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Volume: XXIX / No. 01 (Private Circulation for Members Only) September 2022

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PRESIDENT'S MESSAGE

D. M. Sheregar
President,
TAGMA India

Since the start of this decade, leaders around the world are saying that this decade belongs to India. There is a sense of positivity among global businesses and companies are looking towards India with a lot of hope and optimism.

This is a good sign for the Indian manufacturing ecosystem. We are seeing impressive growth in FDIs, large conglomerates expanding, and product development activities increasing in India. This is great news for Indian toolmakers, as we have huge business opportunities in front of us.

The localisation trend is currently at its peak and OEMs from various industries, including automotive, are looking at Indian suppliers to fulfill their demands. I would like to congratulate my fellow toolmakers for the great work that they have done in reducing imports and providing world-class tools to customers. However, we need to work harder and work together to ensure 100% import substitution.

I would like to request my fellow toolmakers and TAGMA members come forward and participate more in TAGMA activities. We all have to work together to make India the most preferred tooling hub.

(Excerpt taken from Mr. D. M. Sheregar's speech at the International Tooling Summit 2022)

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VICE PRESIDENT'S MESSAGE

D. Shanmugasundaram
Vice President,
TAGMA India

Recollecting what has happened in the last two years during the COVID period... large economies of the world spent a lot of money on various types of stimuli, people had money to spend because there was no spending on vacation, travel or eating at restaurants, they instead spent on buying cell phones, laptops, fitness machines, home appliances and so on. This led to a good demand for such products. So, post-pandemic, we had a consumption-led recovery.

Post-pandemic there were other challenges such as increment in commodity prices, inflation all over the world, and the Russia-Ukraine war. Everyone thought that we will face a difficult situation. But the reality is that India is growing and manufacturing is expanding. India's manufacturing PMI has been around 50 points for several months. It is a clear sign of an expanding economy and a growing manufacturing industry.

As someone closely working with the tooling and machine tool fraternity, I am very excited about the future. I see huge opportunities coming our way from various industries. We can see that automotive OEMs are showing great numbers, EVs are catching up, especially 2-wheelers and 3-wheelers, and industries like toys, defence, aerospace, medical, mobile, white goods, packaging, agriculture, and construction equipment are all growing. It is time for us to explore these industries as well and develop the business accordingly.

(Excerpt taken from Mr. D. Shanmugasundaram's speech at the International Tooling Summit 2022)

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EDITORIAL

NISHANT KASHYAP
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"As a representative of an OEM, I would like to take this opportunity to congratulate the Indian tooling fraternity for the phenomenal work they have done. The way the Indian tooling fraternity has put in efforts to upgrade itself in terms of infrastructure and capabilities is remarkable. We are already working with 31 toolmakers and have been able to localise 90% of our tooling requirements, which was not the case a few years back," said Mr. Sunil Kakkar, Sr. Executive Officer - Supply Chain, Maruti Suzuki India Ltd. at the inauguration ceremony of the International Tooling Summit (ITS) 2022.

This statement by Mr. Kakkar perfectly explains what ITS 2022 was all about – highlighting the capabilities of Indian tool rooms, celebrating the progress we have made as a nation in terms of tool development, and the role the localisation trend is going to play in the development of the Indian tooling landscape in the coming days. Backed by domestic demand and increasing investment in manufacturing, the Indian tooling industry is set for remarkable growth.

At ITS 2022, industry leaders shared their opinions on the challenges present in the Indian industry, government policies, the importance of skill development, the emergence of new sectors, localisation and its impact, and latest technology trends, among others, in the four-panel discussions. The 6th edition of ITS featured 15 technical sessions, 4 panel discussions, 38 speakers, 14 sector participations, and a whopping 400+ delegates. To get a glimpse of all that happened at ITS 2022, read our 'In Focus' section.

Looking at the enthusiasm of toolmakers at the ITS, I am confident that we are moving in the right direction and good days are definitely ahead.

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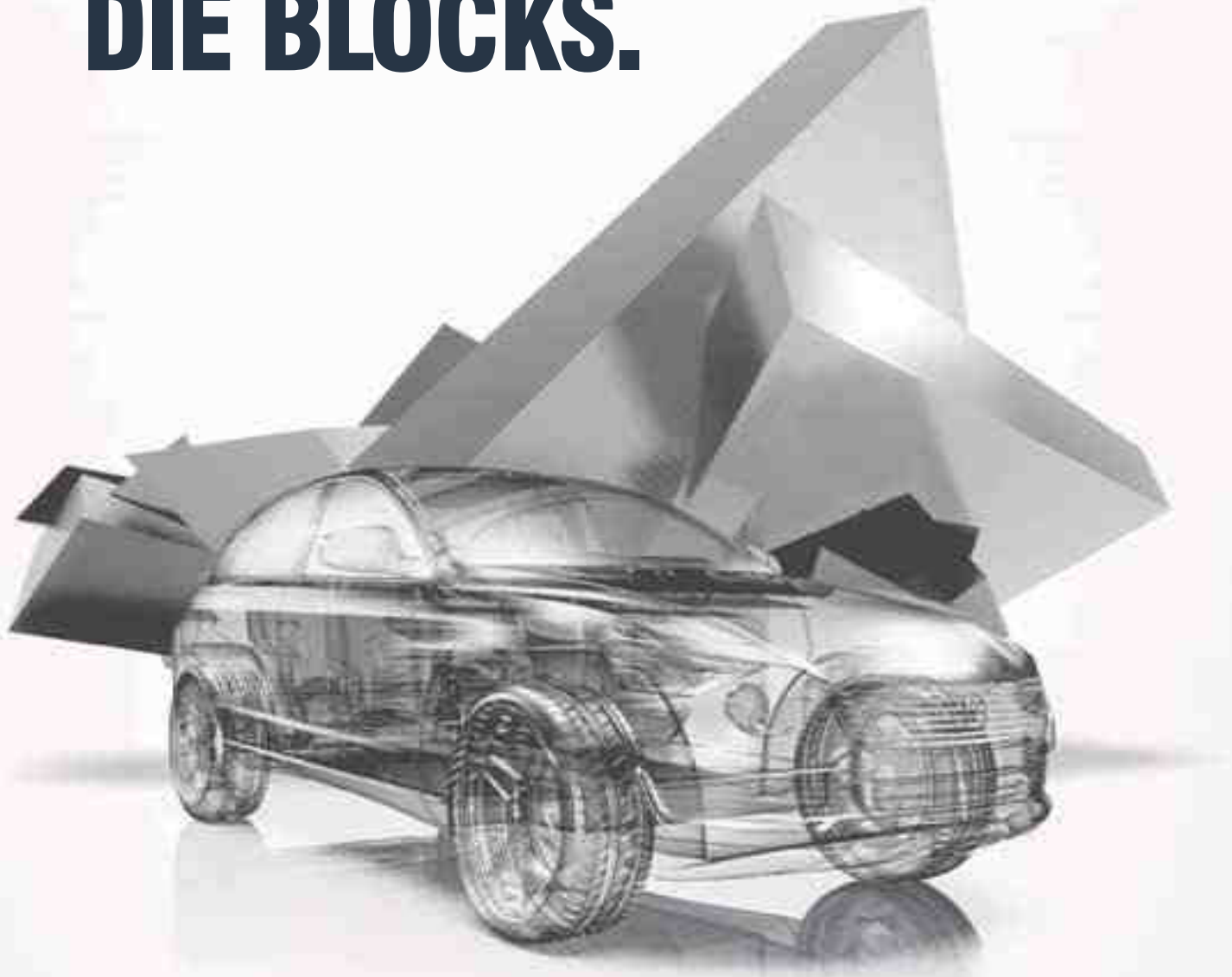

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President of India inaugurates HAL's Integrated Cryogenic Engine Manufacturing Facility; lauds HAL-ISRO partnership

The President of India, Smt. Droupadi Murmu recently inaugurated HAL's Integrated Cryogenic Engine Manufacturing Facility (ICMF) in Bengaluru and said it is not only a historic moment for HAL and ISRO but for the whole of India. "India is the sixth country in the world to have Cryogenic Engine Manufacturing capabilities. The glorious past of HAL and ISRO gives us an assurance that they will play a crucial role in the future," she said.

The President also went around the HAL facility. She virtually laid the foundation stone for Zonal Institute of Virology (South Zone) of NIV, Bengaluru. The Governor of Karnataka Mr. Thaawarchand Gehlot, the Chief Minister of Karnataka, Mr. Basavaraj Bommai, and others were present on the occasion.

Referring to Bengaluru as 'Space City', Mr. Bommai said the state contributed to most of the space and defence-related manufacturing activities in the country and Karnataka will continue to support the development of science and technology projects in the state to realise the 'Aatmanirbhar Bharat' vision.

Dr. Bharati Pravin Pawar, Union Minister of State for Health and Family Welfare, also spoke on the occasion. Dr. Sudhakar K., the Minister for Health, Family Welfare and Medical Education (Government of Karnataka) was present.

Mr. Somanath S., Secretary, Department of Space and Chairman of ISRO, said India can emerge as a superpower in rocket technology only with the help of HAL, which has shown the ability to absorb complicated space technology with perfection. ISRO, therefore, is confident that the entire rocket manufacturing will happen at HAL's facility, he added. Mr. C. B. Ananthakrishnan, CMD, HAL, welcomed the gathering. ◆

LML plans to raise up to INR 500 crore; first product in second half of 2023

LML Electric plans to raise up to INR 500 crore to fund setting up of its own manufacturing plant and scale up business, according to company MD and CEO Yogesh Bhatia. The company is gearing up to launch its first product in the Indian market in the second half of 2023 to mark the return of one of the popular two-wheeler brands of yesteryears, LML in an electric reincarnation.

LML Electric has already entered into a partnership with Saera Electric Auto Pvt. Ltd., which had acquired American cult bike maker Harley Davidson's manufacturing plant at Bawal in Haryana, to roll out its products in the initial phase. "We are planning to launch three products and all are in different categories. Our first product, an electric bike (bicycle), is coming in the first half of 2023 for the European and the US market. Our second and third products will be launched in the second half of 2023 for India and other markets," Bhatia told PTI. The second product will be a "hyper bike" – a crossover between an electric scooter and motorcycle – while the third one will be an electric scooter, he added.

