pad manufacturer sought to modernise their compressed air system due to reliability issues that led to increased maintenance costs and downtime. ELGi's team conducted a site audit to evaluate the compressed air needs and developed a tailor-made solution for the British manufacturer. CAPS' proposal comprised four new ELGi air compressors (two EG132 Premium and two EG160 VFD Premium), two highly efficient refrigerated air dryers, high-quality aluminium pipework and oil-water-separators. The customer immediately realised a reduction in energy consumption and a

much smoother running system with no interruptions or unexpected downtime.

"At ELGi, our definition of Always Better is closely coupled with our vision: Always be the choice everywhere. We pride ourselves on addressing our customer's needs with comprehensive and tailor-made compressed air solutions," said **Steven Coombs, Area Sales Manager**. "Partnering with CAPS in this game-changing installation helped us provide our customer with the lowest life cycle cost through reduced maintenance requirements and energy savings."

The robust design of the EG-Series compressor range enables operations at extreme temperatures, leading overall to higher reliability of the compressed air system across Europe. ELGi's high-efficiency air ends are equipped with in-house developed η-V profile rotors, with the 4/5 lobe combination, designed to run at low rotor speeds. This unique design reduces pressure losses, and together with the OSBIC (oil separation by impact and centrifugal action), 3-stage separation provides best-in-class oil contamination reduction (<1ppm).

## Kirloskar Oil Engines Introduces Kirloskar i-Land

**IN LINE WITH** its philosophy of making sustainability even more of a priority under its new 'Limitless' vision, Kirloskar Oil Engines (KOEL) has introduced the Kirloskar i-Land – a fully automated organic waste composter that blends biotechnology and intelligent engineering to convert organic waste from homes and commercial spaces into compost. It aims to reduce dumping of waste in landfills and reduce the waste-treatment pressure on government agencies.

Kirloskar is India's leading sustainable engineering solutions provider, and its latest innovation complements the government's Swachh Bharat Abhiyan that aims to create a clean and green India. Backed by Kirloskar's rich engineering expertise and industry-leading service capabilities, the composter has features such as noiseless, odourless, and maintenance-free functioning with a short processing time of 24 hours. The Kirloskar i-Land will be available in ranges from 25 kg to 1,250 kg machines.



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## Piaggio Vehicles Inaugurates Exclusive (EV) Dealership/Showroom

**PIAGGIO VEHICLES PVT LTD** has inaugurated its first EV experience centre, Rheo Automobiles in Chennai. The dealership was inaugurated by **Mr MA Subramaniam, Honorable Minister for Medical and Family Welfare of Tamil Nadu** and **Mr Aravind Ramesh, Member of Legislative Assembly, Sholinganallur**. Also present on the occasion were **Mr N Divakar Reddy, Zonal Manager Sales, Piaggio** and **N Padmakumar, Regional Manager Sales, Piaggio Vehicles**.

This experience centre will allow customers to access Piaggio's entire range of electric vehicles. Piaggio had recently launched their FX range (fixed battery) of electric vehicles in both cargo and passenger segments. These new products will be available at the new Chennai outlet.

Speaking on the occasion, **Mr MA Subramaniam, Honorable Minister for Medical and Family Welfare of Tamil Nadu** said, "It gives me immense pleasure to be here today to inaugurate TN's



first of its kind EV Experience centre of Piaggio vehicles Pvt Ltd. With the TN government's focus on eco-friendly technologies, EV vehicles are going to be of extreme importance in the future. Our EV policy is drawn to facilitate multi fold increase in production and infrastructure development of electric vehicles. We are very happy that Piaggio Vehicles is moving in that direction of realising the TN government's dream of making EVs the go to vehicles for customers in the last mile segment.

**Mr Saju Nair, EVP and Head of Commercial Vehicle Business,**

**Piaggio India Pvt Ltd** said, "We are happy to open our first EV exclusive showroom in Tamilnadu at Chennai. At Piaggio, our core philosophy is to provide path-breaking solutions in the last mile transportation segment and we are committed to provide best in class offerings to our customers. Chennai being a big metro and a major business hub, inter-city transportation business is one of the major economic drivers. Our

new range of electric vehicles will help in increasing the earnability due to its low cost of operation and superior range. The FX range will cater to the needs of our customers, protect the environment and truly revolutionise the industry with the concept of "Ape goes Electric, Chennai goes Electric. We are offering unique service solutions like class leading warranty & Free maintenance package to ensure confidence and peace of mind for our customers while shifting to EV technology. After Chennai, we further look to expand our EV presence in various other markets in TN."

## ABB Technology To Improve Quality For Tata Steel Plant

**GLOBAL TECHNOLOGY COMPANY ABB** will provide electromagnetic brake systems (EMBR) for two compact strip production (CSP) casters at Tata Steel's flagship plant in Jamshedpur, working under contract from engineering and construction organisation SMS Group.

ABB's scope of supply also includes DCS800 DC drives, dry type transformers, water cooling systems, commissioning services and metallurgical performance evaluation. ABB is contracted through SMS which specialises in plant construction and mechanical engineering for the steel and nonferrous metals industry.

The contract builds on ABB's large installed base with premier steel producers globally. ABB EMBR is installed on 40 per cent of thin slab casting strands worldwide and allows for higher quality and faster throughput. This



well-established technology, invented by ABB in 1985, enables steelmakers to achieve steel cleanliness similar to conventional vertical bending casters, improves casting speed and increases mold copper plate lifetime. By generating a static magnetic field, which decreases meniscus metal flow speed and turbulence, the ABB EMBR provides a whole range of metallurgical improvements including elimination of mold

powder entrapments, a more even molten mold powder layer and a meniscus which is flatter, hotter and less turbulent.

"The project at Tata Steel in Jamshedpur is a key order for ABB," said **Raghu Badrinathan, Area Sales Manager – ABB Metallurgy**. "It builds on our large installed base with premier steel producers around the world."

"Tata Steel is a highly-valued customer for ABB and it is our continuous endeavour to provide the best-in-class technology and solutions to them," said **Vipul Gautam, Group Vice President, Global Account Executive for Tata Group, ABB**. "We believe that our metallurgy solutions and particularly the ABB EMBR solution will help them to achieve superior performance of their casters in minimum time, lowering their cost of production while improving quality."





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## IndianOil Corporation Collaborates with Automation Anywhere

**AUTOMATION ANYWHERE**, a global leader in Robotic Process Automation (RPA), announced a collaboration with IndianOil Corporation Limited (IOCL), the first oil marketing company in India to speed and scale automation to drive increased innovation across its 30,000 employee organisation.

During the first phase of a five-year plan, IOCL has automated select key processes across departments including Finance, HR, Inventory, etc, using Automation 360, the world's first AI-powered RPA platform.

IOCL's overall vision is to improve operating agility, connect disparate systems, and at the same time, empower employees to work more efficiently by allowing them to create solutions which help them move away from tactical and mundane repetitive tasks and ultimately focus on delivering more compelling products to market. To accomplish this, IndianOil leveraged the collective intellect of the organisation and organised an enterprise-wide RPA botathon event



where hundreds of employees and citizen developers were tasked to create automation assistants that could unlock innovation.

"We have crowdsourced 50+ ideas through an enterprise-wide 'RPA Botathon' event that saw enthusiastic participation from hundreds of IndianOil employees across businesses and functions. Participants trained to build bots on Automation Anywhere's cutting-edge platform developed multiple bots by the end of this exercise. As a result, we now have a trained pool of resources capable of converting an idea into a bot", said **Alok Khanna, Executive Director (SIS & IS)**, who is leading the digital transformation team of IndianOil.

## Free Course for Milling, Turning & Grinding Operators

**SETCO SPINDLES**, the Indian subsidiary of Setco, the world's largest independent spindle manufacturer and rebuilder has announced, that it has launched, a free three-month course for Milling, Turning & Grinding operators. The focus of this course is to provide hands-on-training for selected trainees so that they are skilled and ready to start work from day one and is open for anyone with a minimum qualification of having passed 10th standard.

Speaking on the launch **Rajesh Mandlik, CEO, Setco Spindles India** said, "We have a full fledged and well equipped machine shop with machines for grinding, milling and turning operations which are used for manufacturing and repairing precision spindles used in CNC machines. Over a period of time, we realised that many of the new joiners lack hands on skills to start work immediately and found that this was a challenge faced by the industry. We

had recently made it our core value to become an "Arha Samasti" (Worthy of Existence) organisation and as actions speak louder than words, we decided to also open up the training program and equip young people with in-demand employable skills."

There are many young people who are in the job market and are currently unemployable as they don't have immediately employable skills whereas milling, turning and grinding operators are in constant demand in the manufacturing industry. This course is a bridge between the industry requirement for ready employable talent and people wanting jobs

This is a three-month course that is provided by Setco Spindles at the Pune facility during which they will learn to use measurement tools like Vernier caliper's, micrometres, reading blue print specifications, preparing raw materials for operation, making adjustments to machine, grinding parts to specifications.

## LTI has Earned the Kubernetes

**LARSEN & TOUBRO INFOTECH** has earned the Kubernetes on Microsoft Azure advanced specialisation, a validation of a solution partner's deep knowledge, extensive experience and proven expertise in deploying and managing production workloads in the cloud using containers and managing hosted Kubernetes environments in Microsoft Azure.

**Siddharth Bohra, Chief Business Officer and Head, Cloud and Data Products, LTI** said: "Enterprises need ever increasing efficiency in operations, and cloud solutions make this continuous transformation possible. Our latest specialisation on Kubernetes service capabilities will provide the benefits of portability, agility, and scalability to our customers while modernizing their workloads."

**Rodney Clark, Corporate Vice President, Global Partner Solutions, Channel Sales and Channel Chief, Microsoft** added: "The Kubernetes on Microsoft Azure advanced specialisation highlights the partners who can be viewed as most capable when it comes to deploying and managing containerized applications in Azure."

