

TAGMA TIMES

(Technical Info. on Die, Moulds & Toolroom)

NEWSLETTER

Volume 30 / Issue 12

(Private Circulation for Members Only)

August 2024



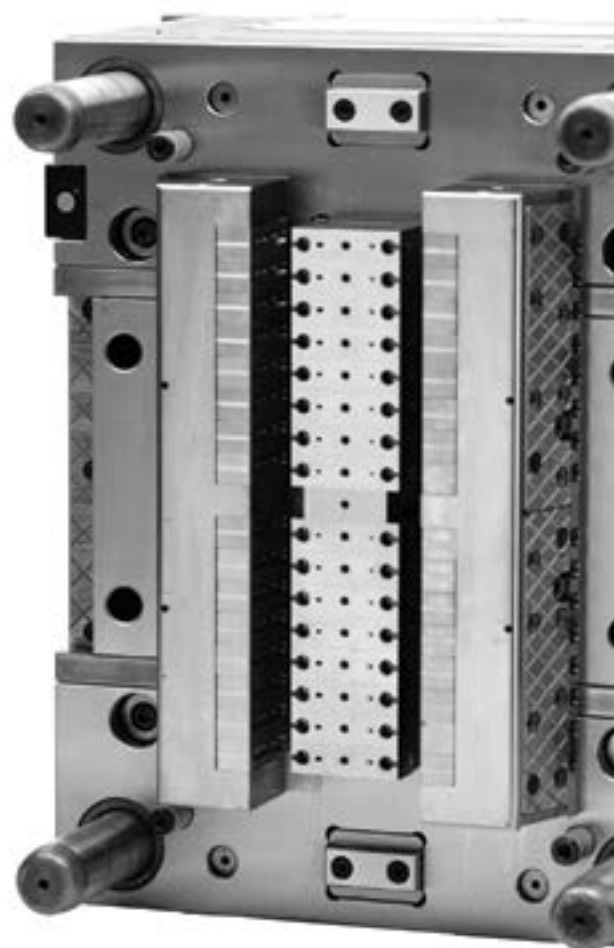
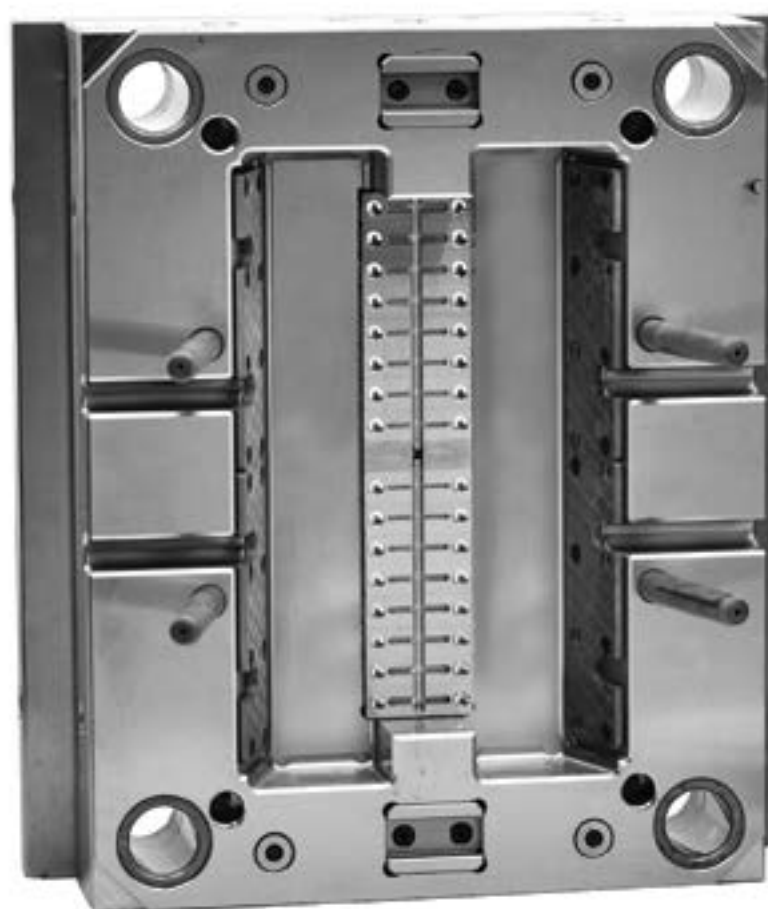
Indian Automotive Industry: On the Fast Track



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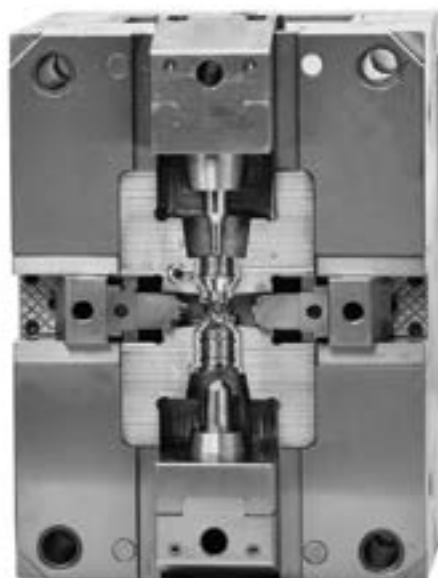
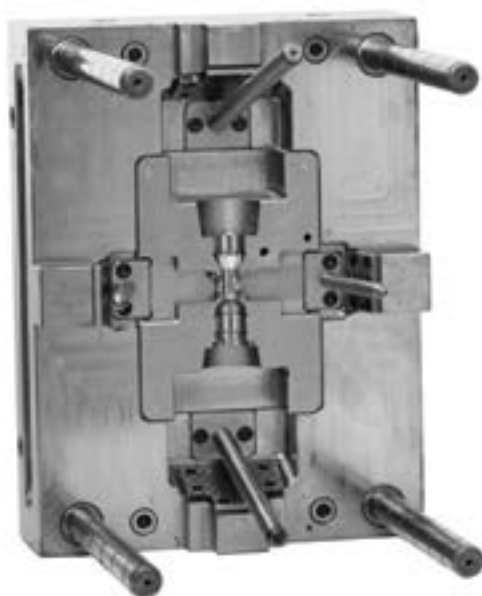