He further said LML Electric is "exploring to raise INR 400 crore to INR 500 crore" to fund its future expansion plans in India and abroad, including setting up of its own manufacturing unit. While the company has signed an MoU with Saera Electric Auto to roll out its products from the latter's Bawal plant, Bhatia said, "Parallelly, we are also exploring to set up our own manufacturing plant...Over 18 months to two years we will set up our own facility." In terms of production capacity, he said, "We are looking at almost one million units annually after 2025." ◆

Courtesy: PTI News

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Hero Electric to invest INR 1,200 crore in greenfield facility in Rajasthan

Hero Electric will set up a greenfield manufacturing unit in Rajasthan entailing an expenditure of INR 1,200 crore, its managing director, Naveen Munjal, told Economic Times. The facility, to be set up in the Salarpur industrial region, will be spread over 170 acres and have an annual capacity of 2 million units, he said, adding that it will also accommodate a vendor company that will invest an additional INR 400 crore in the facility.

According to Munjal, the company had signed an agreement with the Rajasthan government for the facility earlier this month and it is likely to go on stream by the middle of 2023. Hero Electric aims to reach 5 million units annual capacity by 2025. "The demand is robust; we have a substantial waiting-list and we are resolving the supply chain challenges," said Munjal. "We want to be ready with capacity, as adoption to EVs gains momentum. The market, I believe, is going to move much faster than anyone could imagine. The awareness is growing, the cost of operation is lower."

The upcoming facility will be equipped with modern equipment, robotics and innovative technologies. It will utilise sustainable and renewable resources like solar energy. The company also has a new manufacturing line in Ludhiana, which will go onstream in another six months with a capacity of 250,000 units. It will ensure adequate capacity to meet demand.

Hero Electric has already started production at Pithampur in alliance with Mahindra & Mahindra to tap the increase in demand. The company will get about 250,000 units capacity out of the central India facility of Mahindra. Hero Electric is set to launch three new models in the coming six months which will be high-speed and will have a high degree of smart technology, Munjal said. ◆

Courtesy: Economic Times and Hero Electric

Transition from 'who will do it' to 'we will do it' will usher in a new era in India's manufacturing story: Piyush Goyal

Image courtesy : Press Information Bureau

Global leaders are re-imagining sustainable manufacturing processes using modern technologies, IOT, to produce high-quality products. Sustainability of these tech-driven manufacturing value chains lies at the center of this discussion when industry thought leaders are creating a future roadmap to transform manufacturing.

Speaking at FICCI LEADS, Mr. Piyush Goyal, Minister for Commerce & Industry, Consumer Affairs & Food & Public Distribution and Textiles, Government of India, stated that LEADS 2022 resonates with PM Narendra Modi's effort to sensitize our people about zero defect, zero effect.

Mr. Goyal, in his special address pointed out that FICCI can play an important role in taking the message of quality to the industry including the SME sector. He added that we have come out of the practice of two standards for domestic and international markets, as quality must be world class. He also emphasized that today the world is looking to engage with India and he mentioned about his recently concluded visit to Saudi Arabia, where the Government of Saudi Arabia has shown interest to partner with India in 30 different sectors, including fintech, edtech, pharma, medical devices, mining, e-commerce, food security, climate change, etc. He also pointed out the transition of manufacturing and production practice – from 'who will do it' to 'we will do it' – will pave the way for a new era of self-reliance in India.

This session was concluded with the following key takeaways:

- Cost of bad quality is way higher than the cost of creating a good quality product through a foolproof and standardized manufacturing process.
- Change in mindset from 'who will do it' to 'we will do it' is compelling India to achieve newer heights in manufacturing.
- The world is looking at India with opportunity in numerous sectors ranging from pharma, textile, e-commerce, renewables and agriculture, to name a few. ◆

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Tata Motors makes India's trucks smarter, safer and more efficient

Mr. Girish Wagh, Executive Director, Tata Motors with his senior leadership team launching India's smartest trucks

Tata Motors, India's largest commercial vehicle manufacturer, once again creates new trucking history with the launch of India's first CNG-powered Medium & Heavy Commercial Vehicle (M&HCV) truck; introduction of a new-age, Advanced Driver Assistance System (ADAS), and enrichment of its bestselling range of Prima, Signa and Ultra trucks with world-class features to enhance driving comfort. A new series of advanced Intermediate & Light Commercial Vehicle (I&LCV) tippers and trucks were also launched to service the evolving multi-application needs, especially of the rapidly growing logistics and infrastructure sectors.

Speaking at India's largest commercial vehicle launch, Mr. Girish Wagh, Executive Director, Tata Motors, said, "Our trucks connect India and power the engine of the nation's economy. As the industry leader, we are creating new paradigms of functionality, productivity, connectivity, safety and performance by continually introducing future-ready products, services and solutions. The trucks that we are launching address the growing need for safer transportation with an Advanced Driver Assistance System (ADAS) offering collision mitigation system, lane departure warning, electronic stability control, driver alerts and tyre pressure monitoring. They also provide cleaner mobility solutions with a richer offering of alternate fuel powertrains. Every aspect of these trucks has been purposefully augmented to cater to varied duty cycles and special applications. We are delighted to further strengthen our unmatched portfolio of commercial vehicles with these smart trucks that are designed to deliver best-in-class operating economics and superior comfort with enhanced connectivity. We continue to redefine transportation by 'Delivering Progress' to our customers, their drivers, the shippers and our country by making the logistics chain more efficient."

Developed and innovatively engineered to cater to the evolving needs of cargo and construction transportation across segments and applications, the state-of-the-art trucks launched, further enhance Tata Motors' established 'Power of 6' benefit proposition aimed at delivering higher productivity and lower total cost of ownership (TCO) driving fleet profitability. ◆

MOD signs a deal for dual role Surface-to-Surface BrahMos missile with BAPL

Image credit: Press Information Bureau

Providing further impetus to 'aatmanirbharta' in defence production, the Ministry of Defence (MOD) has signed a contract with M/s BrahMos Aerospace Pvt. Ltd. (BAPL) for acquisition of additional dual-role capable Surface-to-Surface BrahMos missiles at an overall approximate cost of INR 1700 crore under the 'Buy Indian' Category. Induction of these dual-role capable missiles is going to significantly enhance the operational capability of Indian Navy fleet assets.

It is notable that BAPL is a joint venture between India and Russia, making crucial contribution to augment the new-generation Surface-to-Surface Missiles with enhanced range and dual role capability for land as well as anti-ship attacks. This contract is going to give a further boost to indigenous production of critical weapon systems and ammunition with the active participation of the indigenous industry. ◆

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Saab to set up manufacturing facility in India for Carl-Gustaf

Saab will set up a manufacturing facility for the shoulder launched weapon system Carl-Gustaf® in India, further strengthening production in the country. Production in the new facility is planned to start in 2024. The facility will support the production of the Carl-Gustaf M4 for the Indian Armed Forces as well as components for users of the system around the world.

The new company Saab FFV India, currently under registration, will make the latest generation of the state-of-the-art weapon in India. Saab will also be partnering with Indian sub-suppliers and the systems manufactured in the facility will fully meet the requirements of 'Make in India'. Saab FFV India will deploy complex technologies including the latest sighting technology and apply advanced manufacturing techniques like carbon fibre winding for the Carl-Gustaf system including the latest M4 weapon.

Image credit: Saab

"It is a natural step to set up a production facility for Carl-Gustaf M4 in India given the long and close association we have with the Indian Army as one of the foremost users of the system. We are glad to be able to contribute to the Government of India's goals of developing a world-class defence industry and proud to offer the Indian Armed Forces our Carl-Gustaf M4 made in India," says Görgen Johansson, head of Saab's business area Dynamics.

Over the years Saab have partnered with Indian companies to make parts or components for Saab's products on the global market. This project is a continuation of Saab's commitment to 'Make in India'. Saab will continue its partnership with Munitions India Limited (MIL) and Advanced Weapons and Equipment India Limited (AWEIL) to manufacture the Carl-Gustaf weapon and its ammunition.

The Carl-Gustaf system has been in service with the Indian Army since the first cooperation agreement for production in India was signed 1976. Through its wide variety of ammunition, Carl-Gustaf has established itself as the main shoulder launched weapon in the Indian Armed Forces. ◆

Crisp-ML – a model for the introduction of artificial intelligence

There are already numerous applications for artificial intelligence (AI) - ranging from predictive maintenance and process monitoring to automated quality checks based on process data. "The relatively high investment costs only pay off if an AI model delivers reliable statements in the long term," knows Prof. Joachim Metternich, head of the Institute for Production Management, Technology and Machine Tools (PTW) at TU Darmstadt. "For example, we experience time and again that companies are surprised by the amount of data they have to collect and prepare in order to train an AI model for the relevant application scenarios." Together with his collaborator Nicolas Jourdan, he shows in 'Let's Talk Science' how a sustainable deployment can succeed and provides valuable advice for practical use.

"We focus on the challenges a company faces when it wants to introduce machine learning models to make its production more efficient and environmentally friendly," adds Nicolas Jourdan, research associate at PTW. These include, in particular, parameters of production processes and manufacturing machines that change continuously. They arise, for example, from wear and tear and sensor drift and cause the performance of already trained AI models to decline over time. The question of how trained models can be generalized and thus applied to further machines and processes is also considered by the Darmstadt experts in this webinar. The researchers from Darmstadt demonstrate all these challenges and solution approaches along the freely accessible Crisp ML process model, which they explain using simulated and real data sets. ◆

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TAGMA organised Annual General Meeting in Bengaluru

Tool & Gauge Manufacturers Association (TAGMA), India, organised its Annual General Meeting at Hotel Radisson Blu Atria in Bengaluru on September 14, 2022. The event was well attended by member companies. Some of the notable names were N. Reguraj, Founding President, TAGMA India, and Managing Director, Nettur Technical Training Foundation; Sonali Kulkarni, President & CEO, Fanuc India; and Salim E.A., Managing Director, Sunikh Components Pvt. Ltd., along with the TAGMA management and secretariat.