## Bridgestone To Provide Tyres For Tata Motors

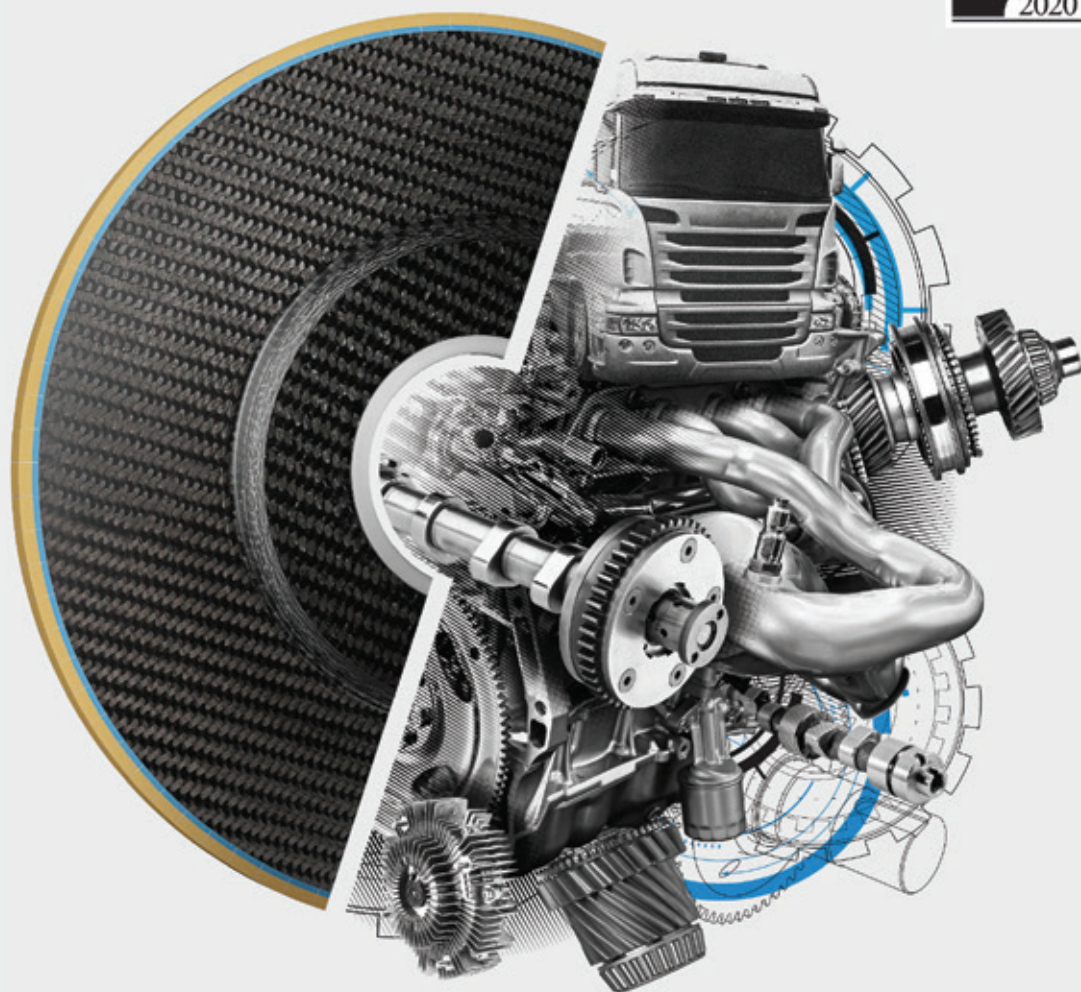
**BRIDGESTONE INDIA** was awarded the contract to supply its R156 Tubeless tyre for fitment in Tata Motors state-of-the-art electric buses. The Company will supply tyres for 150 Electric buses that are being manufactured by Tata Motors for Brihanmumbai Electric Supply and Transport (BEST).

"It is a proud moment for all of us at Bridgestone to partner with Tata Motors as they roll out their Electric buses for Brihanmumbai Electric Supply and Transport (BEST). Our Tubeless R156 comes from the Ecopia family of Bridgestone which provides a higher fuel efficiency, in this case lesser power consumption because of lower rolling resistance. This is eco-friendly tyre and therefore a suitable fitment for Electric buses that provide environmental protection because of the technology," said **Sunil Puri, Head Commercial Tyres Business, Bridgestone India**.



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By Continental Automotive

## THE CONNECTED TRUCK

According to the key findings in a study done by the technology company, Continental Automotive- 'Commercial Vehicle Study 2021: The Connected Truck -it has been noticed that satisfaction in the transport industry with the software used for managing drivers, vehicles, and logistics operations is growing, but more than a third of the companies surveyed are not using these solutions. Here is more:

Satisfaction in the transport industry with the software used for managing drivers, vehicles and logistics operations is growing, but more than a third of the companies surveyed are not using these solutions. This is a key finding of the study "The Connected Truck", which was carried out for the second time since 2016 by the renowned social research

institute infas on behalf of the technology company Continental. The percentage of non-users – most of them small companies – is roughly the same as in the previous survey. In a reflection of current developments in this sector, it was also shown that when it comes to equipment, logistics providers are mainly interested in driver-assistance functions and fuel-saving technologies. Vehicle tracking and software security are also considered important, but companies are careful to invest.

### INVESTING IN SOFTWARE

The industry needs tailor-made solutions – including for small businesses. A direct comparison with the previous study (2016) reveals a clear trend. Logistics and transport companies that use software solutions are now more satisfied with them overall. In particular, the companies surveyed rate software for monitoring driver behaviour roughly half a point better on a scale from 1 to 6 than in 2016. In day-to-day work, this software is also the most important kind, followed by software for planning driver deployment, vehicle management and logistics operations.

On the other hand, although many of the com-



panies surveyed use such software, many others use it rarely or not at all. More than a third – especially smaller companies – are non-users.

"Logistics companies that operate small fleets are just as much affected by rising costs and pressure to increase efficiency as large transport companies," says **Gilles Mabire, who heads Continental's Commercial Vehicles and Services Business Unit.** "But small companies are not yet convinced that software can significantly benefit them. The industry must address this issue and provide solutions that are tailor-made for these customers. It must also point out the advantages of existing solutions for smaller companies. If these big differences in use continue to prevail, the gap might grow between large, profitable companies that make extensive use of technology on the one hand and smaller ones with shrinking profits on the other."

### TECHNOLOGY REQUIREMENTS

Demand for driver-assistance systems and fuel-saving solutions has grown. As in the previous study (2016), about two thirds of the companies surveyed expressed a wish for more driver-assistance functions, and more than half would welcome further fuel-saving technol-





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ogies. In decreasing order of importance, they showed an interest in more comfort functions in the interior, tire pressure monitoring systems and systems for better communication with drivers. "These needs are in keeping with current changes in the transport sector," says Mabire. "New regulations have been introduced to improve road safety and reduce vehicle emissions. An example is the EU directive to reduce CO2 emissions. Consequently, the demand for these technologies will remain high, and it can be expected to increase."

In addition, cost pressure continues to be a major factor in the industry, so companies must save money where they can. Fuel accounts for a large portion of the costs in a fleet, and this is where logistics providers can achieve the biggest savings.

#### INVESTMENTS MUST PAY OFF QUICKLY

The pressure to cut costs and increase efficiency also plays an important role when it comes to willingness to invest. Logistics providers need their investments to pay off quickly. More than three quarters of the companies surveyed stated that investments in fuel-saving driving must pay for themselves within two years – and for companies with small numbers of vehicles this period is even shorter. "Their requirements are challenging, which means that significant benefits are expected from new technologies," says Mabire. "Manufacturers


and suppliers must therefore develop solutions that yield economic benefits within a short time."

#### HIGH SECURITY REQUIREMENTS FOR SOFTWARE, BUT LITTLE WILLINGNESS TO INVEST

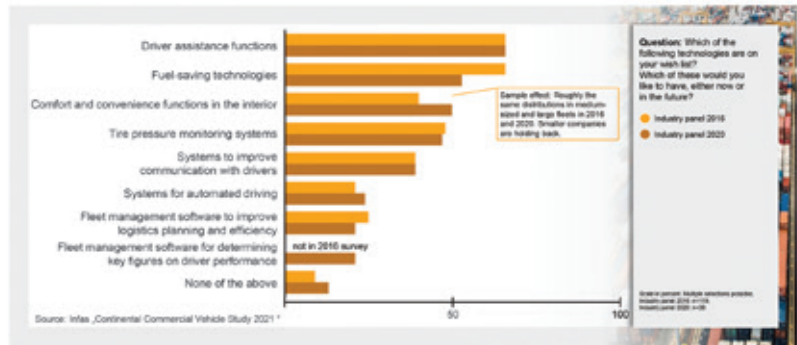
The survey participants also emphasised their need for software that fulfils high security standards. "Increasing data traffic has opened up greater potential areas of attack for cybercriminals," says Mabire. "The industry must offer solutions that are suitably sophisticated and practice-proven. But security costs money; it can't be provided for free." Only about half of the companies surveyed had already taken defensive measures for an attack on logistics or fleet management systems. Three quarters said they were not planning any major investments within the next six to twelve months.

"Real willingness to invest is not keeping up with statements about the importance of this topic. One reason might be that no transport company has yet been the victim of a cyberattack. But the growing number of attempted attacks is a sign that the problem is becoming increasingly important."