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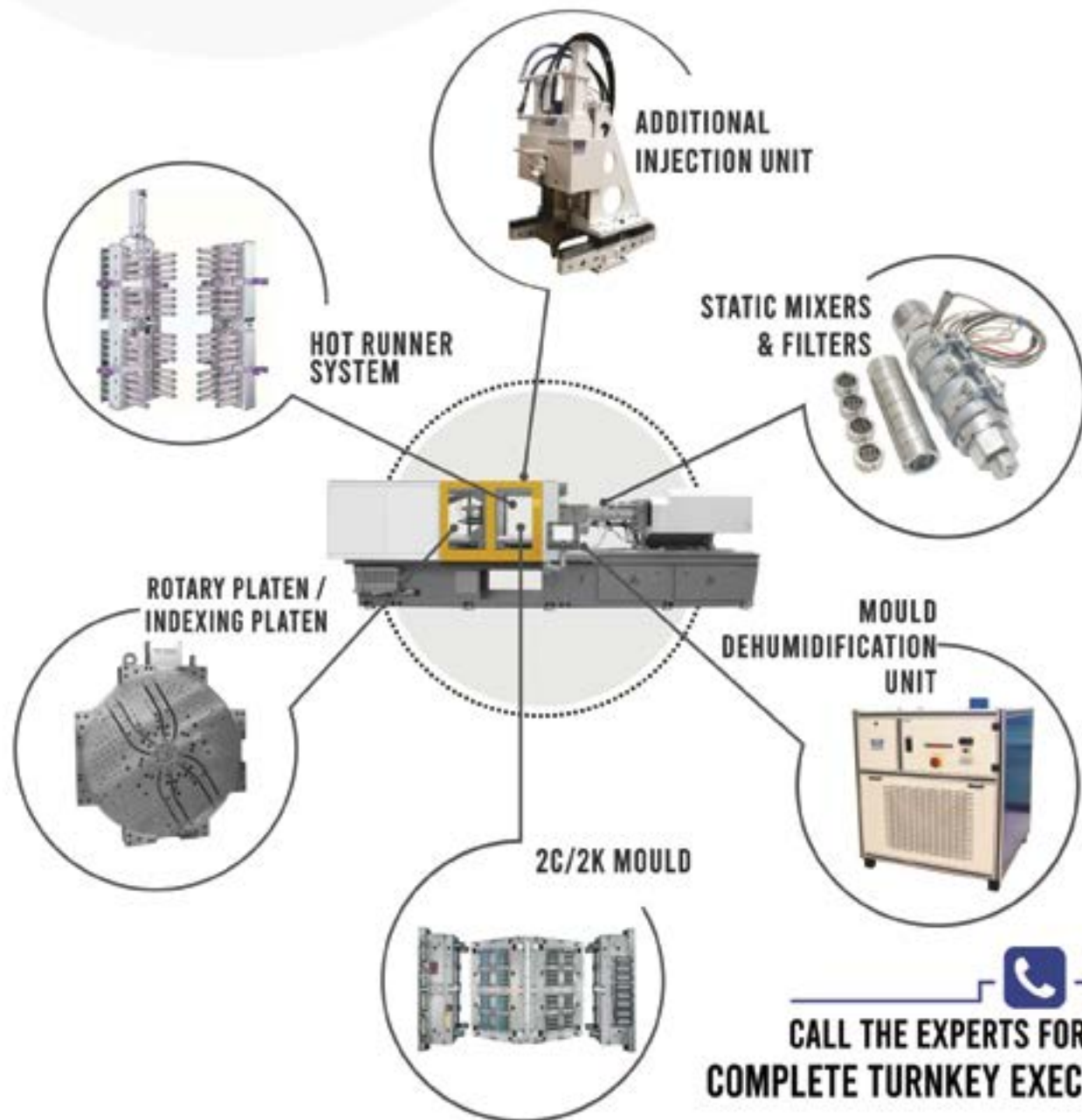


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- Ludhiana Center** : C-1, Industrial Area C, Jaspal Main Road, Kanganwal, Ludhiana - 141 120. Punjab.
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REGISTERED OFFICE

C/o. NTTF

23/24, Peenya Industrial Area,
II Phase, Bangalore - 560 058.

Tel.: 080-28397196 • Fax : 080-64509966

Email: tagma.bangalore@tagmaindia.org

Contact: Mr. Ashok Shetty - Secretary

Cell.: +91 98453 97780

CENTRAL OFFICE

A-33, NandJyot Indl. Estate,

Safed Pool, Mumbai - 400 072.

Cell.: +91 96534 27396 / 97694 07809

Email: tagma.mumbai@tagmaindia.org

PUNE OFFICE

Plot A-22/2, Chakan Industrial Area,

Phase II, M.I.D.C., Village Khalumbre 410501

Tal. Khed, Dist. Pune.

Cell.: +91-95276 89700

Email: tagma.pune@tagmaindia.org

COIMBATORE CHAPTER

C/o. S & T Engineers (P) Ltd.

22, Vasanth Nagar, Trichy Road,

Singanallur, Coimbatore - 641 005.

Tel.: 0422-2590810 • Fax : 0422-2573629

Email: tagma.coimbatore@tagmaindia.org

PRESIDENT

Mr. D. M. Sheregar

Devu Tools Pvt. Ltd. - Mumbai – 400 072

Email: president@tagmaindia.org

sheregar@devutools.com

VICE PRESIDENT

Mr. D. Shanmugasundaram

S & T Engineers (P) Ltd. - Coimbatore – 641 005

Email: shan@stengineers.co.in

MEMBERS

Mr. Akshay Kalyanpur

Sridevi Tool Engineers Pvt. Ltd. - Vasai – 401 208

Email: akshay@sridevitools.com

Mr. Gopalakrishnan T. S.

Multiple Special Steel Pvt. Ltd. - Bangalore – 560 099

Email: gopalakrishnans@gmail.com

Mr. Raj Singh

Eqic Dies & Moulds Engineers Pvt Ltd - Hyderabad – 502307

Email: raj@eqicindia.com

Mr. Sachin Netrabyle

Magna Plastic Corporation - Pune – 411044

Email: magnatooling@gmail.com

Mr. Shijesh Kokkodan

MacPro Technologies Pvt. Ltd. - Bangalore – 560049

Email: shijesh@macpro-technologies.com

Co-Opted Member

Mr. Ajit Gupta

Sr General Manager, Nagata India Pvt Ltd

Email: agupta@nagata.co.in

Mr. Srinidhi Dampur

Executive Vice President - Subros Technical Center & Tool Room

Email: srini.dampur@subros.com

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Edited & Published By: DM Sheregar for TAGMA INDIA at
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NISHANT KASHYAP

Editor

tt.edit@tagmaindia.org

Dear Readers,

As we present the August issue of TAGMA Times, we find ourselves amidst transformative changes in the automotive industry that are setting the stage for the future of manufacturing. These changes, driven by trends such as the rise of electric vehicles (EVs), the push for lightweighting, stringent safety norms, and increasing localisation, are reshaping the landscape for toolmakers, offering both challenges and opportunities.

EVs represent a monumental shift in the automotive sector. With governments and automakers committed to reducing carbon emissions, the demand for EVs is growing rapidly. This shift isn't merely about replacing the internal combustion engine, it's an industry-wide transformation affecting every aspect of vehicle manufacturing. For toolmakers, this means adapting to new materials and processes, including those required for battery production and lightweight components. The move towards lightweighting, necessary for enhancing the efficiency of EVs, introduces advanced materials like high-strength steel, aluminium and composites, which demand new tooling technologies and expertise.

In parallel, evolving safety norms, particularly the integration of Advanced Driver-Assistance Systems (ADAS), require an even greater level of precision and quality in tooling. The challenge for toolmakers is to meet these stringent requirements while remaining cost-effective.

The localisation trend, fueled by global supply chain disruptions, presents a significant opportunity for Indian toolmakers. With an increasing focus on local manufacturing, there is a demand for high-quality tools produced domestically. However, this also raises the bar for local players, who must align with the high standards set by global OEMs.

In this edition, we delve into how these trends are impacting the tooling industry. We provide insights into the challenges and opportunities presented by these shifts, along with strategies for toolmakers to stay competitive. Additionally, we touch upon Union Budget 2024-25, which offers promising support to the manufacturing sector, potentially helping toolmakers capitalise on these new opportunities.

We hope this edition of TAGMA Times inspires and informs your journey through these exciting times.

Happy reading!



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Ather Energy to invest over INR 2,000 crore on third plant in Maharashtra

Electric two-wheeler maker Ather Energy will set up its third manufacturing unit in Maharashtra entailing an investment of over INR 2,000 crore, Maharashtra Deputy Chief Minister Devendra Fadnavis said.

The new facility to be set up at Bidkin, Aurangabad Industrial City (AURIC), will manufacture both electric two-wheelers and battery packs, Ather Energy said in a statement.