Addressing those present at the meeting, D. M. Sheregar, President, TAGMA India, said, "We have been experiencing a good inflow of orders ever since businesses have got back on track. Post the pandemic, India has emerged on everyone's radar as the next manufacturing destination. We must work hard to make the most of this situation."

"At TAGMA, we have been trying our best to help the industry. I would like to take this opportunity to request my fellow toolmakers and other members of TAGMA to come forward and engage more in TAGMA activities," said Sheregar, adding, "We would love to hear your suggestions on some good initiatives that can benefit the industry."

Sheregar also shared some highlights of the recently concluded 12th Die and Mould India show and called for more participation from toolmakers.

In his concluding note, D. Shanmugasundaram, Vice President, TAGMA India, said, "As per reports, India's manufacturing PMI is around 50 points for several months. It is a clear sign of an expanding economy and a growing manufacturing industry. India recently surpassed the UK in terms of GDP to become the fifth largest economy in the world. Backed by such developments, India aims to become a five trillion economy in the coming years with a contribution of at least 20% from the manufacturing industry. Since, the tooling industry is considered a mother industry, the above developments will directly impact Indian toolmakers. We must gear up for the huge opportunities in front of us." ◆

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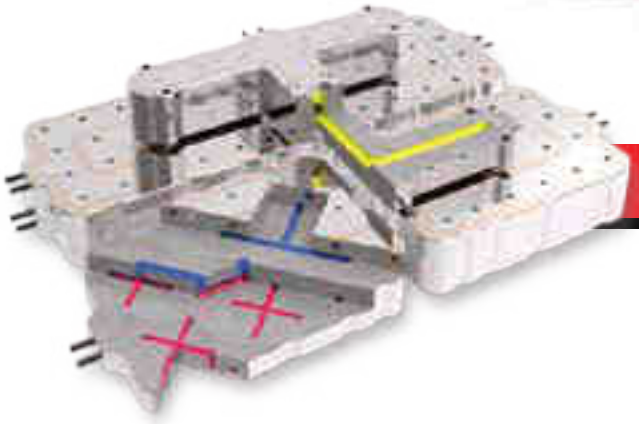

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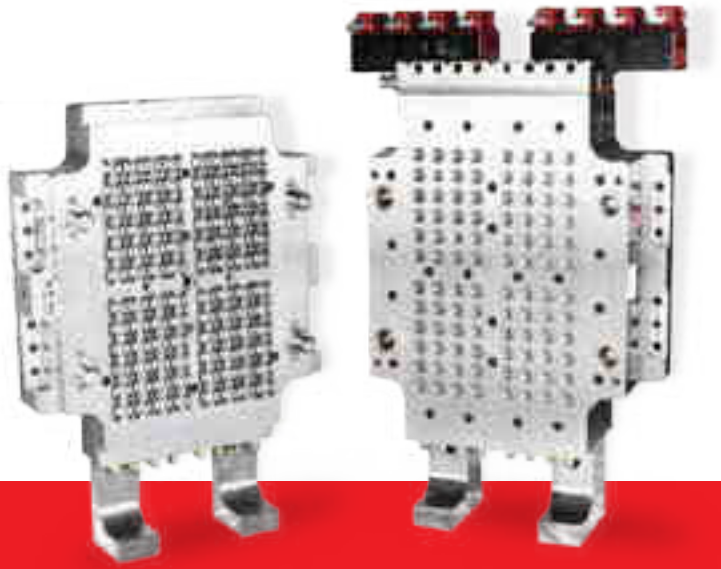

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TAGMA INTERNATIONAL Tooling SUMMIT 2022

ITS 2022:
Charting the growth trajectory for the Indian tooling industry

The 6th edition of the International Tooling Summit (ITS) was recently held at Hotel The Leela Ambience, Gurugram, on September 21-22, 2022. Organised every year by the Tool and Gauge Manufacturers Association (TAGMA), it is India's largest die and mould conference. With more than 400 visitors, the 6th ITS edition witnessed around 40 speakers discussing various topics that impact the Indian tooling industry.

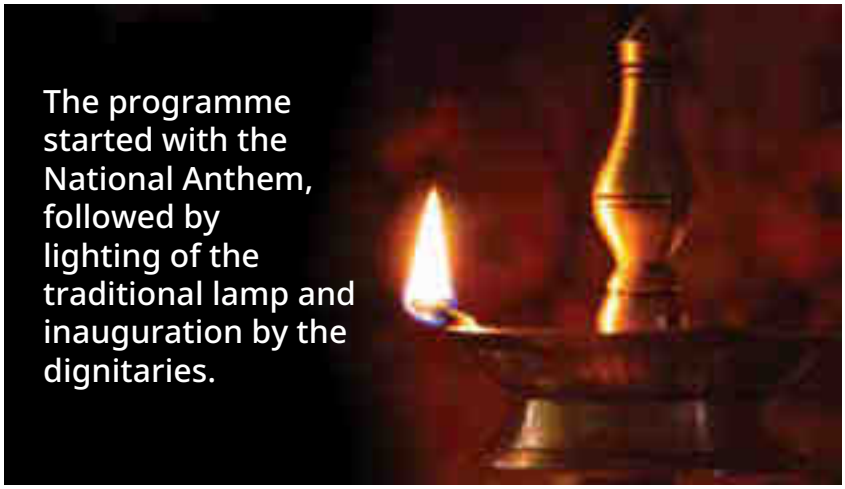
As various sectors continue to emerge in India, FDIs increase and manufacturing PMIs reflect good numbers, the Indian tooling industry is treading on the path to growth. With this thought in mind, TAGMA decided on keeping the theme of this edition of ITS as: 'Indian Tooling Industry: Poised for Growth'. The event highlighted opportunities, localisation, technology trends, emerging sectors, PLI schemes, challenges and policy framework, among other topics.

An auspicious start

The programme started with the National Anthem, followed by lighting of the traditional lamp and inauguration by the dignitaries including Chief Guest Mr. Sunil Kakkar, Sr. Executive Officer - Supply Chain, Maruti Suzuki India Limited; Guest of Honour Mr. Hari Om Rai, Chairman & Managing Director, Lava International Limited; Guest of Honour Mr. Prashant Jain, Managing Director, GE Power India Ltd.; Mr. T. S. Gopalakrishnan, Director - Marketing, Multiple

Special Steel Pvt. Ltd.; Mr. Vishal Agarwal, President, Yudo Hot Runner India Pvt. Ltd.; Mr. D. M. Sheregar, President, TAGMA India, and Mr. D Shanmugasundaram, Vice President, TAGMA India, in the presence of the attendees, speakers, panellists and sponsors.

This was followed by a welcome speech by Mr. Sheregar. Welcoming the dignitaries, attendees, speakers and sponsors, he said, "As the President of TAGMA and the representative of the Indian toolmakers, I welcome all of you to the 6th International Tooling Summit. I welcome everyone present here – our guests on the dais, speakers, sponsors, and my friends from the tooling industry. Since the start of this decade, leaders around the world are saying that this decade belongs to India. There is a sense of positivity among global businesses and people are looking at India with lots of hope and optimism. This definitely is a good sign. We are seeing FDIs increasing, and Indian large conglomerates are expanding, this will be a good opportunity for Indian toolmakers. We have a huge business opportunity in front of us."



Spot the opportunities

Sharing his views, Mr. Kakkar said, "I am delighted to present here at this forum in front of leaders from the tooling fraternity. As an OEM, I am happy to share that we have worked closely with Tier-1 suppliers and tooling companies and the result is that 90% of our tooling requirements are met domestically. Earlier, most automotive OEMs were dependent on countries like Korea, Taiwan and China for tools, but I must congratulate you all for the remarkable work you have done, as now, almost all types of tools are available in India. I would encourage my friends from the tooling fraternity here to be prepared for the changes happening in the automotive industry. The transition in the automotive is happening really fast and you need to be prepared to tackle it."

Mr. Rai then went on to highlight the opportunities in the mobile and other electronics goods manufacturing sector. He said: "IT and electronics together generate a revenue of about $4 trillion globally and it gets multiplied at least 4 times to create a global GDP of about $17 trillion and the valuation of the companies in electronics and tech is about $23 trillion. It's a critical industry for any country. In India, we are about 5-5.5% of global mobile consumption, which is very low considering our population is about 18% of the world's population. So, I see a huge opportunity in the mobile and other electronics goods manufacturing. With PLI schemes and the government's decision to allow JVs in mobile manufacturing, we will see a huge opportunity in mobile and other electronics goods manufacturing. We have to work closely and see how we can reduce the cost of each and every activity of manufacturing to not just target the Indian market but to export globally."

Are we utilising our resources?

Mr. Jain emphasised on optimum utilisation of local resources and importance of research and innovation. In his keynote address, he said, "300 billion to 500 billion, the journey of manufacturing is not going to happen without the great support of the tooling industry. If I look at

the environment today in India, the factors that are working in our favour are: 1) robust demand domestically, 2) right policy framework and the will (PLI schemes and Make in India) and 3) young population. Today, we have been developing in this country largely on import substitution and localisation and I would like to challenge this group here to look beyond. We can target the world with our local capabilities. If we have to go far, we need to recognise two things – the local resources (local talent & R&D) and innovations. The local resources backed with research and innovations can do wonders."

Mr. Gopalakrishnan stated, "At this stage, in front of leaders from the industry where we have professionals from OEMs, who are at the top of the pyramid, to Tier-I suppliers to toolmakers and finally, people like us, the raw material suppliers and technology providers to the tooling industry, we all have to come together and see that our immediate customer is satisfied with our products or services. It's when we all have a satisfied customer, the whole ecosystem will grow and as a country we will become a strong tooling hub."

"As an executive council member of TAGMA, I would also like to urge members present here to encourage and add more members in the TAGMA family. It's our association and we must make it strong so that our voice is heard in parliaments as well," added Mr. Gopalakrishnan.

Mr. Agarwal then addressed the audience. He said, "When we started Yudo in India 22 years ago, the Indian tooling Industry was in its initial growth phase, and tooling was majorly done for white goods, household and other sectors, including automotive, but none of them were significant enough. Since then, definitely, we have come

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Felicitations!