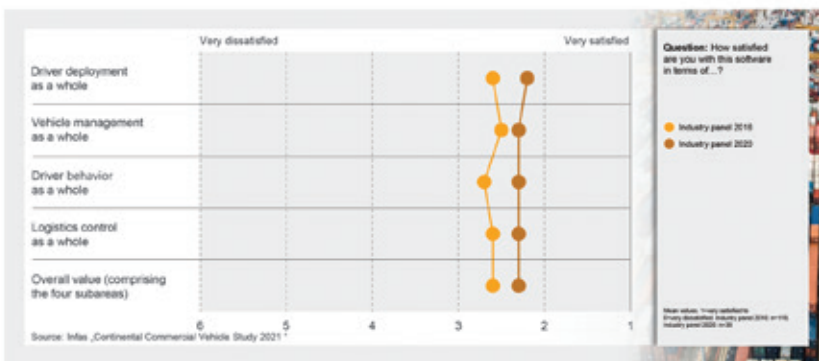
#### About the study:

Between February and May 2020, on behalf of Continental, the infas Institute for Applied Social Science surveyed the first and second management levels of small, medium-sized and large companies in the German logistics and transport industry, including trucking companies and logistics and transport companies. The scope of the study was reduced due to the Covid-19 crisis. A total of 45 companies took part in the survey, the results of which can be taken as an indication of trends. 

#### Technologies on wish lists of logistics providers: In Germany, two thirds want more driver assistance



#### Satisfaction of logistics providers with software as a whole: Better results overall than in 2016





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By Kruti Bharadva

## THE GOOD SIDE OF MODULARITY

Iscar takes us through the intricacies of modularity in machining and why it can be beneficial in certain areas

**M**odular systems have succeeded in finding their way into the lives of many people, from LEGO construction toys to IKEA's modular furniture.

In metalworking, typical examples of these systems are unit-built machines and modular fixtures. As for cutting tools, modular structures have proven their efficiency in these areas as well, and various tool manufacturers have developed their own modular products that are popular with their customers.

The main benefits of modularity are versatility and time-savings. A modular concept facilitates the quick and easy building of an optimally customised cutting tool using an assembly of standardised elements. Hence, customers don't have to order costly, specialised tools and wait months for delivery. If a tool is urgently needed for immediate production, a suitable solution is close at hand. This concept contributes to reducing warehouse stock and diminishing inventory lists that cut manufacturing costs.

However, the modular tool concept is not free of disadvantages. The main disadvantage is the decrease of rigidity; an assembly of several elements is not as stiff as an integral product and the assembled structure may lose accuracy when compared to a one-piece design.

When deciding on a particular tool, both advantages and disadvantages of the modular concept need to be considered. The customer is the only one that can decide which is the best tool for his needs based on production strategy, current production demands, or an immediate need of a tool. The cutting tool manufacturer should provide the customer with the means to make the correct choice and at the same time continue to develop modular products that achieve greater adaptability, rigidity, and accuracy. A glance at ISCAR's modular cutting tools makes it possible to showcase the design features of a product.

ISCAR's FLEXFIT family of tools (Fig 1) is the company's oldest line. The FLEXFIT adaptation principle is based on using a cylindrical connection for centring and a general-purpose standard metric thread (M8...M16) for securing. Simplicity and maintainability have made this rotating tool system very popular in the market. Today, FLEXFIT has a wide variety of shanks, adapters,



Figure 1

and heads with indexable inserts, which are mostly used in milling operations, such as machining complex 3D surfaces, slot, and grooves. The shanks are made from steel and cemented carbide. The carbide shanks increase rigidity, which substantially reduces vibrations especially in long overhang applications.

ISCAR's MULTI-MASTER is a family of rotating tools with exchangeable heads and comprises modular assemblies (Fig 2). The MULTI-MASTER concept features centring by a short precise taper, face contact and a thread of the unique profile. In turn, this enables a highly accurate and rigid connection that provides significant possibilities for modular tooling where elements include a wide range of shanks, extensions, adapters, and reducers, transforming MULTI-MASTER tools into powerful and reliable cutters.

The shanks are made of steel, cemented carbide with considerable stiffness, and heavy metal, which characterises good vibration-proof properties. The original MULTI-MASTER design focused only on solid carbide heads, however, within a very short time the family replenished with various heads carrying indexable inserts. It's not by coincidence that the recently introduced NEOLOGIQ and LOGIQ campaigns include MULTI-MASTER heads with inserts. Specially



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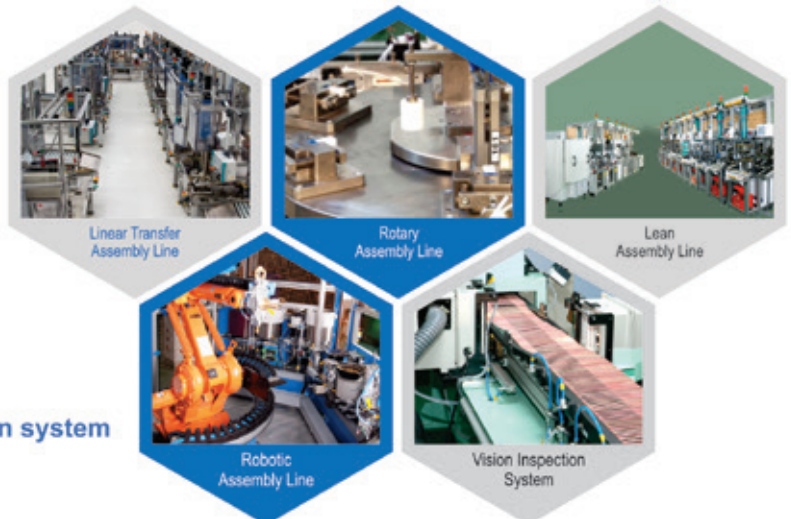
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Figure 2

designed MULTI-MASTER adapters and FLEXFIT mutual connections substantially expand the application range for both families.

For Turning operations, ISCAR developed a modular system that comprises round bars and exchangeable heads with indexable inserts. The bars and heads are assembled with the use of a serrated-face connection (Fig. 3). The system was initially intended for boring, although when selecting a boring bar, the ratio of a required bar overhang to the bar diameter strongly influenced the choice of the right tool.

There are three types of bars to cover the complete range of boring applications for overhang-to-diameter ratios up to 10. Steel bars enable machining with ratios up to 4. Cemented carbide bars facilitate boring with ratios up to 7. However, when machining where a higher overhang is required, the use of a stiffen carbide shank can be somewhat limited. Hence, for ratios 7 to 10, ISCAR developed an anti-vibration bar that significantly reduces and eliminates vibrations when cutting. The key component of these bars is the damping mechanism comprising a heavy mass supported by spring elements.

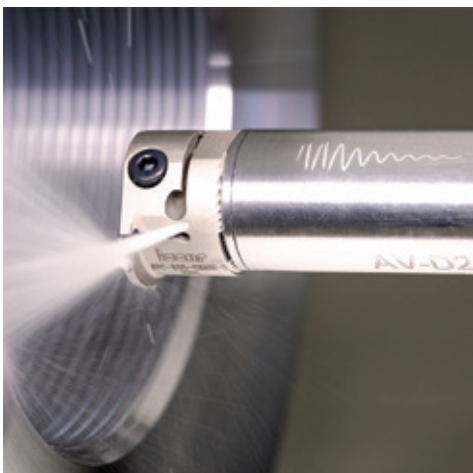


Figure 3

The success of the bars with exchangeable heads in the boring line led to the introduction of ISCAR's design concept in various turning, grooving, and threading applications. In addition, the newly developed bars with a serrated-face connection and a polygonal taper shank increase the application field of the system.

Modularity provides a valuable opportunity for the customer to configure a tool in an optimal manner. In today's modern digital world, a great way to achieve this effectively is with a virtual assembly in a CAM software environment. The digital twin representation of a cutting tool based on ISO 13399 standard becomes an integral part of the tool as a product, and leading tool manufacturers have already expanded their portfolios with appropriate virtual counterparts and instrumenta-

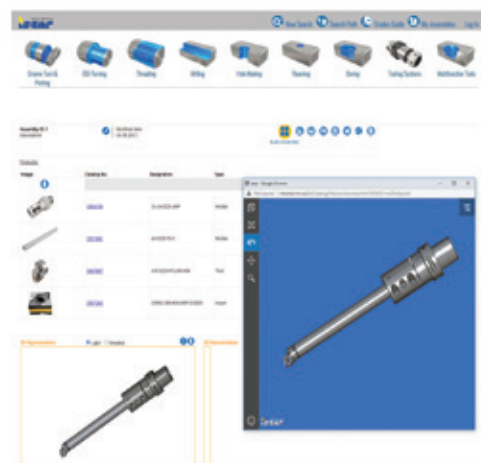



Figure 4

tion to work alongside. ISCAR's tool assembly options, which are incorporated in the company's electronic catalogue, is a good example.