In a post on X, Fadnavis said, "It is a more than INR 2,000 crore investment, generating employment of around 4,000." Terming it as a big investment in Maharashtra's automotive sector, he said, "This state-of-the-art plant will annually produce up to 1 million units of vehicles and battery packs both."

Ather Energy currently has two manufacturing facilities in Hosur,



Image Courtesy: Ather Energy

Tamil Nadu, one dedicated to battery production and the other for vehicle assembly. The current facilities will continue to produce battery packs and vehicles. The existing plants have annual capacities of 4.3 lakh battery packs and 4.2 lakh vehicles, respectively.

The new facility in Maharashtra

allows Ather to get closer to more markets in the country by reducing its logistics cost and hastening the delivery of its finished products to its customers, the company said.

Ather Energy Co-founder & CTO Swapnil Jain said since 2021, the company's facilities in Hosur have been serving as its national manufacturing hub, catering to the demand across the country. "With our expanding product portfolio and the increasing consumer demand for our scooters, we decided to strategically diversify our production capabilities to an additional location that will be closer to more markets in the country. The new manufacturing facility will not only rationalise our logistic cost but will also hasten the delivery of finished products to our customers," he added. ♦

Courtesy: PTI News

Bajaj Auto manufacturing plant in Brazil becomes operational

Bajaj Auto recently announced the inauguration of a new production facility in Brazil, which will initially focus on the sourcing, assembly, and testing of Dominar models, with plans to expand to additional product lines.

Set up in the Northeastern city of Manaus in 9,600 sq meters of space and equipped with engine and vehicle assembly as well as testing facilities, the plant has a production capacity of 20,000 units per year on a single shift, Bajaj Auto Ltd. said in a statement.

Bajaj Auto commenced work on the new manufacturing plant in June last year and the facility became production-ready within a year, it said. With the opening of the Brazil plant, Bajaj Auto said, it now sells its



vehicles in 100 countries.

"With the establishment of our own plant in Brazil, we have achieved a quantum shift in our local capability to fulfil demand. Our Dominar brand has received an outstanding reception since its launch. The new manufacturing capabilities will enable us to build a wider distribution network, introduce new products and meet the growing expectations of our customers," said

Rakesh Sharma, Executive Director at Bajaj Auto Ltd.

The Manaus plant has been designed with advanced, automated production lines and integrated quality control systems with multiple conveyor and transfer systems seamlessly connecting to various stages of manufacturing, Bajaj Auto said.

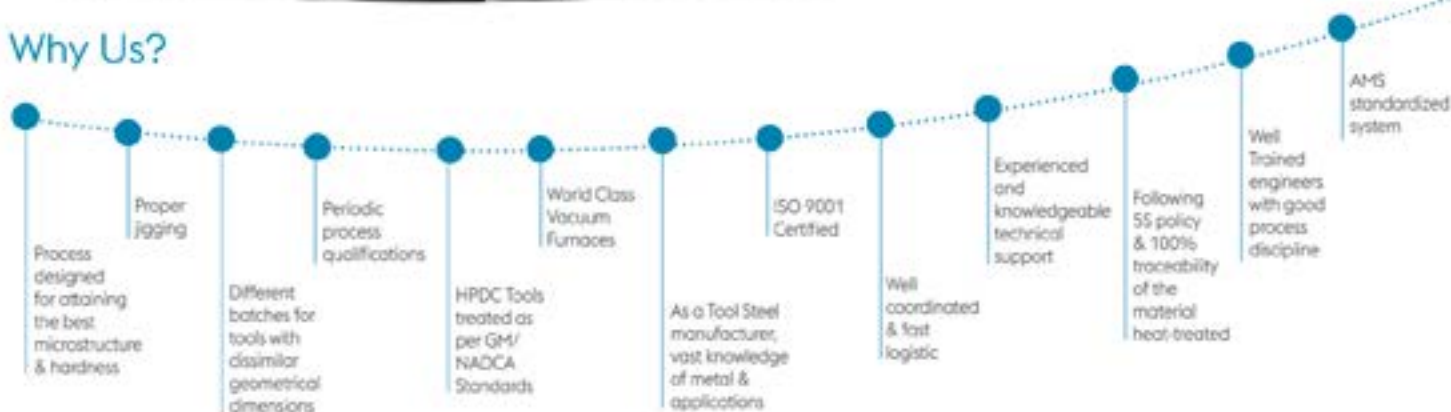
"Bajaj do Brasil has provided for plans to expand the facility further in due course to accommodate additional production capacity to up to 50,000 units per year. It has also integrated local suppliers and begun sourcing key motorcycle parts and components from within Manaus," the company said. ♦

Courtesy: PTI News

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ONE STEP AHEAD.

Nikon SLM Solutions and Wipro 3D announce strategic partnership to accelerate additive manufacturing in India

Nikon SLM Solutions, a global leader in metal additive manufacturing, and Wipro 3D, a pioneer in additive manufacturing solutions, are excited to announce a strategic partnership to accelerate the adoption of advanced 3D printing technologies in India. This collaboration aims to leverage Wipro 3D's extensive infrastructure and technical expertise to provide superior quality additive manufacturing services across various sectors.

The partnership will see the distribution of cutting-edge metal 3D printing machines from Nikon SLM Solutions in the Indian market. By combining Nikon's pioneering multi-laser technology with Wipro 3D's rich experience in implementing 3D printing solutions, the collaboration aims to address the evolving demands



of industries such as aerospace, automotive, healthcare, marine, oil & gas, and heavy engineering.

Pratik Kumar, CEO, Wipro Infrastructure Engineering (WIN) & Managing Director, Wipro Enterprises, said, "We are very pleased to embark on this strategic partnership between Wipro 3D and Nikon SLM Solutions, which underscores our commitment to driving innovation and excellence in additive manufacturing in India. By

combining our strengths, we aim to advance industrial manufacturing and contribute significantly to the nation's quest for self-reliance and technological advancement."

"We are thrilled to partner with Wipro 3D to bring our advanced additive manufacturing technologies to the Indian market. This collaboration is a testament to our commitment to innovation and our vision of driving the future of manufacturing. By combining our expertise with Wipro 3D's deep understanding of the local market, we aim to provide unparalleled value to our customers and contribute to the growth of additive manufacturing in India. We are excited about the opportunities this partnership brings and look forward to a successful journey together," added Sam O'Leary, CEO of Nikon SLM Solutions. ♦

Toyota Kirloskar Motor signs MoU with Maharashtra for proposed new investment

Toyota Kirloskar Motor (TKM) has recently signed a Memorandum of Understanding (MoU) with the Government of Maharashtra, to examine the setting up of a Green Field Manufacturing Facility at Chhatrapati Sambhaji Nagar. Headquartered in Karnataka, TKM already boasts a world-class manufacturing setup with two state-of-the-art units located at Bidadi, well-equipped to contribute and strengthen India's position in the global automobile landscape.

The MoU with the Government of Maharashtra was exchanged by Dr. Harshadeep Kamble (IAS), Principal Secretary (Industries), Government of MH, and Mr. Sudeep Santram Dalvi, Director & Chief Communications Officer, TKM, in the august presence of Mr. Eknath Shinde, Hon'ble Chief Minister; Mr. Devendra Fadnavis,



Hon'ble Deputy Chief Minister; Mr. Ajit Pawar, Hon'ble Deputy Chief Minister and other key dignitaries. Present from TKM were Mr. Masakazu Yoshimura, MD and CEO of Toyota Kirloskar Motor and Regional CEO at Toyota Motor Corporation (TMC); Ms. Manasi Tata, Vice Chairperson, TKM; Mr. Swapnesh R. Maru, Deputy Managing Director, TKM.