The evening program started with the felicitation of industry stalwarts Mr. S. C. Kalyanpur, Founder and Managing Director of Sridevi Tool Engineers Pvt. Ltd.; Mr. A. K. Kaul, Horizon Industrial Products Pvt. Ltd., and Mr. Krishnamoorthy, Chairman, Fine Components and Tools Pvt. Ltd., for their immense contributions to the Indian tooling industry. The felicitation ceremony was followed by a cultural programme and networking dinner.

A K KAUL
(Represented by Ms. Alka Kaul)
Horizon Industrial Products Pvt Ltd

S C Kalyanpur
(Represented by Mr. Akshay Kalyanpur)
Founder and Managing Director,
Sridevi Tool Engineers Pvt Ltd

a long way. Today, the technical capabilities of our tool rooms are at par with any global tooling standards, be it any segment like automotive, packaging, white goods electrical or household. However, there are many areas we all must work on together, like the delivery time of tools in India, which has to improve, and tool rooms alone cannot do that. There is a lot which has to be done from the vendor's side first, where steel suppliers, mould base, standard parts and hot runners come into the picture. We all have to work on our processes and speak to our counterparts to invest more in India."

Vote of thanks

Mr. Shanmugasundaram delivered the vote of thanks with warm greetings to the dignitaries present at the event. "Today, standing here, as someone who closely works with the tooling fraternity, I am very excited about the future. I see huge opportunities coming our way from various industries – automotive OEMs are showing great numbers, EVs are catching up, especially in the 2-wheeler and 3-wheeler segments, and industries like defence, aerospace, medical, mobile, white goods, packaging, agriculture, and construction equipment are all growing. Companies from these sectors are setting up their manufacturing base here, which is a great sign for toolmakers. It is time for us to explore these industries as well and develop skills accordingly," he said.

In his speech, he also announced various new initiatives that TAGMA has planned, such as tooling academy for skill development and delegation to Canada, among others.

TECHNICAL SESSIONS: Day One

ITS in sessions

The first panel discussion on the 'Indian tooling industry: What stops us from becoming the tool factory of the world?' was moderated by Mr. Ankit Sahu, Director, Objectify Technologies Pvt. Ltd., while the panellists were Mr. M. M. Singh, Director & CEO, International Automobile Centre of Excellence (iACE) and Executive Advisor, Maruti Suzuki India; Mr. Vivek Nanivadekar, Executive Director, Fibro India Precision Products Pvt. Ltd.; Mr. Ashim Sharma, Senior Partner & Group Head Business Performance Improvement Consulting (Auto, Engg. & Logistics), Nomura Research Institute, and Mr. D. Ravi, Managing Director, CM Precision Product & MD, Clastek Engineering Pvt. Ltd. In this panel discussion, the panellists highlighted the current state of the Indian tooling industry, the policy framework, the benchmarking with global tooling hubs, skill development, growth drivers and challenges that Indian toolmakers face.

The first technical session was presented by Mr. Gopalakrishnan. This was followed by a technical session on the 'Role of hot runners in addressing the EV segment, speciality materials and applications' by Mr. Agarwal.

The next technical session on 'Overview of Indian Tooling Industry' was presented by Mr. Aashutosh Sinha, Sr. Manager - Business Performance Improvement, Nomura Research Institute (NRI) Consulting & Solutions. The technical session 'Machining Czars Of Die & Mould Industry – Diaedge & Moldino' was conducted by Mr. Anoop Pandey, Dy. General Manager, MMC Hardmetal India Pvt. Ltd. (a subsidiary of Mitsubishi Materials).

The first panel discussion on the 'Indian tooling industry: What stops us from becoming the tool factory of the world?'

Dr. P. M. Pandey, Department of Mechanical Engineering, IIT-Delhi & Director of BIET-Jhansi also conducted a technical session on 'Leveraging Metal 3-D Printing for rapid tool realization'.

A technical session on 'Designing and building tools for the electrical industry' was conducted by Mr. Dominic Savio, General Manager - Central Process Engineering, Legrand.

A technical session on 'Complications in manufacturing press tools: How to overcome manufacturing challenges?' was conducted by Mr. K. Vijayakumar, Unit Head – Tool Room, Brakes India Pvt. Ltd.

The last session of Day 1 was an interesting panel discussion on 'Indian tooling industry: Expand your horizon'. The agenda of this session was to highlight opportunities, challenges, and expectations from various industries for toolmakers. The session was moderated by Mr. Arvind Chawla, Consultant - Innovative Solutions, Injection Moulds, Automation and Project Management, and the panel consists of Mr. Anand Wankhede, Head Tool Manufacturing - Engineered Tooling Solutions, Schneider Electric India Pvt. Ltd.; Mr. Dayanand Reddy, Founder & Managing Director, Vasantha Tools Crafts Pvt. Ltd; Mr. Raju Desai, Chairman, Jyoti Plastic Works Pvt. Ltd. and Mr. S. K. Jha, Head – Mould Shop, Alpla Group. The panel was represented by professionals from industries like packaging, plastics, electrical and tool room. They all highlighted their expectations from the tooling fraternity and also provided their suggestions for improvements.

The power-packed day one sessions came to an end with a thank you note from Executive Council Member, Mr. Amit Kumar Parashar, COO, Subros Ltd.

The last session of Day 1 was an interesting panel discussion on 'Indian tooling industry: Expand your horizon'.

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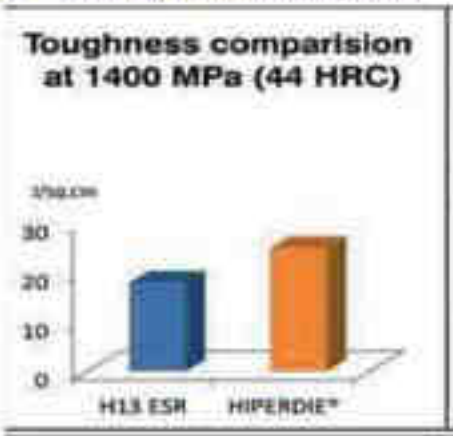

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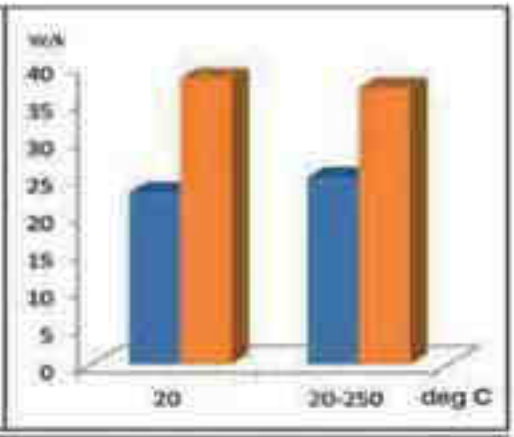

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The next day...

Mr Jayesh Rambhiya, Chairman - Plastic Park & Projects, AIPMA felicitated TAGMA Executive Council Members at the ITS 2022.

The first panel discussion of the day was on 'Localisation trends: Challenges, opportunities & policy framework'.

The second panel discussion of the day took place after lunch. Titled 'Die & mould innovations for tomorrow'.

Day 2 began with a welcome speech from TAGMA Executive Council member, Paresh Panchal, CEO, CAM Tools India.

The first session of the day was presented by Mr. Giuseppe Di Mario, Tool Steel Sales Manager, Lucchini RS, on 'Extra-large forgings for aluminium structurals'. It was followed by a technical session on 'Yudo's endowment in advancement of Indian tooling in packaging & medical segment' by Mr. Agarwal.

The first panel discussion of the day was on 'Localisation trends: Challenges, opportunities & policy framework'. The panel was moderated by Mr. Niranjan Mudholkar, Editorial Director, Pro MFG Media and included Mr. Kalyanpur; Mr. Ravindra Gugale, Sr. GM - Purchase - Interiors & Plastic Division, TATA AutoComp Systems Ltd.; Mr. C. S. Agarwal, Asst. Vice President - Component Development & Tooling, Lumax Industries Limited and Mr. Vikas Gupta, Founder, CEO & CFO, eAshwa Automotive Pvt. Ltd. as panellists. The speakers highlighted not only the need for localisation, but also the challenges they are facing while sourcing certain tools in India as well as their expectations from Indian toolmakers.

There was also a technical session on 'How the recent global economical changes affected the die and mould industry and how we will adapt to them?' by Raghav Prasad, Head - Die Mould Department, Makino India Pvt. Ltd

A technical session on 'Advanced heat treatment for high performance tooling' by Mr. C. Vijayakumar, Senior Manager – Technical and Value-added Services, voestalpine High Performance Metals India Pvt. Ltd. was also held.

There were technical sessions on 'Successful qualifications of Additive Manufacturing for the aerospace sector' by Dr. Dheepa Srinivasan, Chief Engineer,


Team TAGMA behind the success of ITS 2022

Pratt and Whitney (R&D Center Bangalore) and on 'Plastic mould tooling for the packaging industry' by Mr. S. K. Jha, Head – Mould Shop, Alpla Group.

The second panel discussion of the day took place after lunch. Titled 'Die & mould innovations for tomorrow', the panel highlighted technology trends such as additive manufacturing, industry4.0, design & manufacturing software and the latest machining strategies for the tooling industry. The panel was moderated by Dr. Vishwas Puttige,


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Makino India

TECHNICAL SESSIONS: Day Two

Business Head, Amace Solutions Pvt. Ltd. and included Mr. Panchal; Mr. Parashar and Mr. Shatyabrata Das, Sr GM - Tooling, IAC Group as speakers.

This panel discussion was followed by a technical session on 'Aspects of Diecasting' by Mr. Ranjan Swaroop, Director, M/s AgKASA Industries and the last session of the event was presented by Mr. Amar Vemanaboyina from Siemens Digital Industry Software on 'Streamlining IIoT adoption for your Industry 4.0 journey'. In his presentation, he highlighted the step-by-step process to adopt IoT solutions on SME shop floors.