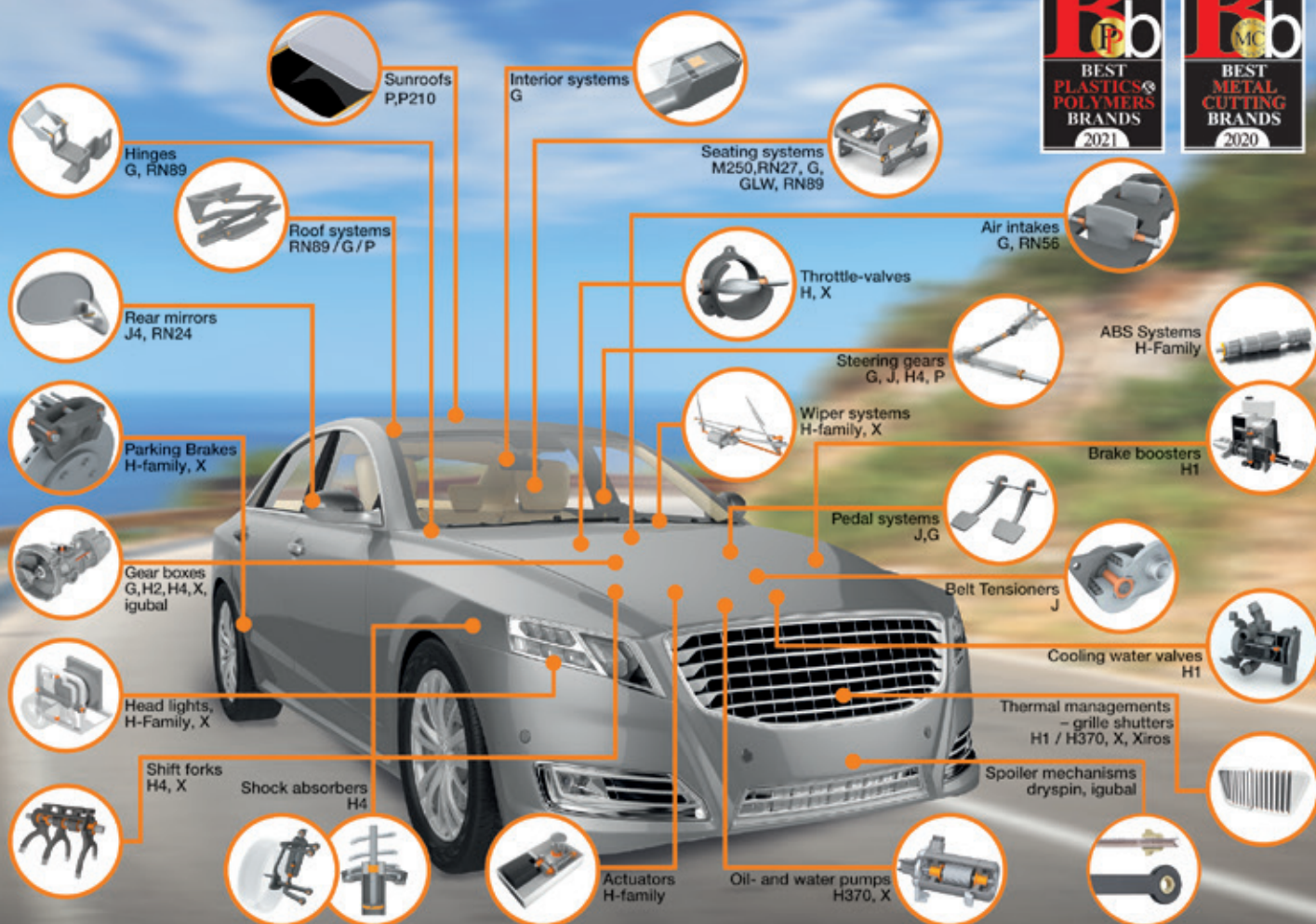
These tool options represent a highly valuable instrument for preliminary processes in selecting tools at the design and planning stages of machining. In modular tooling, they significantly improve the way of finding the most optimal tool configuration, prevent errors on the shop floor, and save time and costs.

Modular cutting tools are more common in the metalworking sector and feature a wide range of products for the success of small-to-medium run productions, die, and mold making. A flexible modular concept ensures the ability to quickly find effective tool solutions when a product program is constantly changing. This impact of diminishing tool inventory attracts large manufacturers. Consequently, new developments focusing on reliable, accurate, and digital modular tools to meet industrial needs will remain relevant and important in the market .



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By Gaetan Bouzard, Industry Solutions Manager, Heavy Equipment, Siemens Digital Industries Software

## SIMULATION FOR AUTONOMOUS HEAVY EQUIPMENT SAFETY

With an increasing number of Advanced Driver Assistance Systems (ADAS) features to improve operator safety, such as remote-control driving/actuation or fully autonomous driving, the interactions between the operator and the vehicle are being reshaped- here is a brief look at how this is being done

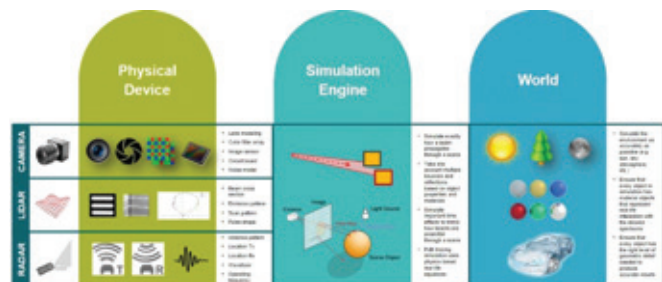
The heavy equipment customer's main objective is to increase their machine efficiency in the field by producing more with less while keeping a strict eye on operator safety. But with machines that become more specific and more complex, guaranteeing people safety and machine integrity also depends a lot on the operator's skills.

Partly or fully automated machine operation is a solution that most of the industry stakeholders are already investigating to increase safety and improve operability. Consequently, they can lead the digital revolution we face today.

With an increasing number of Advanced Driver Assistance Systems (ADAS) features to improve operator safety, such as remote-control driving/actuation or fully autonomous driving, the interactions between the operator and the vehicle are being reshaped. Nevertheless, working on heavy equipment autonomous operations means partially or fully replacing a skilled operator. These operators bring four main elements to their position: his/her senses, his/her brain, his/her experience, and the environment they interact with.

### THE ROLE OF SIMULATION AND OF THE DIGITAL TWIN

Model-based systems engineering (MBSE) is an ap-



proach that fits perfectly with the development of autonomous vehicles – many companies have been using it for years. Today, we've entered a period of intense innovation and manufacturers are under tremendous pressure to reduce program costs. We see more system autonomy to deliver new mission capabilities leading to more interactions between the thousands of systems, interfaces and components on a single heavy machine.

When it comes to product design and performance engineering, the MBSE approach brings the so-called 'Digital Twin' of the product/vehicle as well as its environment. It allows engineers to virtually explore the autonomous vehicle designs, as well as accelerate advanced control verification and validation, which can be tough for vehicle durability and expensive if pursued using a classical physical testing approach- even if you work with the state-of-the-art data acquisition solution dedicated to ADAS.

### AUTONOMOUS HEAVY EQUIPMENT NATURAL ENVIRONMENT SIMULATION

When it comes to the natural environment modelling, the simulation solution should be open and flexible enough to allow the import of any type of:

- off-road vehicle geometric models,
- geometric terrain with a relevant drop, slopes, and obstacles like rocks, trees, pedestrians, other vehicles
- harsh conditions implied by the natural environ-



Partly or fully automated machine operation is a solution that most of the industry stakeholders are already investigating to increase safety and improve operability. Consequently, they can lead the digital revolution we face today



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Any relevant obstacles associated with the scenarios of interest can be implemented as part of the environment. The objective is to analyse the sensor's detection and object recognition algorithm performances

ment seasonality (rain, fog, dirt, day & night, sunset or sunrise, etc.)

This allows to perfectly match with conditions regularly encountered by heavy-equipment vehicles.

To create a good virtual digital twin of the field environment, Simcenter Prescan, the solution developed by Siemens Digital Industries Software (DISW), ensures objects have a good enough geometric description and material property description by considering what is important for each sensor modality: camera, LiDAR, radar.

Additionally, Siemens DISW teams have been working in the past years on the coupling between its environment and its system simulation software, as well as investing in improved ground modelling technology. The Simcenter Amesim Track generator feature is an example. This feature allows the implementation of bumpy soil, with a certain penetration coefficient to consider the impact of the soil on autonomy sensor performance at vehicle low or high speed. The interactions between vehicle dynamics, traction on soft soil and the powertrain are crucial.

Any relevant obstacles associated with the scenarios of interest can be implemented as part of the environment. The objective is to analyse the sensor's detection and object recognition algorithm performances. Rocks, trees, buildings, crops, pedestrians, wildlife, infrastructures, etc. are elements that are relevant for our autonomous heavy equipment simulation environment, adding object motion when necessary.

#### PHYSICAL SENSOR MODELLING

When it comes to the replacement of the operator senses, one question summarises the engineering challenges of implementing sensors like cameras, radars, LiDARs: How can you predict what the machine will or will not sense? Consider that a physical sensor modelling solution is mandatory for a simulation platform dedicated to autonomous operations development. Indeed, optimisation of the sensor design and their configuration can be done virtually to a large extent.

From basic ground truth sensors (that identify all objects that appear in the sensor range), through probabilistic sensor models (that allow for fault insertion and filtering), up to physics-based sensor models (for raw data simulation), we can support engineers with balancing accuracy and computational time of sensors simulations based on mission/scenario requirements,

for an improved engineering workflow efficiency. To have a robust sensor simulation, it is important to take into consideration three key components

- The physical sensor device
- The world
- The simulation engine

The simulation engine is what brings together the physical device and the world. It allows us to handle important effects based on real-life physical equations. For example, for the radar and the LiDAR simulation, an in-house ray-tracing framework accurately captures how light or a beam is propagated through a scene got developed in Simcenter Prescan. We believe that having a high accuracy simulation engine is important to ensure that developers, testers, integrators, and authorities can trust Siemens as a key partner.

On top of the sensor modelling, engineering departments can use simulation to optimise the machine design itself for better sensor performances. For example, to prevent sensor soiling or too much electric/electromagnetic disturbance from a metallic bumper covered by mud or rain, both of which impact heavy equipment vehicles daily and yet are not considered enough in current solution portfolios

#### HEAVY EQUIPMENT VEHICLE MODELLING

A skilled operator has hours of machine operations background experience. To improve the performance of the autonomous operations of the vehicle, it is mandatory to include accurate dynamics within the control virtual training, verification, and validation process. From soil and tire model to the vehicle dynamics, the more physics you implement the more robust your control will be, improving operability and safety.

The automation of the machine positively impacts other attributes. Indeed, it enables to better control the energy distribution, or yet powertrain actuation resulting in improved powertrain durability, keeping the machine within the safety zone of loads.

Simcenter simulation platforms, like Simcenter Amesim system simulation software and Simcenter 3D Motion, propose a large heavy equipment vehicle modelling capability: from construction equipment, transportation, agriculture, to military intervention autonomous robots, including the relevant vehicle and powertrain dynamics for each application. Simcenter Amesim, for example, can connect to the natural environment model using smart co-simulation FMI/FMU





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technology. Engineers can thus consider the realistic vehicle dynamics impact on sensor and algorithm performances along the development workflow.

The machine type does not limit itself to the ground vehicles. Siemens DISW also proposes the integration of autonomous drones, including flight dynamics. That capability is usually used for terrain recognition, crop identification, and supporting to autonomous vehicle decision strategy.