Mr. Yoshimura said: "Toyota Motor Corporation believes that India is well positioned to become a global manufacturing hub for cleaner and

greener mobility solutions. This belief was reinforced with the recent regional restructuring which elevated India to play a central role by being integrated into the Middle East, East Asia & Oceania Region and acting as the hub of the new 'India, Middle East, East Asia & Oceania Region'. The MoU signing marks a pivotal point as we stride into the next phase of growth in the country, enabling us to contribute to enriching lives with qualitative mobility solutions locally and globally." ♦



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HASCO celebrates its 100th company anniversary

Around the globe, HASCO is celebrating its 100th anniversary this year together with customers, employees and associates. For company boss Christoph Ehrlich, it was a matter close to his heart to adequately celebrate this exceptional event with the employees and former staff at the headquarters in Lüdenscheid. On the company site, at places where components are normally designed, developed, manufactured and packed, a major HASCO family celebration recently took place.

Invited guests included employees and their families as well as former employees with their partners, who were presented with a varied program of activities. A time tunnel took the visitors into an eventful past. Large-format screens showed milestones from ten decades of HASCO history. For some of the guests, the tour of the plant with a visit to the administration area and the production facilities was a highlight because, up until then, they had been familiar with the name HASCO and the company's standard mould units only



from their family members, but were now given an insight into the heart of the company. They also visited the unique sheet production area and the warehouse/logistics section with its innovative Autostore system. The guests were given an impression of how, on a day-to-day basis, the HASCO formula is brought to life through availability, speed and quality.

Christoph Ehrlich, in the presence of the Hasenclever founder family and the management of Berndorf AG

(majority owner), welcomed the guests with the emotional words: "What would HASCO be without you? – You are the stars of the evening." He emphasised that many members of staff had been true to the company for decades, had encouraged young upcoming staff and had passed on their knowledge to them. Standards were set for an entire industry and continuously further developed: "This has made HASCO the pioneer of mouldmaking for 100 years." ♦

EV maker Euler Motors unveils INR 100 crore manufacturing, R&D facility in Haryana

Electric commercial vehicle manufacturer Euler Motors recently unveiled its manufacturing and R&D facility at Palwal in Haryana, which has been set up with an investment of INR 100 crore to cater to the rising demand.

Spanning 5 lakh sqft, the plant has the capacity to produce 36,000 vehicles per annum and will serve as Euler Motors' national manufacturing hub, catering to the rising demand for its three-wheelers, the company said.

"Our new factory represents a significant leap in manufacturing commercial 3-wheeler EVs. This facility will enhance our production capacity, and help us deliver locally

manufactured vehicles that meet the evolving needs of our customers and the industry," said Gaurav Kumar, Head of Supply Chain and Manufacturing at Euler Motors.



The new plant has an automated assembly line connected via a proprietary manufacturing execution system, which drives production efficiencies by tracking the vehicle lifecycle from production to delivery, the company said.

"The ongoing transformation in the mobility segment in India can only be fully realised with strong local production and localised innovation," said Saurav Kumar, Founder and CEO, Euler Motors.

He further said Palwal, which has a strong supplier network in the vicinity, is the ideal location for the company's growth.

"As we expand into new markets and aim to achieve 15 per cent growth in FY25, this facility will help us respond to the increased customer demand and adapt to changes in processes and products with agility and flexibility," he added. ♦

Courtesy: PTI News

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BNM Type

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Features

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- ✓ Enables smooth, high-speed cutting for intricate shape copy milling.



GRM Type

Giant Radius Insert

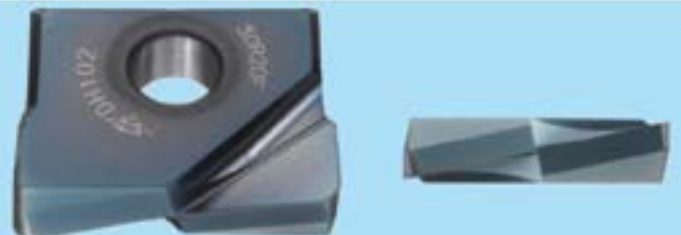
- ✓ Improved Surface Quality and Durability
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- ✓ Larger pick feed improves machining efficiency.
- ✓ High precision and efficiency even with low speed machines.



FRM Type

Inserts for Mirror Radius

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Clamping more intelligently with smart fixture

Hydraulic workpiece clamping offers numerous advantages, high clamping forces with simultaneous automation of clamping processes. In addition to these advantages, however, there are also challenges: higher energy costs, additional floor space of aggregates and a high variance of rotary unions. Their number of channels is limited, which limits the possibilities for process monitoring. DMG MORI has found a suitable answer with the E-Pallet, a smart interface for controlling electrical and hydraulic devices.

The E-Pallet interface can provide power for all-electric clamping devices with 48 V and 50 A via docking. It provides current for sensor technology (24 V / 4 A), which is transmitted inductively. This allows permanent interrogation of sensors.

In addition to power, the new interface can transfer up to four channels with hydraulics or pneumatics as usual. By using electrical directional control valves on the clamping device, these channels can be intelligently expanded,



which removes the channel limitation. Another innovation at E-Pallet is safe speed management using RFID technology. This enables individual speed limitations of pallets and thus mixed operation of milling and turning applications on the same machine.

Compared to conventional hydraulic clamping, the E-Pallet offers numerous advantages in application. In addition to process optimization, a new level of complexity can be mapped that meets the high safety requirements. The installed sensor system provides permanent digital monitoring of the tension at the setup station and in the machine's work area. High-precision monitoring of the support and presence, as well as path and force monitoring, can be implemented on the fixture side. Reinhard Musch, Managing Director of DECKEL MAHO Pfronten, is certain: "With its increased flexibility and the possibilities of digital monitoring, the maintenance-free E-pallet makes a decisive contribution to process optimization in metal-cutting production - and thus also to cost reduction." ♦

Kennametal launched new modular drilling system & PSTS inserts

Kennametal Inc. recently introduced its new ST Line Modular Drilling System, an extensive portfolio of dedicated tools for challenging beam drilling for the construction industry. The new product line was developed to address common construction machining issues such as reliability, stability and noise control.

"Understanding the challenges and needs of industry-specific machinists plays a major role in Kennametal's ever-evolving tools and with our new ST Line Modular Drilling System we're able to deliver best-in-class performance when drilling structural steel. The stability and versatility of our new KSEM™ drills and hydraulic chucks create a perfect fit for beam and plate drilling," said Scott Etling, Vice President of Global Product Management.

Some features and benefits include:

- ▶ Hydraulic clamping for less vibrations, delivering better tool life and hole quality
- ▶ Straight shank with flange and threaded pin for extraordinary



rigidity and stiffness, delivering longer tool life and boosted performance

- ▶ KSEM Modular Drilling System for strong insert clamping, delivering enhanced durability and reliability
- ▶ MQL optimized coolant channels for improved cooling and lubrication.

The new modular drilling system is designed specifically for structural steel and construction operations and is compatible with Kennametal's existing and proven KSEM inserts.

Kennametal also launched new 4-edged PSTS inserts that further enhance the company's true, full-solution tangential milling platform Mill 4-12^{KT}. The new inserts feature a PU Geometry that delivers the lowest cost per cutting edge and increased metal removal rates.