TESTIMONIALS

"Since its inception, the International Tooling Summit has come a long way to become one of the best and biggest conferences for the tooling industry in the world. The Indian tooling industry is indeed poised for growth and the 2022 edition truly showcased the same through various insightful presentations and panel discussions. Some of the trending topics such as localisation, diversifications, technology adoption, and skill developments were very well focussed upon. I congratulate the organising team for the great success of ITS 2022."
- D. K. Sharma,
Immediate Past President, TAGMA India

"I would like to congratulate the International Tooling Summit team for organising such a wonderful event. The topics covered during the technical presentations and panel discussions were insightful. Also, bringing in speakers from diverse backgrounds was a good initiative, as it helped us understand the expectations of various industries. I am eagerly awaiting the next ITS edition. It is a must-attend event for anyone dealing with the tooling industry."
- Vivek Nigam,
Plant Manager, EMKA India Panel Accessories Pvt.Ltd

"ITS 2022 was a wonderful event. It clearly highlighted the present state of the Indian tooling industry, the capabilities of Indian toolmakers and the growth prospects. It will also help the plastics industry and those who deal with press tools. The speaker line-ups and topics were beyond my expectations. The event clearly showcased the enthusiasm among the Indian toolmakers. On behalf of the All India Plastics Manufacturers Association (AIPMA), I congratulate the TAGMA management for the great show and their exemplary work towards the betterment of the Indian tooling industry."
- Jayesh Rambhia, *Chairman Plastic Park & Projects & Past President, AIPMA*

In conclusion...

With many insightful sessions, networking with industry leaders & user industry professionals, the event concluded on a high note. In his closing remark, Mr. Shanmugasundaram thanked all the sponsors, speakers and attendees, TAGMA management and secretariate for ensuring that ITS 2022 was a grand success. He also appealed to toolmakers to actively participate in TAGMA activities and help the association grow.

All the attendees were filled with gratitude and optimism. As highlighted by the panel discussions, the future looks certainly bright for Indian toolmakers.

Some of the common outcomes of the two-day summit were:

- **Indian tooling industry is poised for growth,**
- **Toolmakers need to look beyond automotive and explore emerging sectors,**
- **Skill development is key,**
- **We need to fast-track technology adoption,**
- **Cluster development is a must, and**
- **We must focus on exports as well.**

The two-day event helped the attendees gain a thorough unders'tanding of the latest technology trends, customer expectations, opportunities and the challenges in front of the Indian tooling industry and growth drivers. ◆

Lucky draw





'Rising electric vehicle penetration to drive significant investment in battery cell manufacturing'

Image used for representation only. Courtesy Envato Elements.

According to ICRA, EV battery demand in India (in relation to domestic sales) is expected to touch ~15 GWh by 2025 and ~60 GWh by 2030 and investments in cell manufacturing are estimated to exceed ~INR70,000 crore by 2030.

The battery manufacturing segment remains a critical cog in the overall EV ecosystem development and is garnering a lot of attention. Spurred by government support in the form of subsidies, enhanced awareness and increasing product launches, the electric vehicle (EV) segment saw a significant upturn in prospects in FY2022. EV penetration across automotive segments is expected to grow exponentially over the next decade; with battery remaining the most critical and costly component of an EV. In addition to the robust demand from EVs, the annual battery demand for stationary applications (grid storage, telecom towers, etc.) is also likely to grow at a rapid pace and be substantial. Given the incremental demand from various applications and future growth prospects (post 2030), ICRA estimates investments in cell manufacturing to exceed USD 9 billion.

Achieving economies of scale in battery manufacturing will remain critical in lowering the cost of an EV and helping achieve pricing parity. Additionally, given that the charging infrastructure penetration

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will only improve gradually, improvements in energy efficiency remain imperative. Locating cell manufacturers close to the original equipment manufacturers (OEM) would allow for the creation of a research and innovation ecosystem, which would aid the development of batteries with improved energy efficiency and which are better suited to Indian climatic conditions.

Commenting on the same, Mr. Shamsher Dewan, Senior Vice President & Group Head - Corporate Ratings, ICRA, said: "In EVs, advanced chemistry batteries remain the most critical and the costliest component, accounting for almost 35-40% of the vehicle price. At present, battery cells are not manufactured in India, and thus most OEMs rely on imports, and manufacturing operations in India are limited to the assembly of battery packs. However, to achieve mass scale penetration of EVs and a competitive cost structure, India will need to create its own ecosystem of developing battery cells locally. Multiple challenges exist on the road to establishment of a cell manufacturing ecosystem, primary ones being technology complexity, high capital intensity and raw material availability. The ability of battery manufacturers to enter into agreements/alliances with players across the value chain to mitigate these risks, coupled with the creation of a robust framework for recycling would remain key."

Image used for representation only. Courtesy Envato Elements.

Given the need to invest in cell manufacturing units to keep pace with the expected surge in battery demand for both EV and stationary applications, numerous entities have already committed significant investments in this segment. The Government of India (GoI) recently signed agreements with three companies for incentives under its Production-Linked Incentive (PLI) Scheme for Advanced Chemistry Cell (ACC) Battery Storage. The policy emphasises on enhancing domestic value addition and is expected to support capability development in this sunrise sector.

Lithium-ion batteries have emerged as the battery of choice for EVs, given their high energy efficiency, decent thermal stability and low self-discharge. While Lithium Nickel Manganese Oxide (NMC) is the most prevalent cathode chemistry currently, Lithium Iron Phosphate (LFP) chemistry is expected to gain increased acceptance going forward, given its higher thermal stability and lower production cost. Multiple other chemistries also continue to be under development, even as commercial viability for such chemistries may take time. ◆

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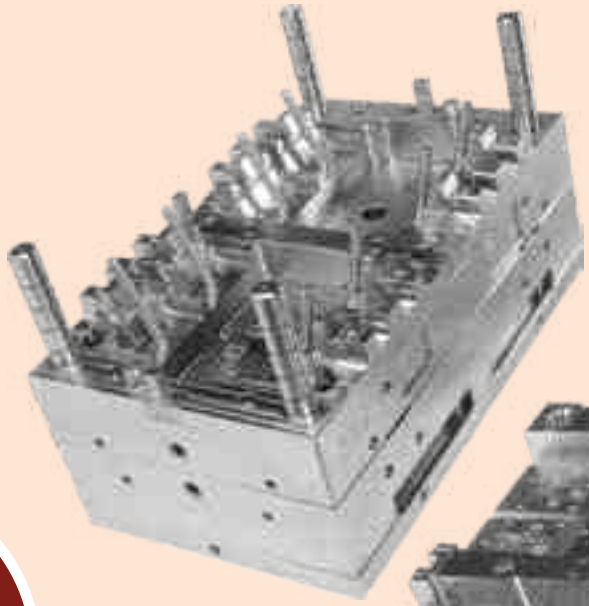

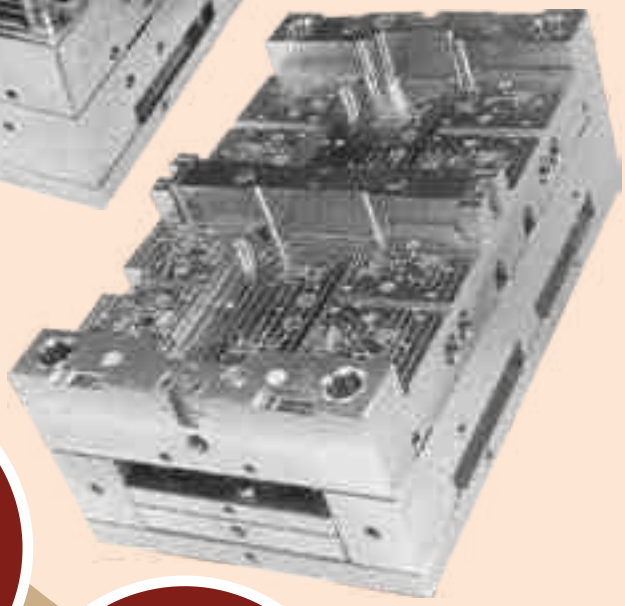

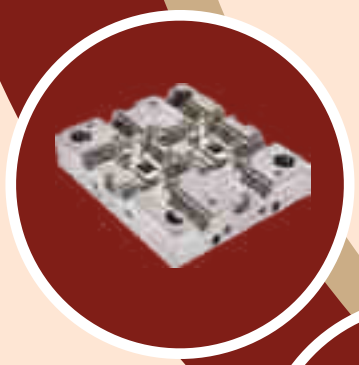

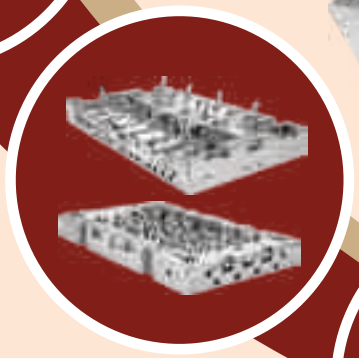

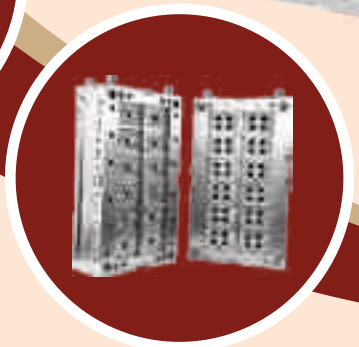

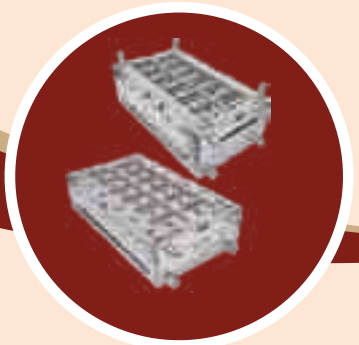

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Establishing a hands-on manufacturing internship program

NIT Kurukshetra partners with Siemens to train over 350 students in industry-grade software

Technological advancements are accelerating and in turn, transforming the global economy. The National Institute of Technology (NIT), Kurukshetra, is one of India's first technical, higher education institutes. During its journey of over five decades, the institute has made remarkable strides in teaching, learning, research, innovation, entrepreneurship and outreach activities.