#### AUTOMATE AND ACCELERATE THE VERIFICATION WORKFLOW

A key element leading to a significant reduction of the cost of autonomous heavy equipment simulation is the automation of the algorithm verification and validation workflow. Indeed, automating the validation of algorithms performance under various weather or lighting conditions, or simply making sure that the workflow covers all possible scenarios, allows an improved coverage of your perception algorithm validation, not talking about development time and cost-saving associated with this automation.

Sensor and vehicle configuration, sensor mounting, and vehicle design exploration can also be automated. In the example above, Simcenter HEED, Siemens DISW design space exploration, and optimisation software package allow this performance verification automation.

The objective is the deployment of the virtual verification framework of ADAS and autonomous vehicle systems, allowing easy scenario generation, efficient critical case identification, and systematic virtual verification of requirements. In other words, automate and accelerate the scenario set-up, the interaction between the different simulations, and the post-processing of relevant metrics, for a quick and efficient Key Performance Indicators (KPIs) analysis. 

*Gaétan is Heavy Equipment industry lead at Siemens Digital Industry Software. His responsibilities consist of capturing Siemens customers' needs to feed solution portfolio strategy and drive selected integrated solution prototyping as well as innovation initiatives, to make sure Siemens Simulation & today Test solutions answer the engineering challenges of tomorrow.*

## HEXAGON AND ETQ CONNECT QUALITY SOLUTION

Hexagon's Manufacturing Intelligence division, a global leader in sensor, software, and autonomous technologies, and ETQ, a leading quality management system (QMS) provider, have announced a partnership to assure quality from concept to customer, enabling improved data-driven decision making throughout the entire process, producing better, more consistent products in less time and with less resource and enabling progressive smart manufacturing strategies.

The partnership connects Hexagon's vendor-agnostic inspection and measurement solutions with ETQ's stakeholder-connecting QMS to produce a rich digital thread that automatically captures quality control and assurance processes that are currently performed manually. By applying machine learning and artificial intelligence throughout design, production, customer service and support the cloud platform also helps users to rapidly identify and analyse issues by producing actionable insights.

**Rob Gremley, CEO of ETQ**, said: "Manufacturers in a range of industries – automotive, life sciences, heavy manufacturing and beyond – will derive immediate value from the integrated data thanks to higher product quality and fewer defects, scrap, rework or recalls. As the Smart Manufacturing environment evolves, this level of data-driven automation and integration will deliver the ability to maximise the quality

and efficiency of the complete manufacturing lifecycle and create the foundation for autonomous manufacturing and true digital transformation."

**Paolo Guglielmini, President of Hexagon's Manufacturing Intelligence division**, said: "Consumers perceive quality based on their experience. It is the manufacturer's brand reputation, it can add significant value to a product, and it combines every aspect of the product lifecycle. Our customers trust our solutions to connect the shop floor to the top floor with pervasive quality assurance, and this new addition to our ecosystem will further support their journey towards Industry 4.0."

An example of how the partnership will benefit customers today is in resolving a nonconformance incident, leveraging inspection and measurement data collected and managed by Hexagon's Q-DAS and eMMA software solutions with full traceability and best in class Statistical Quality Control (SQC) and Analytics, and integrated with ETQ Reliance's QMS.

Hexagon's existing quality control solutions can identify a nonconformance from, for example, the Production Part Approval Process, Failure Modes and Effects Analysis, or customer feedback, at which point the digital connection between that manufacturing solution and the ETQ QMS will autonomously generate a nonconformance report (NCR) without human intervention.



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**Global  
Conference on  
Plastics in  
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## CELEBRATING THE UNSUNG HEROES OF MANUFACTURING

A day to remember – that was what the 7<sup>th</sup> edition of The Machinist Super Shopfloor Awards were all about. And of course, bringing together the manufacturing fraternity to recognise and honour the true heroes who work tirelessly at the very heart of manufacturing – the shopfloor workers! Here is a detailed coverage of the event.

By Kruti Bharadva

When one sits down to have a serious discussion on the Indian manufacturing industry, one may discuss facts such as the latest IHS Markit India Manufacturing Purchasing Managers' Index (PMI)- a survey which showed that the headline index stood at 53.7 in September, up from 52.3 in August. A bounce back in new

orders and output sub-components of the PMI aided the up move in the headline index. Or one could discuss that rising fuel, raw material and transportation prices pushed the overall rate of input cost inflation to a five-month high. Output prices, however, rose at a slower rate. Or maybe the fact that there is evidence suggesting that parts of the manufacturing sector—







most notably carmakers—have been cutting production due to supply constraints. Little wonder then that business confidence among manufacturers has not seen much improvement. Furthermore, for Q2FY22, the PMI averaged at 53.8, an improvement over the 51.5 in the last quarter. Also, despite the gradual improvement in the health of the Indian manufacturing sector, the employment scenario is dismal. The survey showed little change to manufacturing sector employment in September, as many firms reported the compliance of government guidelines surrounding shift work.

All these are valid, important topics and provide a holistic scenario of the Indian manufacturing health—yet, amidst all the ‘facts and figures,’ one may forget the core, the very heart of manufacturing—The Shopfloor!

The Machinist magazine, part of Worldwide Media Ltd, a Times Group company, organises the Super Shopfloor awards to recognise excellence at this very fundamental manufacturing level. This year, the 7th edition of The Machinist Super Shopfloor Award ceremony was held on the 23rd of September, at the Taj Lands End, Mumbai. The Machinist Super Shopfloor Awards is India’s first and only red-carpet ceremony for the country’s discrete manufacturing industry. Started in 2015, the platform has created a benchmark through its credibility, industry acceptance and popularity over the last six years.

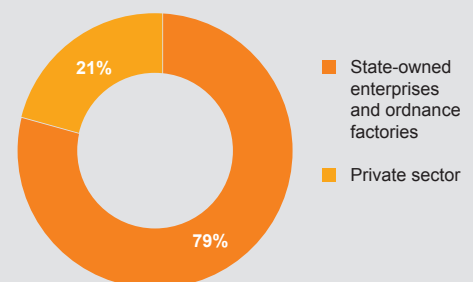
#### THE PROCESS

Nominations are invited from shopfloors (and not

companies). It is an open and fair platform that truly brings out the best of Indian manufacturing. Eleven different categories address the key measurable parameters for a manufacturing plant’s performance. These categories are:

- Safety
- Productivity
- Digital Manufacturing
- Innovation (Product/Process)
- Green Manufacturing
- Machining Excellence
- Quality
- Human Resources (HR)
- Corporate Social Responsibility (CSR)
- Supply Chain Management (SCM)
- Maintenance

**Defence Production in India by Sector (%)**





The Machinist Outstanding Contribution to the Manufacturing Industry:  
Shri Subhash Desai, Minister for industries and Mining, Government of Maharashtra

*The partners for the 7th edition of the Super Shopfloor Awards were:*

Presenting Partner - Ace Micromatic Group

Powered By Partner- MotulTech India

Tooling Partner- Forbes & Company with the brand Totem

Metrology Partner- Carl Zeiss India

Associate Partner- igus India

Associate Partner- Tyrolit India Superabrasive Tools Pvt Ltd

#### AN AUSPICIOUS BEGINNING

The event began with the auspicious lamp lighting ceremony, conducted by **Mr TK Ramesh, Managing Director, Micromatic Machine Tools Pvt. Ltd;** **Mr Yatendra Kumar, Business Head, MotulTech India;** **Mr. Ravi Prem, CoO Of Forbes & Company;** **Mr Dilip Gaur, Managing Director, Grasim Industries;** **Mr Rishi Sutrave, Brand Publisher- B2B Division, Worldwide Media.** The lamp lighting ceremony was followed by the inspirational opening note by the Machinist's very own **Rahul Kamat, Editor- B2B Division, Worldwide Media.** In his own words:

*48 TRUMPS 24!*

*Organisations are compartmentalised into two parts. There is a 24 part and 48 part, and the 24 and the 48 refer to the ambient temperature at which those two parts operate. So, 24 degrees is the head office, the corporate office, the folks inside the offices who take decisions and make policies. And the 48 degrees are the folks out there in the marketplace, the sales guy, the supply chain, the people working in factories and plants, the people who work at 48.*



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*The vital point is that businesses depend on the 48s for their success. And I think, most of the CEOs present here will agree with my point. And if you want to be a successful business, you got to make sure the people who operate at the 24-degree temperature are always keeping the 48-degree folks in mind. What a great thought it is, isn't it?*

*The Machinist also echoes this thought. And that's why the Machinist team has put together this brilliant on-ground event – The 7th Super Shopfloor Awards 2021 where we are felicitating the most deserving of the manufacturing sector – the essential 48 degree people.*

*Why is the manufacturing sector so vital to the Indian economy, one may ask?*

*The sector's gross value added (GVA) at current prices was estimated at US\$ 348.53 billion as per the second advanced estimates of FY21. The India Manufacturing Purchasing Managers Index (PMI) reached 48.1 in June 2021 from 50.8 in May 2021. The manufacturing GVA accounts for 19 per cent of the country's real gross value added.*

*According to the Ministry of Statistics & Programme Implementation, India's industrial output that is measured by the Index of Industrial Production (IIP) stood at 116.6 in May 2021. In May 2021, the industrial output indices for mining, manufacturing and electricity sectors stood at 108.0, 113.5 and 161.9, respectively. As per the latest survey, capacity utilisation in India's manufacturing sector stood at 66.6 per cent in the third quarter of FY21.*

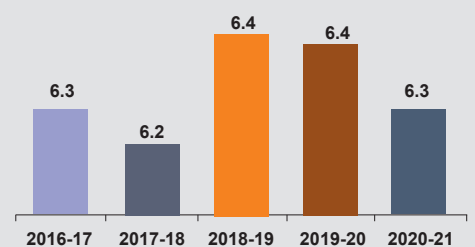
*The manufacturing component of the IIP stood at 116.9 between April 2020 and March 2021. According to the Ministry of Statistics & Programme*