"We are proud to expand our portfolio with the new PSTS inserts to cover even more applications for automotive, energy and general engineering customers seeking the lowest cost per cutting edge," said Etling. ♦

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Guiding systems for die making

The guiding system is one of the most important components of a properly functioning die set. Meusburger offers a comprehensive, interchangeable range of bearing and sliding guides for a wide variety of applications. There are numerous combination options between guide pillars and guide bushes. The guides are also compatible according to DIN/ISO and optimally matched to the standardised Meusburger die sets.

Depending on the application: bearing or sliding guides

Bearing guides ensure maximum guiding speeds and high stability thanks to low rolling friction and preloaded rolling elements. They are preloaded between 4 and 15 μm depending on the guiding diameter. Meusburger offers both ball and roller guides. The main difference here is the contact surface of the rolling element. Sliding guides can transmit maximum shear forces due to the large contact surface.

Numerous combination options

In addition to standard guiding, Meusburger also offers special guiding systems: for small installation spaces, the modular concept, and large dies.

Compatible guides according to DIN/ISO

Thanks to the compatibility of the guide pillars and guide



bushes according to DIN, they are easily interchangeable. This leads to high flexibility in the design of the guiding system depending on the application.

Optimally matched components and accessories

The fitting dimensions of the guiding elements are perfectly coordinated to the standardised die sets from Meusburger. This guarantees consistent standardisation of the die sets. The range of accessories includes elements for cage positioning, pillar and bush retainer plates as well as components for pillar and bush mounting. ♦

Mitsubishi Electric Automation, Inc. releases CNC oscillation cutting function

Mitsubishi Electric Automation, Inc. recently announced the upgrade option of Vibration Cutting Control (VCC) via hardware to its M8 Series CNC as a solution to eliminate chip strands while machining difficult to cut material, such as stainless steel, at faster cutting speeds.

Machine tool and automotive industries alike often experience delays and defects in processes due to long strands of metal build-up that result in decreased production. Through use of the M8 Series CNC with VCC, the tool axis vibration breaks up the long strands of



material that is expelled from the part being produced. This extra functionality speeds up processes, reduces cycle times, and provides a better finish on the part being produced.

"The addition of the VCC function provides production facilities the ability to significantly reduce chip jams in the machine while receiving better cycle times and finish on the parts they are producing, resulting in a better ROI to the customer," said Scott Strache, Senior Product Manager for Mechatronics at Mitsubishi Electric Automation, Inc. ♦

HASCO 100

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Indian Automotive Industry: Accelerating Ahead



The Indian automotive industry has evolved into a powerhouse, attracting domestic and international giants. From two-wheelers to heavy commercial vehicles, India now stands as one of the world's leading vehicle producers. This industry is characterised by its dynamic mix of innovation, cost-efficiency, and a robust supply chain, that supports large-scale production and groundbreaking research and development. As it continues to expand, the industry is embracing electric vehicles, advanced manufacturing technologies, and sustainable practices, among the other latest trends, positioning itself in a prominent position in the global automotive landscape.

Kimberley D'Mello

The automotive industry is a major driver of the Indian economy. It has come a long way since its liberalisation in 1991. "Today, there is a presence of major global auto manufacturers in the country. All categories of vehicles like two-wheelers, three-wheelers, passenger cars, light commercial vehicles, trucks, buses, tractors, heavy commercial vehicles, etc., are being produced in India," highlights the Ministry of Heavy Industries' website.

Growth Projections

According to a report published in August 2024 by Market Research Future, a market analysis company, "India's automotive industry market size was valued at USD 100.5 billion in 2022. The Global India Automotive Industry is projected to grow from USD 109.3 billion in 2023 to USD 214.7 billion by 2032, exhibiting a compound annual growth rate (CAGR) of 8.80% during the forecast period (2023-2032)."

What are the market drivers contributing to the industry's expansion? On its website, the India Brand Equity Foundation (IBEF), a Trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India, states: "The two-wheelers segment dominates the market in terms of volume, owing to a growing middle class and a huge percentage of India's population being young. Moreover, the growing interest of companies in exploring the rural markets further aided the industry's growth. The rising logistics and passenger transportation industries are driving up demand for commercial vehicles. Future market growth is anticipated to be fueled by new trends including the electrification of vehicles, particularly three-wheelers and small passenger automobiles."

Government Policies in Place

The Indian government has implemented several policies to boost the automotive industry and promote sustainable mobility. Let's take a look at some of them:

► Production Linked Incentive (PLI) Scheme for Automobile and Auto Components

The Union Cabinet approved the PLI-Auto Scheme in September 2021 with a budgetary outlay of INR 25,938 crore for a period of 5 years – FY2022-23 to FY2026-27. The scheme aims to boost the manufacturing of Advanced Automotive Technology (AAT) products, facilitate and promote deep localisation for AAT products and enable the creation of a domestic as well as global supply chain.

"This PLI Scheme focuses on Zero Emission Vehicles (ZEVs) i.e. Battery Electric Vehicles and Hydrogen Fuel Cell Vehicles. The incentive under the Scheme is applicable from FY2022-23 to FY 2026-27 and the disbursement is applicable in the subsequent financial year i.e. from FY 2023-24 to FY 2027-28," states the Ministry of Heavy Industries website.

► Electric Vehicle (EV) Policy

In March 2024, the Government of India approved a scheme to promote India as a manufacturing destination so that e-vehicles with the latest technology can be manufactured in the country. The policy, which requires a minimum investment of INR 4150 crore (~USD 500 million), is designed to attract investments in the e-vehicle space by reputed global EV manufacturers.

"This will provide Indian consumers with access to the latest technology, boost the 'Make in India' initiative, and strengthen the EV ecosystem by promoting healthy competition among EV players leading to high volume of production, economies of scale, lower cost of production, reduce imports of crude oil, lower trade deficit, reduce air pollution, particularly in cities, and will have a positive impact on health and environment," states a press release issued by the Press Information Bureau.

► Automotive Mission Plan 2016-26

The Government of India and the Indian automotive industry articulated their objectives for the future of the industry through the Automotive Mission Plan 2016-26 (AMP 2026), states the Ministry of Heavy Industries' website.

"The plan envisions that by the year 2026, India will be among the top three in the world in engineering, manufacturing and export of vehicles and auto components. To achieve these objectives, the industry will have to ensure persistent growth over the next decade," it elaborates.

Automotive Industry Trends

The automotive industry in India is undergoing a significant transformation driven by global trends, policy changes, and

shifting consumer preferences. The focus areas of lightweighting, electrification, and hydrogen fuel technology are at the forefront of this change, shaping the future

of mobility in the country. Let's understand what each of these trends has to offer:

► **Lightweighting:** In August 2023, Mahindra & Mahindra launched a new range of lightweight tractors, and in August 2024, there are news reports divulging Tata Motors' plans to launch a new lightweight vehicle for last-mile delivery... These are just a few examples showing that the lightweighting trend is gaining traction in India.

Owing to factors such as increasing regulatory pressure to meet stringent fuel efficiency and emission standards, as well as consumers' demand for more efficient vehicles, manufacturers are increasingly adopting advanced materials such as high-strength steel, aluminium, and carbon fiber to reduce vehicle weight. For instance, in January 2024, there were news reports on how Mahindra & Mahindra managed to reduce the weight of their SUVs, such as the XUV-700, by 79 kg. This approach is important for the production of electric vehicles (EVs), where reducing weight can directly impact the vehicle's range and battery efficiency.

While lightweight materials offer performance benefits, they are often more expensive than traditional materials. As a result, Indian automakers are focusing on finding a balance between cost and weight reduction to remain competitive in a price-sensitive market. There is also growing collaboration between automotive companies, material suppliers, and research institutions to develop cost-effective lightweight solutions. Government initiatives supporting research and development in advanced



materials are playing a crucial role here.