NIT Kurukshetra understands it is cardinal for the current education system to be equipped with infrastructure to stimulate innovation, sustainability and employment. Therefore, it collaborated with Siemens Digital Industries Software and Siemens' partner CoreEL Technologies, which acted as the system integrator to establish the Siemens Center of Excellence (CoE) in 2019. Its goal was to become a globally recognized and leading center for skill development and translational research for empowering indigenous manufacturing.

Facing a paradigm shift

Typically, engineering students can participate in an internship, which will equip them with the hands-on, industry experience that they need to excel after graduation. However, with lockdowns and social distancing health measures due to the Coronavirus disease of 2020 (COVID-19), internships have become scarce. This led to a major global paradigm shift.

Industries are at the cusp of massive transformation due to digitalization and the exponential use of technology. Entering the Industry 4.0 world is a significant initiative for closing the gap between industry and academia.

"NIT Kurukshetra's vision is to be a role model in technical education and research, in response to global challenges," states Dr. Satish Kumar, director at NIT Kurukshetra. "This aligns with the current technological needs of the global marketplace and India's government initiative to fill-the-void in skill development. NIT Kurukshetra wanted to align the education system with the skills required for Industry 4.0 and provide students with complete access to facilities in any industry. It was seeking to develop a workforce that is ready for the industry with the skills needed to enter the realm of fast-paced digital transformation.

> Aspired target for NIT Kurukshetra will be a breakthrough in generating the best-in-class workforce with better employability in the global marketplace.
>
> **Dr. Satish Kumar,** *Director (Oct 2016 - Oct 2021), NIT Kurukshetra*

Enabling students to gain hands-on experience

NIT Kurukshetra developed an innovative internship program spanning over four and a half months. It is centered around using software and hardware at Siemens CoE. In addition, students were provided with significant industry faculty support.

"The Siemens Center of Excellence will enable the young engineers to access the benchmark technologies in the automotive, industrial automation, industrial machinery, aerospace, robotics,

defence and energy saving fields," explains Kumar.

Siemens CoE helps bridge the gap between technical education and technological brilliance by administering hands-on training with the software and hardware used in the real-world. This holistic development enables students to become successful entrepreneurs and self-reliant in the domestic manufacturing sector, preparing them to contribute to the 'Make in India' program. This is a national program in India, which facilitates investment, fosters innovation, enhances skill development, protects intellectual property and builds the best-in-class manufacturing infrastructure in the country.

The center is equipped with industry-grade software design tools and hardware setups with a focus on smart manufacturing. The facility includes end-to-end product design and development, test and optimization, automation and robotics. It provides students with a competency-based learning forum for empowering education to drive innovation.

"The aspired target for NIT Kurukshetra will be a breakthrough in generating the best-in-class workforce with better employability in the global marketplace," states Kumar.

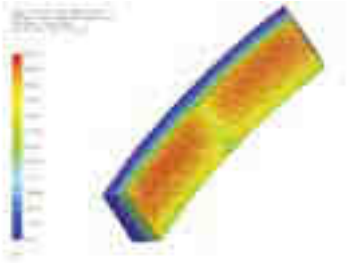
Granting students access to specialized laboratories

Siemens CoE is comprised of 11 specialized laboratories:

↗ Design and validation lab – is about the design methodology, covering three important domains of the overall product development cycle. NX™ software and Solid Edge® software, which are a part of the Xcelerator™ portfolio, the comprehensive and integrated portfolio of software and services from Siemens, are used in this lab for computer-aided design (CAD) to create 2D drawings and 3D models of a part or assembly. NX is used to generate the G and M codes for turning machines to multi-axis milling machines. Femap™ software is used for computer aided engineering (CAE) to perform structural thermal and flow analysis.

↗ Advanced manufacturing lab – is used to create 3D simulated models of the entire manufacturing process of an industry. This includes plant layout, robotics, material movement, etc. This lab uses Siemens' advanced industrial software to integrate the physical manufacturing process with the virtual manufacturing process to increase plant efficiency.

↗ Test and optimization lab – is used in the analysis and design of complex life systems, which ranges from simple linear static problems to highly complex non-linear transient problems. This unified CAE environment uses Simcenter™ 3D software with the finite element analysis (FEA) capabilities of Simcenter NASTRAN software and Simcenter STAR-CCM+™ software, which is a CFD solver for modeling and analyzing fluid flow problems. The lab also uses Simcenter Amesim™ software, the system-level simulation tool for solving multi-physics problems, and Simcenter Testlab™ software, which is a test-based solution for engineering problems.



↗ Automation lab – provides a platform where engineers can understand and work on Simatic S7 technology and products, learn how to control different manufacturing processes and become industry-ready professionals or solution providers. This lab works with industrial controllers and monitoring devices and can provide complete factory automation solutions using a programmable logic controller (PLC) and WinCC® SCADA system WinCC® HMI system.

↗ Mechatronics lab – provides industrial solutions, such as system design, system integration, maintenance and trouble-shooting to foster knowledge, work experience and synergistic integration of diverse engineering disciplines among the individuals. It has a modular manufacturing system that consists of five different stations that are controlled by S7 1200 PLC and totally integrated automation (TIA) portal and PLC simulation (SIM) to simulate these standard industrial operations.

↗ Electrical and energy savings lab – offers the opportunity to study the industrial equipment and explore energy efficient strategies to deliver customized consulting and market-specific solutions. It has industrial electrical equipment,

CHALLENGES

« Bridge skill gap between academia and industry
« Prepare students for the Industry 4.0
« Empower indigenous manufacturing

KEYS TO SUCCESS

« Partner with Siemens to train engineering students
« Launch innovative internship program at CoE
« Enable students to gain hands-on experience

RESULTS

« Established hands-on manufacturing internship program
« Trained over 350 students in Siemens' software
« Improved students' domain skills to solve real-time industrial problems

which is used for strategizing about motion control by using variable frequency drive, equipment protection and energy efficiency.

↗ Process instrumentation lab – is comprised of various sensors and instruments to control equipment and monitor process parameters for industrial automation. This improves production, product consistency, quality and workplace safety in manufacturing and processing plants.

↗ Robotics lab – uses industrial-grade robots in the manufacturing automation process with typical robotic applications such as tungsten inert gas (TIG), metal inert gas (MIG) and spot welding and material handling operations. This lab is used to gain insight in the selection procedure of industrial robotic arms, grippers and effectors and their operation, programming and teaching methods.

↗ Metrology lab – is used to develop skilled workforce-ready engineers in the fields of quality engineering, advanced precision measurements and reverse engineering. Metrology lab is equipped with an industry-grade coordinate measuring machine and blue-light 3D scanners, which enables rapid, precise and accurate measurements for smart and flexible manufacturing.

↗ CNC controller and CNC machine labs – are comprised of facilities for computer-integrated manufacturing and controllers for turning and milling operations to provide hands-on experience of machining and maintaining. Computer numerical control (CNC), programming and operations play a key role in the mass production manufacturing to deliver quality products and parts in compliance with the customer demand and industry standards. These labs have industrial-grade CNC turning and vertical machining center (VMC) machines to perform operations.

Bridging the gap between technical education and technical brilliance

The internship program at Siemens CoE enabled students to gain hands-on experience with Siemens' software and hardware used in various industries at a single location during COVID-19. Students were granted exposure to the building blocks of various technologies and given the confidence to undertake industry-grade projects.

Over 350 students benefitted from the internship by successfully completing 40 projects. The students also enabled the Siemens CoE to receive a Net Promoter Score (NPS) of 75. Students gained and improved their skills with software like NX and Simcenter 3D and applied this knowledge to solve real-time industrial problems.

They also used Plant Simulation in the Tecnomatix® portfolio to design and optimize manufacturing plants for automotive parts, food processing, coins, toys and textiles. By using tools in this software such as bottleneck analyzer, energy analyzer and charts, students were able to flexibly change layouts throughout the design process and eliminate bottlenecks between workstations.

NIT Kurukshetra is now receiving inquiries from students from other institutes across the country. It has also inspired other institutes in the country with a CoE to design their own internship programs.

The distance between a probable future and a possible future is always shortened by resilience and determination. Making the youth ready for the future is a chord that cannot be missed.

Moving forward

The center is now focusing on skilling and re-skilling programs and has designed 38 courses that are run by industry experts. There are currently 13 industry professionals who work at Siemens CoE that have academic and industry experience. Siemens CoE supports the industry by providing new solutions and empowering students by upgrading their skills in industry-grade technology. So far, over 1000 candidates have been trained in numerous domains.

Industry experts at the facility are working on two research and development (R&D) projects assigned from a research organization. Siemens CoE is working on the collaborations with academia, industry and research organizations and has partnered with 11 institutions with more in the pipeline. ◆

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5 things you should know about CNC Lathe Software

A computer numerical control lathe is directed by computer-generated code. This code tells the machine exactly where and how to cut, and it's created by CNC software. When programmers need to find the best way to make a part on a lathe, they use their CNC CAD/CAM software to plan the machining motion. If you're considering adding CNC lathe software to your shop, here are the five most important things to know.

1 It can take a part from start to finish

With the right CNC lathe software, you should be able to set up your part on one machine (hopefully, just once) and run it until completion. Your software should be able to direct roughing, grooving, threading, and finishing the vast majority of your turned projects. If it has both CAD and CAM capabilities, it should even allow you to design and model your part in the same interface you use to program machining.

2 Pairing it with mill can double its effectiveness

For those parts that can't be machined solely on a conventional lathe, consider pairing your lathe software with a mill-turn solution. By combining these two different techniques – milling and turning – you can still machine a more complex part on one machine. The right mill-turn product will offer tools like drilling and face or cross contouring.

3 It should offer its own simulation

While third-party simulation tools can be incredibly powerful, your CNC lathe software should come with its own standard simulation. This simulation will naturally pair with and critically analyze each preprogrammed toolpath in your file, seeking out and marking potential issues. Not only should it verify toolpaths, it should also check for collisions, gouges, and air cuts.