*Implementation, India's industrial output measured by the Index of Industrial Production (IIP) stood at 143.4 in March 2021.*

*If there is one thing which these numbers show is that the heartbeat of Indian manufacturing is not inside air-conditioned conference rooms or inside boardrooms – the heart, the very soul of manufacturing is on the Shop floor. And thus, we take today to honour the shopfloors, the heartbeats of the nation.*

*And if you want to be a successful business, you want to make sure that you are paying heed to what's happening in that 48-degree environment. If you're making a policy inside a head office, try and ask yourself, what does this mean for the folks in 48-degrees? If you're trying to make a great strategy, and you might think you've got the world's best strategy sitting inside your boardroom make sure*

**Value of Production by Defence PSUs  
(US\$ billion)**





The Machinist CEO of the year 2021: SS Kim, Managing Director, Hyundai Motors

*you've tested it out there in the 48-degree environment, essentially your shop floor.*

**RESPONSIBILITY- THE ABILITY TO RESPOND!**  
Mr TK Ramesh, Managing Director, Micromatic



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in  
Productivity**

**Machine Tools Pvt. Ltd**, fondly known as TKR to the industry took to the stage to give his opening remarks next. He began by thanking every person present, taking the time out to be a participant. He went on to briefly describe the Micromatic group's journey:

*Thank you to our customers for making us the largest machine tool group in the country, we are what we are today – adding over 5000 CNC machines annually to the manufacturing ecosystem- because of our customers. We make our machines with indigenous technology, indigenous design and indigenous processes. 'Make in India' is relatively new but we have proved that 'it can be made in India' and have been making in India since the last four decades.*

*It is important to make sure, no matter what business we are in, to be continuously adding value to your customer. Our growth is only possible through the growth of the customer. Responsibility can be beautifully defined as the ability to respond and we have done so and keep doing so for our customers.*

*Indian manufacturing transformed in the 1980's- there was an automotive revolution and along with it came a process revolution. Instead of individual excellence, the spotlight fell on process excellence- inside which fell training, learning and ensuring that processes were stable, and thus began the CNC revolution.*

*We are privileged to be associated with The Machinist and Worldwide Media for these awards and to give back to the shopfloor warriors.*

#### EDITORIAL CHOICE AWARDS

The first set of awards for the event were the prestigious Editorial Choice Awards. These awards were conceptualised to recognise the efforts of amazing manufacturing professionals whose vision and leadership have set a benchmark for others. **Sunita Quadros, Chief Business Officer- Times Strategic Solutions Limited**, felicitated the winners of the Editorial Choice Awards







for 2021. These were:

**The Machinist Sustainable Manufacturer' For 2021 was awarded to Bridgestone India.** For over 80 years, Bridgestone has been dedicated to helping customers on their journeys with a passion and innovation delivering reliability, safety and performance, keeping sustainability right at the top of its ethos. Mr Yoshimasa Kihara, Technical Director, Bridgestone India, shared a few words: "I am very honoured to be here today, accepting this award on behalf of my 1.4 lakh team mates, who are tirelessly working towards our company mission- embracing our responsibility towards future generations. We are proud to have our efforts recognised and our mission and vision recognised."

**'The Machinist Next Generation Leader 2021 was awarded to -Pragun Jindal Khaitan, Vice Chairman & Managing Director, Jindal Aluminium Ltd.**

Pragun joined Jindal Aluminium Limited as its whole-time Director in the year 2013. Under his leadership, the parent company grew at an attractive average annual rate of 25 per cent between 2013-2017. Also, in this time, he successfully stabilised production at JAL's aluminium flat rolled product's plant, taking it from inception to being the second-largest supplier of aluminium flat-rolled products in India within four years. He was subsequently promoted to the position of Managing Director in 2017. In the year 2020, he was given the additional responsibility of vice-chairman of the company.

Pragun, who wasn't able to attend the event, commented via video, "I am truly humbled and pleased to accept this award. Thank you to the entire team of the Machinist and WWM, you have truly created an inspirational platform for the manufacturing industry."

"There is a lot of work behind the scenes done by my team at Jindal aluminium and of course none of it would have been possible without the support, guidance and encouragement of my grandfather, Dr Sitaram Jindal (Chairman and founder of Jindal Aluminium). He gave me the platform to experiment and try out new things. An enormous salute to the rest of the participants and let such events continue to inspire us to 'Make In India' Thank you once again," he concluded.

**The Machinist CEO Award For 2021 was awarded to Mr Seon Seob Kim, CEO & Managing Director, Hyundai Motor India Ltd.**

Mr. SS Kim is the MD & CEO of Hyundai Motor India Ltd since Dec 1, 2018. He joined Hyundai Motor Company in January 1992. A keen strategist with 27 years of diversified Global experience, Mr S S Kim has worked in different markets of Hyundai Motor Company. Before Hyundai Motor India, he was Head of Business Operations Strategy Division of Hyundai Motor Company headquarters in Seoul.

With Thought Leadership and Analytical perspective, Mr. Kim has led many global roles for successful implementation of long-term strategies of Corporate Planning, Business Operations & Strategy Planning,



The Machinist Next Generation Leader 2021: Pragun Jindal Khaitan, VC and Managing Director Jindal Aluminium Ltd

Procurement and Audit Division including marketing operations at Hyundai Motor America.

"It is with sincere appreciation and gratitude that I accept this prestigious award. I thank the jury, The Machinist and the team at WWM. I want to also thank all our business partners and customers for their trust and

support. We shall continue to serve India and transform its mobility landscape in the coming years with innovative mobility solutions. Thank you once again," commented Mr Kim in his acceptance speech.

It is our great honour to proudly present the award for Outstanding Contribution To Manufacturing Industry To **Shri Subhash Desai, Minister For Industries And Mining, Government Of Maharashtra.**

Shri Subhash Desai was an MLA in 1990, 2004 and 2009 from the Goregaon constituency and was elected to the legislative council in 2016. He has played a pivotal role in felicitating grand events such as 'Make in India' and 'Magnetic Maharashtra convergence'. Under his esteemed leadership, government permissions required for the industry have been brought down from 76 per cent to 25, making the state one of the most industry-friendly states.

"I am really thankful to Worldwide Media for honouring me with this award and I greatly appreciate its activities in celebrating machine excellence over the past six years," began the honourable minister in his acceptance speech.

"Maharashtra is leading development in the country, and we are putting in our best efforts to maintain this lead and bettering ourselves by making reforms in ease of doing business. We are introducing new policies







which are industry friendly and I am happy to note that the industry itself has been supportive of these government policies,” added Mr Desai.

The Honourable Minister went on to describe the state of Maharashtra’s- ‘Magnetic Maharashtra’s’- industrial landscape and said that the ‘wheels’ have begun rotating at a normal speed and are slowly gaining more momentum as things normalise.

#### GREAT MINDS TOGETHER! THE PANEL DISCUSSION

A good panel discussion can spark an interesting conversation and even more interesting viewpoints between a group of experts and thought leaders, allowing the audience to learn from their discourse and interaction. The Super Shopfloor 2021 panel discussion fulfilled this and more! Moderated by **Rahul Kamat, Editor, B2B Division- Worldwide Media**, the other panellists were:

- **Shri Subhash Desai, Minister of Industries and Mining, Government of Maharashtra**
- **Mr T K Ramesh**, a staunch pillar of the manufacturing industry and the **Managing Director of Micromatic Machine Tools Pvt. Ltd.**
- **Mr. Deepak Gaur, Managing Director of Grasim Industries Limited & Business Director of the Group’s global Pulp & Fibre Business and also Director of Aditya Birla Management Corp. Private Limited**, the apex corporate body that provides strategic direction and vision to the group

companies. Mr Gaur enjoys working in a multi-cultural global business environment, is a firm believer in the Power of ‘Teams’ and is extremely passionate about sustainability, climate control and circular economy agendas.

- **Mr Uday Narang, Chairman, Anglian Omega Group and Omega Seiki Mobility.** Mr Narang presently heads Anglian Omega Group and is taking a lead role in expanding Asian and ASEAN markets in Automotive Parts, Steel & Infrastructure projects. Mr Uday Narang has more than 15 years of experience in the industry which has given him an incisive understanding of the operations of the company as well as great insight into the larger trends. Uday Narang is a firm believer in collaborative leadership.

The panel discussion began on a light-hearted, yet interesting note as Rahul asked the panellists to describe something crazy or creative, they have done, which helped them in their professional journey. The Honourable Minister’s quip, “Joining the Government!” drew chuckles from the audience.

“Jokes aside, being part of the government has come with immense opportunity and privileges. One can dream and ponder and not get the opportunity to implement. For me this is an opportunity to implement, to reach out to people and assist them in realising their dreams of setting up industry or expanding business,” shared Mr Desai.

For Mr Narang, it was the launch of one of In-



**Sustainable Manufacturer 2021: Bridgestone India**

dia's first electric commercial vehicles, the SCV MIKA. For Mr TKR, leaving a secure multinational company job and joining a start-up and for Mr Gaur, interesting enough, a conference in the Rajasthan desert, the presentation being made on the back of a camel!

"My then boss said, trust me, and that is a lesson that has stayed with me for life- leadership has to inspire trust," shared Mr Gaur.

#### *Consensus On Make In India*

Since 2014, the 'Make in India' initiative has been the focus of every manufacturing think tank or discussion. But what was the ground reality on making 'Make in India' work for India?

"We talk about the government can do but never about what we can do as the manufacturing fraternity. This is the time to work together and improve things like speed to market to gain that global manufacturing advantage," commented Mr Gaur.

"Conflict is an important aspect for development, without which we are basically stagnant. Thus, while consensus on an initiative is important, it is even more vital to have an understanding of different view points on the initiative. Roads may be different, but the goal is the same- bringing

India as a strong contender as a global manufacturer," Mr TKR shared this interesting view point.