► **Electrification:** The emphasis on electrification is driven by the government's commitment to reducing carbon emissions and dependence on fossil fuels. The Indian government has launched

initiatives, such as the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme, to promote the adoption of EVs. These initiatives include subsidies, tax incentives, and infrastructure development, such as the expansion of charging stations. Indian automakers are increasingly investing in electric vehicle technology, with major players launching EV models. The two-wheeler segment is particularly vibrant, with a range of electric scooters and motorcycles entering the market. For instance, in August 2024, Ola Electric launched a new series of electric motorcycles.

While the EV market is growing, challenges such as high battery costs, limited charging infrastructure, and range anxiety persist. However, advances in battery technology, economies of scale, and increased government support are expected to address these challenges over time. The electrification trend is expected to accelerate, with predictions that EVs could make up a significant portion of new vehicle sales by the end of the decade. Additionally, there is a focus on developing local manufacturing capabilities for batteries and other key components to reduce reliance on imports.

► **Hydrogen Fuel:** This technology is emerging as a potential game-changer for the automotive industry, particularly for vehicles where electrification might not be as efficient. India is exploring hydrogen as an alternative fuel under its National Green Hydrogen Mission, which aims to make the country a hub for the production and export of green hydrogen.

DID YOU KNOW?

Hindustan Motors was the first Indian car company to start production in India in 1942. It started production of the Landmaster in 1954, and in 1957 began the production of the Ambassador. Later tie-ups with General Motors Corporation of USA, Vauxhall Motors, UK, Marion Power Shovel Co, USA, led to new products being launched. In 1963, it commenced the production of the Ambassador Mark 2. Later versions and more forays in related vehicle segments followed.

Source: <http://www.hindmotor.com/>

In fact, in a bid to meet the goals of the National Green Hydrogen Mission, in January 2024, various news reports stated that Hyundai India had plans to establish a dedicated 'Hydrogen Innovation Centre,' in association with IIT-Madras. At the Tamil Nadu Investors Conclave 2024 held in Chennai in August 2024, the company announced, in a press release, the 'Groundbreaking Ceremony' of its 'Hydrogen Innovation Centre', which is poised to serve as a catalyst for innovation in the field of hydrogen technology. Automotive companies are experimenting with hydrogen fuel cell technology, although it is still in the nascent stage.

Hydrogen fuel, particularly green hydrogen produced using renewable energy, offers a zero-emission alternative to fossil fuels, and its adoption in the automotive industry could significantly reduce the carbon footprint of transportation in India. However, the high cost of hydrogen production, storage, and distribution remains a significant barrier.

Opportunities for Toolmakers

The Indian automotive industry's rapid growth presents lucrative opportunities for domestic toolmakers. To capitalise on this, toolmakers need to align their strategies with the evolving industry's landscape by focusing on the following:

► Rising Demand for Specialised Tools:

The development of new vehicle models, especially those with advanced features, requires custom tools and dies for manufacturing complex components, such as airbags, ABS systems, and other safety-critical parts. Toolmakers will need to create precise moulds, jigs, and fixtures for these.

► Growth of EVs and

Lightweighting: The rise of electric vehicles (EVs) and the



lightweighting trend also open new avenues for toolmakers. The production of EV components, such as battery enclosures and lightweight materials, requires specialised tooling. Toolmakers who can adapt to these new requirements will be well-positioned to capitalise on the growing EV market.

► Adapting to Safety Standards:

As stricter safety regulations, including mandatory crash tests and incorporating features like electronic stability control (ESC) are being enforced, toolmakers will be needed to design and produce tools that ensure consistent quality and safety of these components. This demand for higher precision in tooling creates opportunities for toolmakers to innovate and invest in advanced technologies like CAD/CAM and CNC machining.

► Collaborating with OEMs:

Specialisation and niche creation are crucial for toolmakers to stand out in a competitive market. By identifying specific automotive components or processes and focusing their expertise, toolmakers can become valuable partners to OEMs. Collaborating with OEMs will allow them to understand their specific tooling

requirements better, enabling toolmakers to develop customised solutions.

► Localisation and Supply Chain

Resilience: As global supply chains face disruptions, Indian automakers are increasingly looking to localise their production processes. This shift presents a lucrative opportunity for domestic toolmakers to collaborate with manufacturers, providing them with high-quality, locally-produced tools that meet the latest standards and reduce dependency on imports.

► Leveraging Government

Initiatives: Taking advantage of schemes like 'Make in India' and Production-Linked Incentive (PLI) can provide toolmakers access to financial incentives, support, and market opportunities.

Toolmakers who can meet these challenges with innovative, high-precision solutions stand to benefit significantly in this evolving automotive landscape. By adopting these strategies, Indian toolmakers can position themselves as key contributors to the growth of the Indian automotive industry and achieve long-term success. ♦

*Images used for representation only.
Courtesy Envato Elements.*

'Embrace innovative thinking and move beyond traditional mould-making methods'

"The expectations of customers have evolved significantly, and it is crucial to rise and meet these new demands. Developing in-house training programs to enhance manpower skills is essential, as relying solely on external institutes may not suffice," says **Dominic Savio**, General Manager - Central Process Engineering, Legrand India.

Nishant Kashyap

Q Could you please provide a brief overview of Legrand, specifically focusing on its tooling activities?

Legrand, a global leader in electrical and digital building infrastructures, has a long history dating back to 1865. Headquartered in France, the company is established in 90 countries and markets its extensive range of products in 180 countries worldwide.

In India, Legrand operates eight manufacturing units with a significant need for thermoplastic and thermoset moulds. Currently, the company requires an average of 300 moulds annually. Legrand does not produce these moulds in-house, but relies on external suppliers.

Over the years, the company has developed a detailed scope of supply, which is regularly updated to meet the evolving standards. This scope serves as the foundation for Legrand's design, mould inspection, and procurement processes.

A dedicated team of six professionals manages the procurement and inspection of these moulds each year, ensuring they meet Legrand's stringent quality requirements. The team's work is crucial to maintaining the high standards that Legrand's products are known for, both in India and globally.