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4 It might need a post processor

Every lathe and turning machine works slightly differently than the next. The numerous configurations of headstocks, tailstocks, beds, and carriages each offer specialized cutting for various applications. However, that also means that pairing your CNC software with the different machines in your shop might take one more step. Post processors translate the CNC code created by your software into data usable by each specific machine, ensuring that tool and stock motion convert seamlessly.

5 Its benefits extend past its machine

On the surface, it's clear how using CNC software would be better than programming by hand: time savings and reducing operator error. In practice, though, it does so much more. As more and more shops are getting certified and adhering to strict manufacturing standards, process tracking and repeatability is becoming more important. By having digital data on each part – how it was designed, its toolpaths, which tools were used on it, etc. – you're ensuring that it will always be made the same way, no matter when it's ordered.

Mastercam's Lathe Solution

The Mastercam Lathe Solution offers users everything they need to be successful with turning. One part can be made from start to finish within this product. Its advanced CAD capabilities give users the ability to create intricate 3D models before bringing the file into the CAM portion of the software. There, proven toolpaths are just a click away, ready to take the part from roughing to finishing. It even offers multiaxis tools as well.

Before machining begins, users can take advantage of the in-software simulation, which verifies tool and stock movement to catch problems before they can happen. For more complex parts, users can bring in Mastercam Mill-Turn, which provides the best of both milling and turning. Most CNC turning centers will already have a custom post created for pairing with Mastercam, but our Applications Engineers are always happy to help design post processors for any machines that you may have. ◆

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BLUM presents new FormControl X measurement software for the automation of machining processes

With the new FormControl X measurement software from BLUM, machining processes can be automated quickly and reliably, which is reflected 1:1 in productivity and the quality of the manufactured workpieces.

Blum-Novotest, leading supplier of innovative and high-quality measuring and testing technology, recently presented FormControl X for reliable process automation. "The foundation of intelligent automation solutions is process data that is evaluated live or very quickly and serves as a control variable for process optimisation. The automation reacts to the measurement result and readjusts to ensure that the process always remains within the predefined limits," explains Wolfgang Reiser, Technology Division Manager at Blum-Novotest. "With the new FormControl X software, Blum-Novotest presents a solution for machining centres, which can be used to gain much more knowledge by continuously measuring workpieces in the machining process."

Processes in both individual and series production can be automated with FormControl X from BLUM.

While the previous FormControl version (without the 'X') was based on a scenario in which a machine operator works at a machine with the laptop and processes the measurements at the same time, the trend today is moving towards automating such processes, meaning this 1:1 relationship is now fairly rare. Genuine automation of workpiece measurement also opens up completely new areas of application. That is why, the goal with FormControl X was to enable real measurement automation on the basis of a modern client-server architecture – this means moving away from pure logging and towards process integration

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and automation with the help of the measurement data collected by the software.

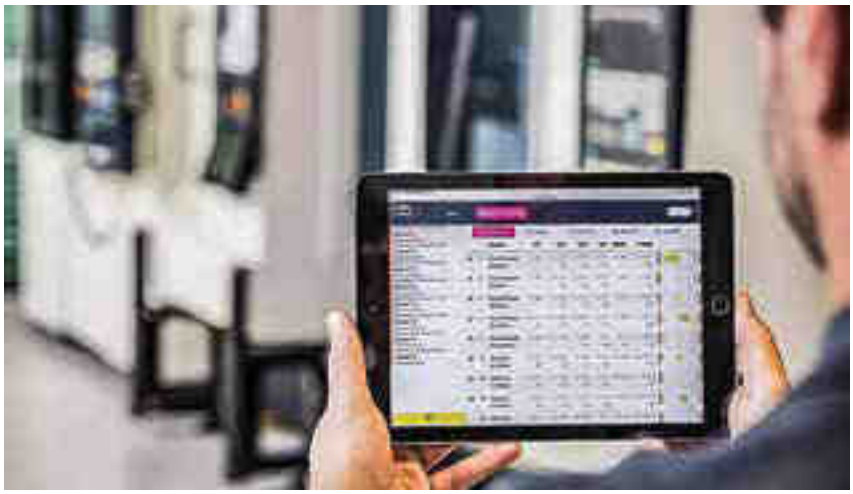
In this way, workpieces can be measured directly after each machining operation, and the results serve as a correction value and basis for optimisation for the next component. To do so, the user defines intervention limits when creating the project, which the software uses to make corresponding corrections. This makes it possible to compensate for tool wear, among other things. FormControl X works in line with the trend that bore holes, for example, get smaller and smaller as the corresponding tool wears out, and can counteract this process. This widens the focus of the software: While FormControl was focused on higher-priced parts in individual production, FormControl X also targets small, medium, and large series production.

Evaluated data and results are accessible in a web interface using various end devices. The server communicates with the machines on which measurements are taken, so an operator can run measurement projects on many different machines and have them evaluated automatically. Complex measuring routines such as the alignment function can be used to adapt the reference points of the machining programme to the position as well as the shape of the workpiece to ensure that machining runs optimally. Another innovation in FormControl X is the management of measuring devices and machines. Since it is now centrally located on the server, the data is available for all machines. Definition of the measurement is also very simple and intuitive thanks to a context wizard.

With FormControl X, measuring programmes are created very simply on a PC at the click of a mouse.

FormControl X now also makes it possible to create and evaluate data series over time. What with FormControl ended in a protocol of a single machining operation can now be used to evaluate entire machining series. This offers the operator completely new ways to gain knowledge. The protocols resulting from the measurements can also be adapted very easily and extensively, tolerance limits can be displayed as a number or image, red/green colouring can be defined and much more.

FormControl X is another step on the path to integrating measurement results from machine tools into company processes and making them usable for Industry 4.0 applications. "With a networked client-server architecture, the reusability of measurements and the interaction with the machine, the new version of the software solution offers many new options for keeping processes transparent and optimising them on an ongoing basis," Wolfgang Reiser says in summary. "However, perhaps the most important aspect for many users will be that with FormControl X, the machining process can be automated quickly and reliably, which is reflected 1:1 in productivity and in the quality of the manufactured workpiece." ◆



The measurement results can be conveniently displayed in the web browser of any end device.

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Survey: Germans bemoan lack of appreciation for skilled occupations

According to a survey commissioned by Continental, 60 percent of Germans regard the recognition for skilled occupations as inadequate. Better pay and more flexible working conditions are seen as the most effective means to increase appreciation. The causes of unfilled training positions include poor pay and lack of recognition. The survey also revealed a clear trend – young people favour a college education over vocational training.

Representative survey by YouGov on behalf of Continental, May 2022

The majority of Germans regard the recognition of skilled workers in society as inadequate. This is the finding of a representative survey of some 2,000 German citizens conducted by the YouGov opinion research institute on behalf of Continental in May 2022. According to the study, 59% percent of respondents bemoan the lack of appreciation for skilled occupations based on in-company training. Just under a third of those surveyed (32 percent) believe that skilled workers with the relevant qualifications are sufficiently valued. "The results of the survey are alarming. We urgently need to improve the image of skilled occupations. Only then can we increase the number of trainees in companies and combat the skills shortage. This has already become one of the greatest challenges for the economy today," says Dr. Ariane Reinhart, Executive Board member for Human Relations and Sustainability at Continental. "Skilled occupations in Germany, for example in the trades sector, are held in high regard internationally. They also deserve the appropriate social recognition domestically."

According to the survey, more than a third of respondents (37 percent) see better pay as the most effective measure to improve appreciation for skilled workers. For 23 percent, the key lies in more flexible working conditions for skilled occupations – for instance, with regard to working hours.

Clear trend: Young people favour a college education over vocational training

The survey also found that the trend among the younger generation is increasingly toward

> Nearly one-fifth (17 percent) of the 16- to 22-year-olds have no graduation certificate and do not intend to obtain one. A further 17 percent are still undecided with regard to vocational training.

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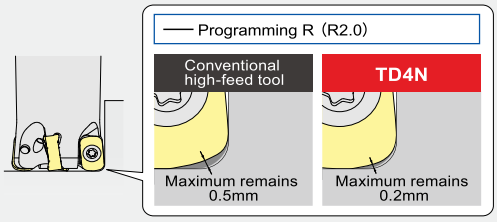

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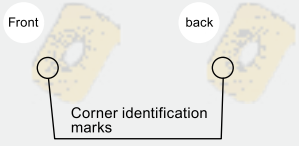
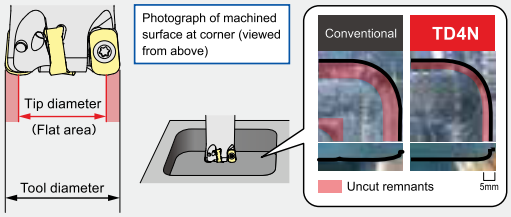
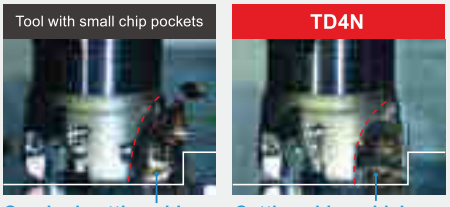


Large tip diameter for excellent handling



Excellent chip discharge characteristics

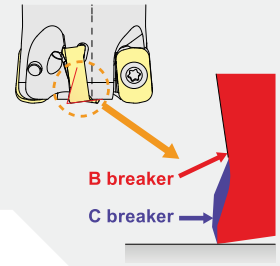


Crushed cutting chips

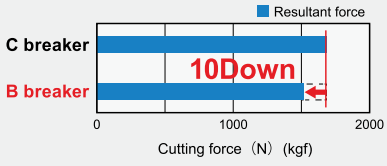
Cutting chips which were discharged well

Magnified view of cutting edge cross section

Positive rake angle



Comparison of cutting force



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a college education. 42 percent of young respondents reported an intention to pursue degree studies, while just over a quarter (27 percent) plan to complete in-company training.

Respondents from this age group cited poor pay (38 percent) and the lack of social recognition for skilled occupations (27 percent) as the main reasons why so many of the training positions currently on offer remain unfilled. Meanwhile, the majority of those ruling out a college education said that they wanted to earn money immediately after leaving school (23 percent), that they lack the necessary qualifications or that studying did not fit into their life plans (both 20 percent).