Mr Narang commented, "I am a big believer in Make In India but would like to add that alliances are more important, working together is what it is all about. We, as Indians, have to be open for Make in India but align the processes of making it a reality. The pandemic has shown us this reality."



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### *China Plus One – Where Does India Fit In?*

China Plus One, also known simply as Plus One, is the business strategy to avoid investing only in China and diversify business into other countries. The COVID-19 pandemic laid bare the need for companies to diversify

supply chains outside of China. This has given rise to the “China plus one” strategy, in which multinational firms are moving to other countries.

India stands out as an attractive option thanks to its strategic location, a large domestic market, skilled labour, low labour costs, etc. Will India continue to attract foreign companies as a diversification option? According to the China Business Report published by the American Chamber of Commerce of Shanghai, the Indian subcontinent was among the top four options for relocation or diversification in 2019 and 2020 for American companies, along with Southeast Asia, the US, and Mexico. India has also modestly benefited from trade diversion in machinery and consumer goods such as toys and furniture due to the US-China

Categories	Winner (Large)	Runner Up (Large)	Winner (SME)	Runner Up (SME)
HR	Skoda Auto Volkswagen India Pvt Ltd, MIDC Chakan	Vitesco Technologies India Pvt. Ltd, Pune, Talegaon	GKN Fokker Elmo India Pvt Ltd, Pune Chakan	Supreme Treon Pvt Ltd Ahmedabad, Gujarat
CSR	Piaggio Vehicles Pvt Ltd Baramati	Varroc Polymers Pvt Ltd Plant I, Takve Budruk	Omega Seiki Mobility IMT Faridabad	RSB Transmissions Limited Pentagaon, Hadapsar
Digital Manufacturing	Tata Motors, Gear Factory Pimpri Pune	Fiat India Automobiles Private Ltd, Ranjangaon, Pune-Powertrain Division	Supreme Treon Pvt Ltd Irrungattukottai	Cooper Corporation Pvt Ltd Satara, Plant J-2a, Machine Shop
Productivity	Durovalves India Pvt Ltd Waluj, Aurangabad	Milacron India Pvt Ltd-Unit 2 Ahmedabad, Gujarat	Cooper Corporation Pvt Ltd Satara, M60	RSB Transmissions Limited Pantnagar
SCM	VE Commercial Vehicles Ltd, Bhopal MP	Tata Motors Ltd. CVBU Pune	Supreme Treon Pvt Ltd Ahmedabad, Gujarat	Stanadyne India Pvt Ltd Thiruvallur
Innovation	Tata Steel BSL, Khopoli	Tata Hitachi Construction Machinery Company Pvt Ltd Kharagpur, West Bengal	Stanadyne India Pvt.Ltd Thiruvallur	GKN Fokker Elmo India Pvt Ltd, Pune Chakan
Machining Excellence	Mahindra & Mahindra Ltd Rudrapur, Uttarakhand	Varroc Engineering Ltd-Metallic BU, Pantnagar	Supreme Treon Pvt Ltd Oragadam	Stanadyne India Pvt Ltd Thiruvallur
Green Manufacturing	Bajaj Auto Ltd Chakan, Mahalunge	Varroc Polymers Pvt Ltd. (Plant I), Takve Budruk	Duravit India Pvt Ltd Tarapur, Gujarat	Supreme Treon Pvt Ltd Sanand, Gujarat
Safety	Bridgestone India Pvt Ltd Chakan, MIDC	Bajaj Auto Ltd, Chakan, Mahalunge	Covestro, Ankleshwar	PPAP Automotive Chennai
Maintainance	Timken Engineering Research India Pvt Ltd	SKF India Ltd, Pune	PPAP Automotive Ltd Chennai	Duravit India Pvt Ltd Tarpur Gujarat
Quality	Hyundai Motor India Ltd Chennai Engine Shop 3	Sany Heavy Industry Pvt Ltd Chakan, Pune	Kranti Industries Limited Mulshi	Omega Seiki Mobility Imt Faridabad



**The Machinist Super Shopfloor of the Year - large: Hyundai Motor India Limited, Chennai**

trade war, though not to levels as significant as those in Southeast Asia.

"As a textiles person, I can comment that the textile industry and the entire world is trying to realign their supply chain away from China. To take advantage of this, India needs to firstly make its own supply

chain agile, adaptive and aligned. Furthermore, it has to be a supply chain capable of managing disruptions extremely fast. Secondly the industry has to be collaborative to take advantage of this opportunity," commented Mr Gaur.

#### *Cost Of Manufacturing In India*

Developing globally competitive manufacturing hubs represents one of the biggest opportunities for India to spur economic growth and job creation this decade. A report by McKinsey & Company has identified eleven manufacturing value chains with strong potential to operate in international markets, power growth, and provide long-term employment and skill pathways for millions. Their potential comes from several factors. First, these value chains are well positioned to capitalise on India's advantages in raw materials, manufacturing skill, and entrepreneurship. Second, they can tap into four market opportunities: export growth, import localisation, domestic demand, and contract manufacturing. Lastly, the 11 value chains stand to benefit from a fresh, focused approach to industrial policy.

India's natural resources (for example, iron ore, bauxite, high solar insolation, and cotton) and low-cost labour are a boon to makers of basic metals, textiles and apparel, renewable energy, and chemical products. The country's large numbers of well-trained workers lend strength to skill-intensive value chains such as pharma-



**Excellence in Machining**







ceutical formulations, capital goods, and automotive components. And many manufacturing value chains in India operate in close proximity to strong domestic markets. The makers of fast-selling technology products, for example, enjoy ready access to millions of Indian consumers.

"India has the fourth largest stock market in the world, and we have come a long, long way. We are diverse, we have the technology, we have the workers, the skills, the largest 'youngest' population in the world. If that is not an immense opportunity, then I don't know what is!" stated Mr Narang.

### The Machinist Super Shopfloor Awards 2021 Jury

- **Mr Vikas Kadlag**, *Managing Director, Molten Metal Systems*
- **Mr S K Sinha**, *Coo And Senior Vice President, Setco*
- **Mr Bireshwar Mitra**, *Former Executive Director, Sharda Motor Industries Ltd*
- **Professor Madhu Ranjan**, *Emeritus Professor, College Of Engineering Pune*
- **Mr Hemant Watve**, *Ceo And Md, Wilo Mather And Platt Pumps Pvt Ltd*
- **Mr Ramendra Kumar Sharma**, *Co-Founder And Managing Director, Daejung Moparts Pvt Ltd*
- **Mr Rajeev Mittal**, *Chief Information Officer, Endurance Technologies Ltd*
- **Mr Abhijit Janugade**, *Head- Production And Maintenance, Draexlmaier Manufacturing India*
- **Dr Dhananjay Kumar**, *Emeritus Professor, College Of Engineering Pune*

### THE MACHINIST SUPER SHOPFLOOR AWARDS 2021 JURY

The foundation of any award, in addition to fair evaluation and judging by an extensive methodology, is to have a strong and expert jury which provides their invaluable knowledge base and insight to evaluate the submitted entries, creating benefit and value for participants by transferring their insights and ideas in form of votes, feedbacks and suggestions. The Machinist Super Shopfloor jury for 2021 was multidisciplinary and comprised of recognised, experienced professors, entrepreneurs, and business heads who truly validated and evaluate the nominations using their wisdom, experience, specialisation and technical knowledge. The Jury was felicitated by Rishi Sutrave, Brand Publisher, B2B Division, Worldwide Media.

And thus the 2021 edition of The Machinist Super Shopfloor Awards was concluded successfully with a vote of thanks by Rishi Sutrave. The entire team thanks all the partners, winners, participants, jury and everyone involved in bringing this event to a successful execution, and we look forward to seeing you next year! 🎉

By Kruti Bharadva

## AUTOMATION, CONNECTIVITY AND COMBINED MACHINE POWER

At EMO 2021, WFL Millturn Technologies will be presenting the new M20 MILLTURN complete machining centre for the first time. Alongside gear skiving technology, there is a clear trend toward automation and the integration of sensors. The latest solutions from WFL range from smart software to screw programming through to intelligent tools and clamping devices

**A**t EMO 2021, WFL Millturn Technologies will be presenting the new M20 MILLTURN complete machining centre for the first time. Alongside gear skiving technology, there is clear trend toward automation and the integration of sensors. The latest solutions from WFL range from smart software to screw programming through to intelligent tools and clamping devices.

The M20 MILLTURN will be celebrating its world première at EMO in October 2021. The Austrian company is positioning the M20 for applications that require a compact and powerful complete machining solution.

The aim when developing the M20 was to introduce a particularly robust machine with the highest



**Norbert Jungreithmayr, CEO,  
WFL Millturn Technologies**

possible long-term accuracy. The machine frame is made from spheroidal graphite iron, ensuring optimal stability plus outstanding damping properties. This also means heavy roughing cuts can be made without compromise.

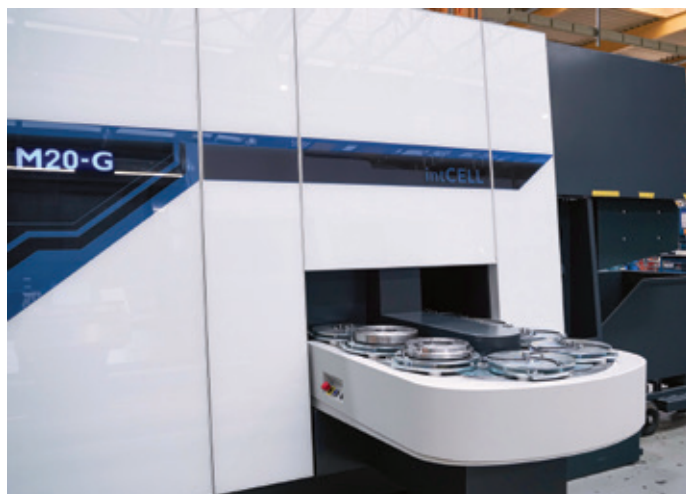
The most ground-breaking aspect, however, is the machine's new design. The continuous toughened-glass front features an integrated performance data display and a touch panel for conveniently operating the tool magazine from the front of the machine. The working area is perfectly

ly illuminated thanks to ultra-efficient and bright LED lights. A clearly visible LED strip at the bottom of the sliding door displays the machine status.