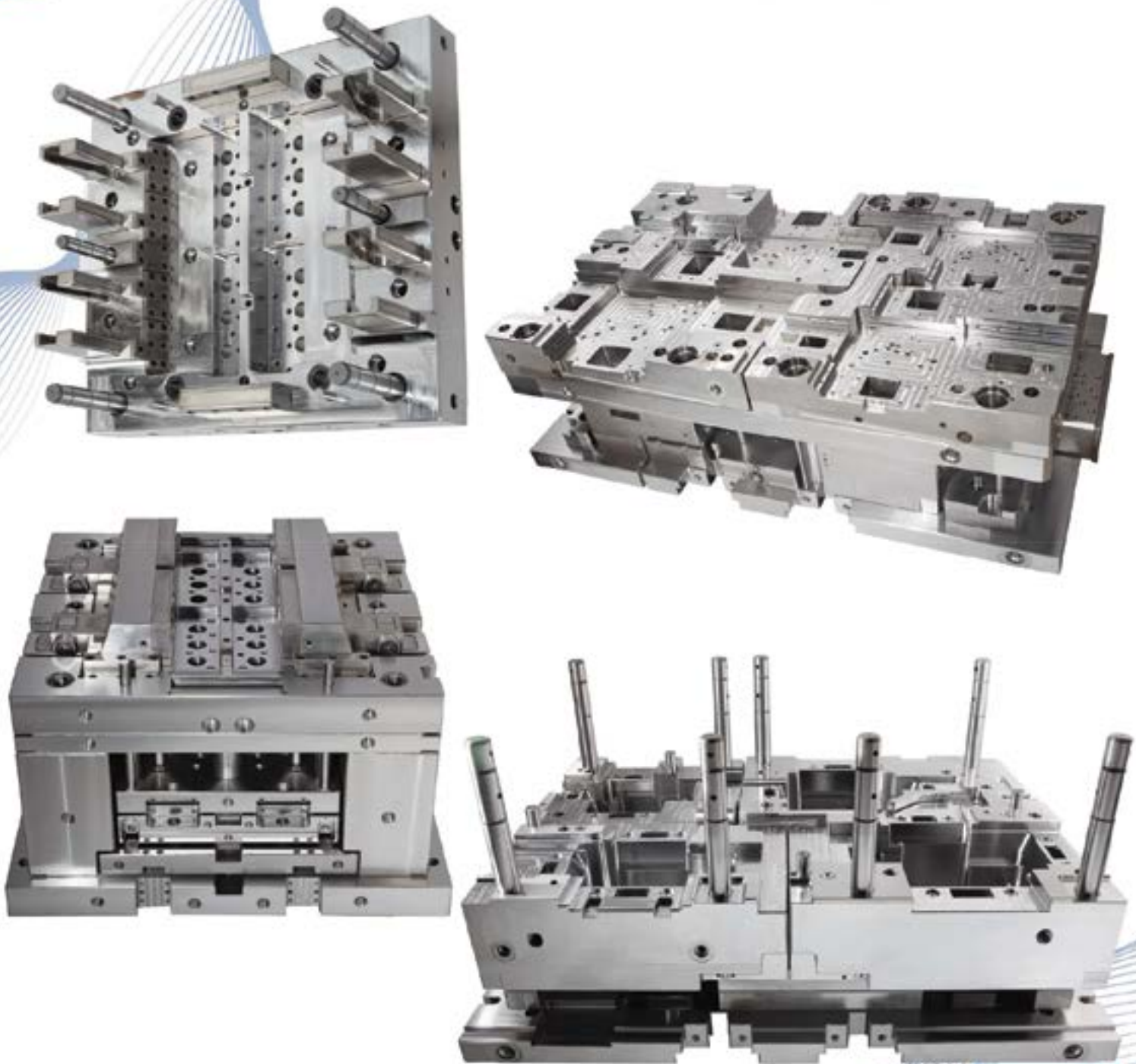


Q Various market reports have highlighted how the Indian electrical industry has experienced rapid growth in recent years. What kind of growth do you foresee for Indian toolmakers in the electrical industry?

The electrical industry in India

has been experiencing rapid growth, driven by increasing industrialization, urbanization, and overall GDP expansion. This growth presents significant opportunities for Indian toolmakers, particularly in the mould market, which is expected to expand by 10% over the next two years. That's a substantial increase!

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For example, at Legrand, we sourced 150 moulds in 2022, 275 moulds in 2023, and anticipate sourcing around 300 moulds in 2024. As we look forward to 2025, we expect these numbers to continue rising.

However, as I travel and observe the industry, I notice that the demand for moulds in the electrical sector is growing rapidly. Despite this, I have reservations about whether Indian tool rooms are fully prepared to meet this surge in demand. Unfortunately, my assessment is that they are not yet ready to handle it effectively.

Q Building tools for every industry requires a different skill set. What is it like to design and build moulds for the electrical industry?

Building moulds for the electrical industry indeed requires a specific skill set, and while different segments like automotive, PVC pipe fittings, and electrical products have varying demands, the differences shouldn't be insurmountable. However, I must connect this to my previous point—Indian tool rooms are not fully prepared, and the answer is 'No, we're not ready!'

When designing moulds for the electrical industry, the key challenges include achieving precise undercut formations and ensuring high-accuracy movement within the mould. This often involves integrating various sensors to monitor mould component movements and making the correct choices in steel and accessories based on the raw materials used. While every toolmaker should aspire to adopt a 'first-time-right' approach, unfortunately, many are still operating in the 'trial-and-error' mode.

In terms of mould making, achieving a seamless parting line appearance is crucial, as is ensuring that the mould functions correctly on the first try. It's essential not to cut corners in the manufacturing

process. Both the designer and the mould maker must have a clear understanding of the end goal to deliver a product that meets customers' expectations.

One concept that illustrates this challenge is the 'Seso and Scissors' approach. This concept emphasizes the importance of synchronized, precise movements within the mould, akin to the coordinated action of a pair of scissors. This level of precision and coordination is vital in delivering a functional and reliable mould, yet it remains an area where many in the industry fall short.

Q What kind of tools does the electrical industry need, and how does this differ from the automotive industry? Please provide some details.

Rather than differentiating strictly between electrical and automotive moulds, it's more about distinguishing between precision and non-precision moulds. Both these industries require high-precision moulds because errors can compromise safety.

However, the main difference lies in the lifespan of the tools – the tools in the electrical industry need to last longer due to high production demands. For Legrand, we focus on using advanced CNC machines, wire-cut, and EDM machines, prioritizing speed and efficiency. We also use vacuum heat treatment to enhance mould durability and apply suitable surface treatments to protect mould bases, especially in India's challenging environment.

This emphasis on longevity and precision is crucial, with the electrical industry often requiring even greater durability due to the nature of its products.

Q I'd like to discuss a potential use case. If I currently own a small tool room with all the necessary infrastructure to carry out tooling activities for the automotive industry, what

would I need to do in order to expand into the electrical industry? Specifically, what new skills, infrastructure, knowledge, etc. would I need to acquire?

To transition from serving the automotive industry to the electrical industry, it's crucial to understand the specific demands of electrical toolmaking. The primary differences lie in the precision and lifespan of the moulds. Here's what you would need to focus on:

- **Precision and Durability:** The electrical industry requires long-life, high-precision moulds. While automotive tools also need to be precise, electrical tools demand even greater accuracy and durability.
- **Infrastructure:** Ensure your tool room is equipped with high-end CNC machines, advanced wire-cutting and EDM machines, and facilities for vacuum heat treatment. These are essential to achieve the necessary precision and longevity.
- **Skill:** The shift will require highly skilled toolmakers, who are adept at working with the latest technologies and techniques. Your team should be trained in advanced mould-making methods.
- **Know-How:** Embrace the latest technologies such as mould flow analysis, warp testing, and advanced coatings. Transitioning from traditional methods to state-of-the-art practices will be crucial in meeting the electrical industry's demands.
- **Metrology:** Invest in high-quality inspection equipment and ensure you have skilled inspectors. Precision in measurement is critical to delivering the high standards expected in the electrical industry.

This transition requires not just upgrades in infrastructure and technology but also a shift in the mindset towards embracing cutting-edge techniques and achieving the highest standards in toolmaking.

Q How do you evaluate a toolmaker as a potential supplier? What skill set and infrastructure do you expect toolmakers to have in order to become your supplier?