Nearly one-fifth (17 percent) of the 16- to 22-year-olds have no graduation certificate and do not intend to obtain one. A further 17 percent are still undecided with regard to vocational training. "In the current situation, we cannot afford to lose anyone from the labour market. The objective must be to provide career prospects for every person of employable age," says Reinhart. "We must empower those who lack the qualifications required for vocational training to obtain them. To this end, we at Continental offer young people as well as older employees, refugees and people without formal qualifications a so-called entry qualification. This allows them to be integrated into the skilled labour market through vocational training." The one-year entry qualification course is comparable to a long-term internship of 6 to 12 months. During this period, the participants get to know the basics of their skilled occupation as well as Continental as a company. Assuming they achieve the level required, they can then take part in one of 19 vocational training programs. ◆

"We urgently need to improve the image of skilled workers. Only then can we increase the number of trainees in companies and really combat the skills shortage."

Dr. Ariane Reinhart,
Executive Board member for Human Relations and Sustainability, Continental.

Article and graphic courtesy

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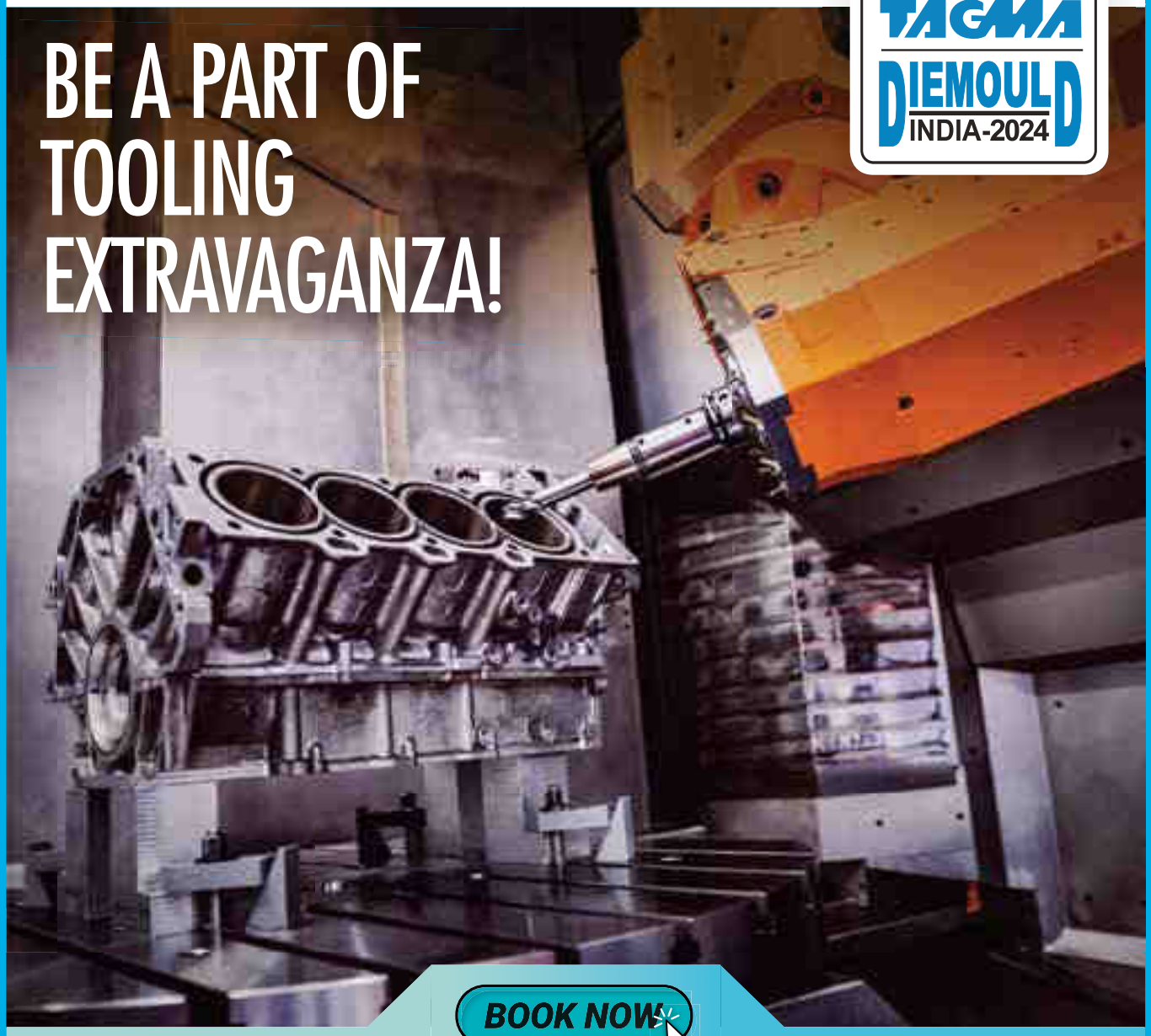

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Yield strength Rp 0.5	MPa	517	725	750-1000
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Brinell hardness	HBW 10/3000	210	294	270-320
Rockwell hardness	HRB	95	106	103-107
Modulus of elasticity	GPa	131	135	127
Density ρ	g / cm^3	8.71	8.7	8.7
Coefficient of expansion α	10^{-6} / K	17.5	17.5	18.1
Thermal conductivity λ	W / m · K	208	156	100
Electrical conductivity	% I.A.C.S.	48	30	17

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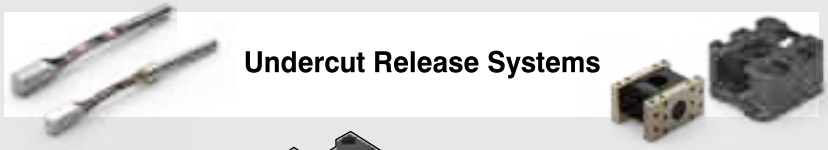

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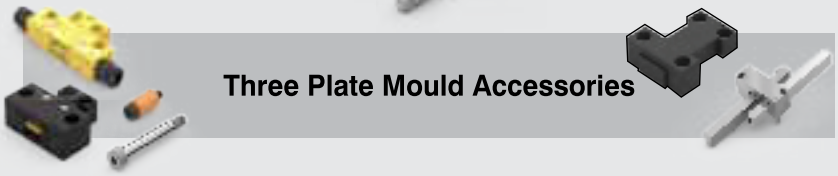

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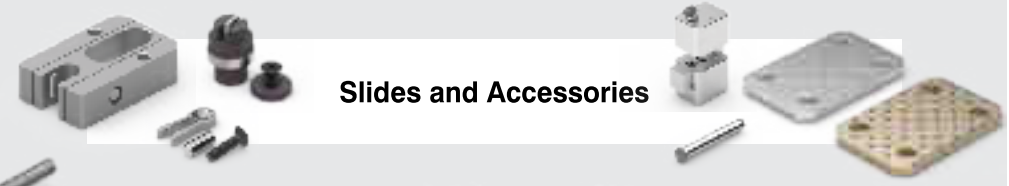

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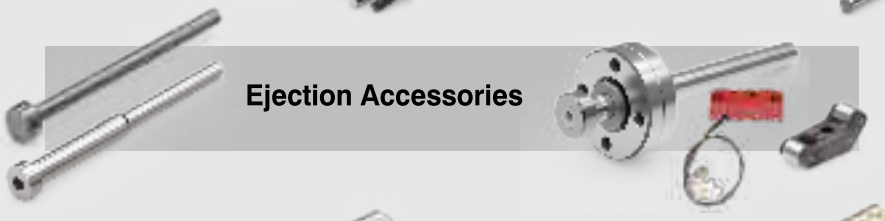

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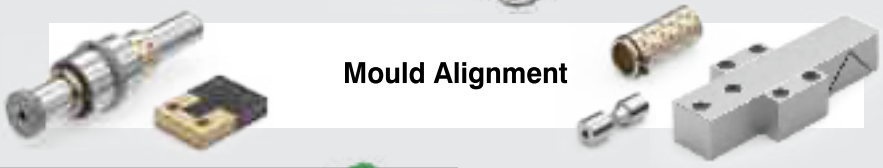

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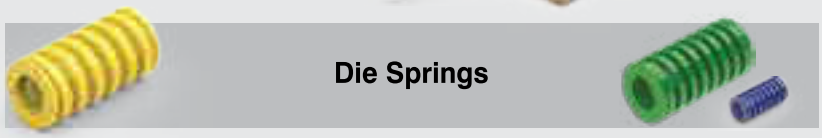

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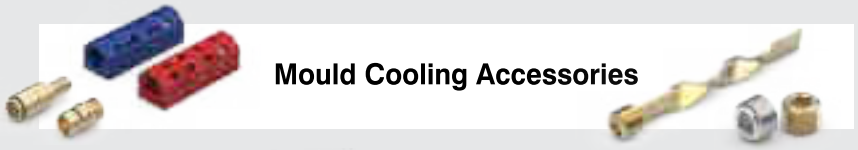

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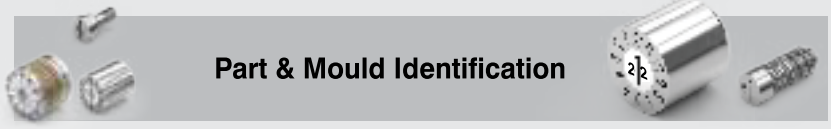

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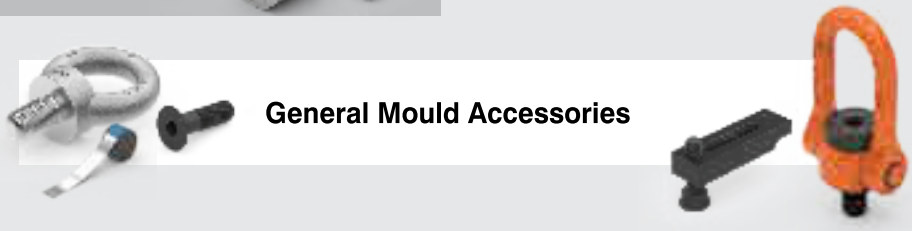

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