The M20 is available with a tailstock or counter spindle and features dynamic and powerful drives. The turning-boring-milling unit with integrated spindle motor and a B-axis with torque motor are entirely new features. The turning output of up to 44kW means even hard-to-machine materials can be handled with ease. The milling spindle with up to 25kW and 20,000rpm is ideally equipped for all machining tasks. In terms of the tool system, there is the option of using HSK 63 or Capto C6.

The individual tool holder with B-axis on the lower slide is a real highlight. The upper and lower system can be used simultaneously, and both systems are supplied by a reliable and dynamic tool changer from a shared magazine. This allows even complex components to be machined with optimal efficiency.

The tool can be moved up to 100mm below the turning centre, so drill patterns with diameters of up to 200mm can be produced on the face with a high level of precision and without turning the C-axis.







tional production cell.

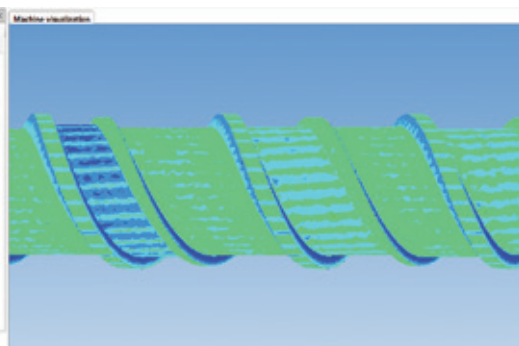
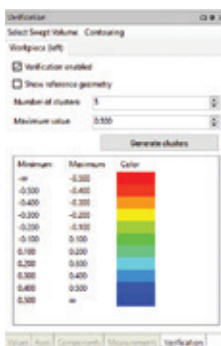
The M20's integrated loading feature is designed for chuck parts with a diameter of up to 300mm and a workpiece weight of 15kg. For shaft parts, a workpiece diameter of 100mm and a workpiece length of 300mm is possible.

Trade fair visitors can experience live machining, which will involve the production of a highly complex chuck part with a length of 150mm and a diameter of 300mm. Technological highlights here include the gear skiving of internal and external gears, and high cutting speeds for fast production of gears. The machining demo will show the main and counter spindle in use at the same time. The demo will also show attendees the

#### FULLY AUTOMATED BY INTCELL

Another key benefit of the machine is the possibility of easily integrating a wide range of automation options. Depending on the customer's requirements, articulated robots, gantry loaders or an integrated production cell with the associated peripheral equipment can be implemented. The newly integrated production cell 'intCELL' is fitted on the right-hand side of the machine and will also be presented to the public for the first time at EMO. The workpieces are supplied on a strip accumulator.

Furthermore, it is also possible to automatically switch the tool to the lower individual tool holder with B-axis. This makes it possible to set up the tools parallel to machining time and to automatically access the stock in the magazine. Stored tools can therefore be placed in the upper and lower tool holder. With the integrated loading concept, WFL has reduced the space requirement by 50 per cent in comparison to a conven-



automatic tool change feature on the two individual tool holders.

#### UNIVERSAL MACHINING SOLUTIONS WITH THE M50-G MILLTURN

The new M50-G MILLTURN generation, with greater axis distance and improved performance, will be another highlight of the trade fair. The optional centre distance of 6000mm enables efficient machining of long shaft parts. When designing the M50, WFL implemented some of the features of the larger M80. The machine's existing potential is fully utilised, particularly





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The most ground-breaking aspect, however, is the machine's new design. The continuous toughened-glass front features an integrated performance data display and a touch panel for conveniently operating the tool magazine from the front of the machine.

in terms of the increased drive power, combined with the HSK-A100 or Capto C8 tool accommodation. The turning diameter is available up to 670mm and the fully developed, proven machine concept of the M50 MILLTURN has also been given an attractive ergonomic finish. A separate pick-up magazine is also available for very long and/or heavy tools. Work-pieces with a length of 1600mm can be automatically inserted and changed. The standard disc magazine can be expanded to up to 200 positions.

On this machine, trade fair visitors will be able to witness a turbine blade/screw being machined live. Components such as turbine blades or plasticis-


ing screws require both dynamic and stable machining concepts. A special clamp from the manufacturer Grasch can be used to clamp rectangular raw materials easily and securely, a fundamental requirement when machining turbine blades. Technologies known as 'helical spiral milling' and 'helical longitudinal milling' are used to machine the blade.

#### SMART TOOLS: ICOTRONIC AND ULTRASOUND MEASURING

The ICOTronic tool, which is fitted with sensors, provides information on the machining process as close as possible to the cutting edge. This should not only optimise milling processes in the future, but also increase the machines' productivity. The demo at EMO will give a small insight into WFL's wide variety of development projects.

Ultrasound measuring will also be demonstrated live for the visitors to the trade fair. The automatically loading ultrasound measuring probe enables a fully automated measuring process. The large measuring range (1.5–30mm) offers further benefits. Ultrasound measuring is extremely well suited for calculating the hole run-out and diameter of very deep holes.

#### EASY SCREW PROGRAMMING WITH SCREWCAM

ScrewCAM will be used at EMO to demonstrate the latest and most innovative software for programming plasticising screws with complex geometries. The geometrical functions that can be manufactured include, among others, single or multi-threaded screws, variable depths, flexible pitch adjustment, wall shaping and wall incline. In addition, the entire NC programme will be checked for collisions and the correctness of the work-piece geometry produced, using a material removal simulation and geometrical verification against the 3D target geometry of the screw. The result is a verified NC programme with estimated machining time. 





## igus: GLIDING, ROLLING, SAVING



**O**n long travels, the energy supply systems from igus are favourites for safely guiding cables and hoses. In most applications, customers rely on the strong E4.1 universal energy chain modular system. igus has now expanded the successful system with glide pads and roller chain links for quick retrofitting. This allows users in abrasive environments as well as in applications with very high speeds or extreme travel lengths to increase

the service life of their systems quickly and cost-effectively.

The energy supply system has an undercut design and thus a high torsional rigidity. It is quiet and variable in heights and widths. In 90 per cent of gliding applications, the E4.1 is the universal solution. To extend the service life of the energy chain, especially in abrasive environments, igus has now introduced glide pads with which the chain can be easily upgraded. The wear-optimised sliding elements can be easily placed on the chain links in the inner radius. They are made of a highly abrasion-resistant igumid polymer, which can double the service life of the energy supply system at travel speeds of 1-3m/s.

### Safely rolled at high speeds

igus has had energy chain links with rollers in its product range for over 20 years. They reduce the pull/push forces on long travels and ensure a significantly longer service life of the energy supply system. Therefore, igus has now developed new optimised roller chain links in two sizes especially for its E4.1 modular system. Their use is particularly worthwhile at high speeds of up to 10m/s or very long travels. The rollers reduce the drive power by up to 37 per cent, which significantly saves energy. The new roller chain links and glide pads provide a customised energy supply system for every special application from 12m to 500m travel.

## MENCOM INTRODUCES THE NEW CAST ALUMINIUM DISTRIBUTION BOXES

**M**encom offers Die-Cast Aluminium Alloy Distribution Boxes that are used for housing sensitive electronic assemblies, signal, pneumatic, hydraulic, and electrical control devices in wet & dirty (AP/AC Series) Environments or explosive (AX Series) environments.

The AP series distribution boxes feature gaskets that ensure the waterproof protection rating (IP66/IP67) while the new galvanized steel captive cross-headed screws ensure easier installation. They are available in 7 sizes, which are supplied in the RAL 7040 textured APV version, unpainted APS version, and the black APW version suitable for extreme temperatures/salt environments.

The AC series distribution boxes are painted with the RAL 7040 gray epoxy-polyester powder. They feature 22mm/30mm piercing units with M25/M32 metric threaded cable entries. To ensure the same protection degree when assembling the boxes, the cable glands or other accessories installed on the box must also have an equivalent or higher protection degree. The AP and AC series distribution boxes are manufactured in compliance with the following standard: IEC 60670-1.

Both AP & AC series and covers are supplied with provision for a terminal earthing connection to protect it from indirect contacts. The cover can be fitted to the box by using a special nylon string and the cover fixing screws become captive to avoid screw loss when the special



O-rings are fitted. The accessory kits are available for fitting inside the boxes DIN rails or zinc-plated steel mounting plates.

AP series distribution boxes are also available in the APX version. APX distribution boxes are Ex components that are suitable for fixed installations in explosive atmospheres classified as Zone 2 (gases) and/or Zone 22 (dust) in ATEX Directive 2014/34/EU. The ATX series is painted with the same RAL 7040 grey as in the APV version and they are available in 7 sizes as well. The gaskets for ATX distribution boxes are fitted in the perimetral slot on the cover and are specifically designed to guarantee the IP66/IP67 degree of

protection required for Ex protection types even in presence of the maximum temperatures applicable to the marking. The material of the gasket size 9, 11, 12, 14 and 19 are the EPDM rubber, and the size 20 & 21 are the silicone rubber foam.

APX distribution boxes are supplied with an external protective earthing and bonding terminal complete with an M4 self-forming galvanized steel screw, a flat washer and a crimp ring lug in tinned copper for protection leads with a cross-sectional area up to 6 mm<sup>2</sup> in order to guarantee the external equipotential bonding indicated in ATEX standards. The inside of the boxes contains supports for protective earthing and the application of the bottom plates. They are also supplied with an instruction sheet to provide installation, operation, and maintenance information and with the Attestation of Conformity for EX Components. All APX distribution boxes have closed walls.

# BESPOKE FIRE RESISTANT POLYMERS



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