When qualifying a toolmaker as a supplier, several key factors are considered. They include:

1. **Experience:** The toolmaker should have substantial experience in precision and long-life mould making. This expertise is critical for ensuring the quality and durability of the moulds.
2. **Capacity:** The tool room should have the capacity to produce at least 10 moulds per month, with a preference for 20 moulds per month, to meet production demands.
3. **Lead Time:** An established and reliable lead time is essential. We require a lead time of 6 to 8 weeks, with a 98% rate of acceptable samples and 100% aesthetic quality.
4. **Materials and Components:** The use of high-quality materials and standard components is a must. This ensures consistency and reliability in the moulds produced.
5. **Designers:** The number, skill level, and experience of designers are crucial. A well-equipped design team is necessary to handle complex mould designs.
6. **Machinery:** The toolmaker must have high-quality, advanced machines that can achieve the precision required for our moulds.
7. **Manufacturing Process and Planning:** A robust manufacturing process and meticulous planning are key. This ensures efficiency and consistency in mould production.
8. **Skilled Workforce:** The number and skill level of mould makers are important. A highly skilled team ensures the quality and precision of the moulds.
9. **Trial Facility:** An in-house trial facility is mandatory. This allows for immediate testing and fine-

The future lies in creating clusters of toolmakers, which can significantly improve both lead time and quality. I like to refer to this concept as a “tooling village”.

tuning of moulds, ensuring they meet our specifications before full-scale production.

10. **Confidentiality:** A clear and secure process for maintaining confidentiality is required to protect proprietary designs and information.

These criteria ensure that the toolmakers we partner with can meet our high standards for quality, precision, and reliability.

Q Many of the largest companies in almost every domain have their own in-house tool room to meet their tooling needs. Do you think companies will continue to invest in captive (in-house) tool rooms or will they depend on commercial tool rooms? According to you, what will be the trend going forward?

I believe that the trend will shift away from companies maintaining their own in-house tool rooms. The primary reason is that tooling is not their core business. Instead, more companies will opt to subcontract mould manufacturing to specialized tool rooms.

The future lies in creating clusters of toolmakers, which can significantly improve both lead time and quality. I like to refer to this concept as a “tooling village”.

This is similar to how specific industries have concentrated in particular regions, such as the furniture village in Kerala or the garment manufacturing hubs in Gujarat or Erode, Tamil Nadu. By forming clusters, toolmakers can pool

resources, share expertise, and drive innovation, making it more efficient and cost-effective for companies to outsource their tooling needs.

Q As someone with extensive experience in the tooling industry, what are your expectations from the tooling industry?

Having spent years in the tooling industry, my expectations are clear and focused. First and foremost, I expect faster delivery times to meet the ever-increasing demands of the market.

Additionally, I look for trouble-free moulds that perform consistently without issues, coupled with an assurance of long life for the tools. Finally, strong after-sales service is crucial. Toolmakers must be responsive and supportive in addressing any challenges that arise post-delivery, ensuring long-term customer satisfaction.

Q What suggestions do you have for Indian toolmakers?

To Indian toolmakers, my suggestions would be to embrace innovative thinking and move beyond traditional mould-making methods. The expectations of customers have evolved significantly, and it is crucial to rise and meet these new demands. Developing in-house training programs to enhance manpower skills is essential, as relying solely on external institutes may not suffice. Additionally, maintaining a stock of steel can significantly reduce lead times by at least two weeks.

In this era of artificial intelligence, TAGMA should take the initiative to explore how AI and machine learning technologies can be leveraged to support and enhance tool-making skills. Addressing the skill gap through AI-driven training can be a game-changer. Furthermore, upgrading skills for developing stack moulds and making a paradigm shift in our approach will help position India prominently on the global tooling map. ♦

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Catalysing MSMEs' Success with Growth-Oriented Schemes

Finance Minister Nirmala Sitharaman presented Union Budget 2024-25 in Parliament on July 23, 2024. Prior to commencing the announcements, the Finance Minister said, "The global economy, while performing better than expected, is still in the grip of policy uncertainties. Elevated asset prices, political uncertainties and shipping disruptions continue to pose significant downside risks for growth and upside risks to inflation. In this context, India's economic growth continues to be the shining exception and will remain so in the years ahead."



Image Courtesy: Press Information Bureau

Union Minister for Finance and Corporate Affairs Smt. Nirmala Sitharaman departs from the Ministry of Finance in North Block to Rashtrapati Bhavan and Parliament House, along with the Ministers of State for Finance Shri Pankaj Chaudhary as well as her Budget Team/Senior Officials of the Ministry of Finance to present Union Budget 2024-25 in New Delhi on July 23, 2024.



The Finance Minister highlighted that Union Budget 2024-25 “provides special attention to MSMEs and manufacturing, particularly labour-intensive manufacturing”. Let’s take a look at the significant announcements for MSMEs:

Support for promotion of MSMEs

The budget highlights a package covering financing, regulatory changes and technology support for MSMEs to help them grow and also compete globally.

Credit Guarantee Scheme for MSMEs in the Manufacturing Sector

For facilitating term loans to MSMEs for purchase of machinery and equipment without collateral or third-party guarantee, a credit guarantee scheme will be introduced. The scheme will operate on pooling of credit risks of such MSMEs. A separately constituted self-financing guarantee fund will provide, to each applicant, guarantee cover up to INR 100 crore, while the loan amount may be larger. The borrower will have

to provide an upfront guarantee fee and an annual guarantee fee on the reducing loan balance.

New assessment model for MSME credit

Public sector banks will build their in-house capability to assess MSMEs for credit, instead of relying on external assessment. They will also take a lead in developing or getting developed a new credit assessment model, based on the scoring of digital footprints of MSMEs in the economy. This is expected to be a significant improvement over the traditional assessment of credit eligibility based only on asset or turnover criteria. That will also cover MSMEs without a formal accounting system.

Credit Support to MSMEs during Stress Period

The Budget also mentions a new mechanism for facilitating continuation of bank credit to MSMEs during their stress period. While being in the ‘special mention account’ (SMA) stage for reasons beyond their control, MSMEs need credit to continue their business and to avoid getting into the NPA stage. Credit

availability will be supported through a guarantee from a government-promoted fund.

Mudra Loans

The limit of Mudra loans will be enhanced to INR 20 lakh from the current INR 10 lakh for those entrepreneurs who have availed and successfully repaid previous loans under the ‘Tarun’ category.

Enhanced scope for mandatory onboarding in TReDS

For facilitating MSMEs to unlock their working capital by converting their trade receivables into cash, the Budget proposes to reduce the turnover threshold of buyers for mandatory onboarding on the TReDS platform from INR 500 crore to INR 250 crore.

SIDBI branches in MSME clusters

SIDBI will open new branches to expand its reach to serve all major MSME clusters within 3 years, and provide direct credit to them. With the opening of 24 such branches this year, the service coverage will expand to 168 out of 242 major clusters.

Associations share their perspectives



The Budget is very encouraging for MSMEs. It takes care of a lot of points, like the acceleration of funds availability through the reduction of a threshold. This will help MSMEs going forward and ease their requirements for working capital.

Ashok Saigal, Co-Chairman, CII National MSME Council, & Managing Director, Frontier Technologies Pvt. Ltd.

(Source: ET Manufacturing)



We welcome the budget presented, which lays out a comprehensive roadmap for 'Viksit Bharat' across key sectors including manufacturing and services. The emphasis on promoting MSMEs through enhanced credit support and infrastructure development is particularly commendable. These measures will not only bolster job creation but also enhance competitiveness, paving the way for a robust industrial growth trajectory. For the manufacturing sector, the proposed incentives for additional employment will significantly boost job creation and strengthen the manufacturing ecosystem. The special attention given to MSMEs, particularly labour-intensive manufacturing, through financing, regulatory changes, and technology support, is a crucial step toward enhancing global competitiveness. The introduction of a credit guarantee scheme for MSMEs, providing up to INR 100 crore without collateral, along with the new credit assessment model and enhanced Mudra loan limits, will ensure broader financial inclusion and stability. The commitment to developing 'plug and play' industrial parks and reducing customs duty on key raw materials like ferro nickel and blister copper will lower production costs and enhance competitiveness. Additionally, the financial support for shifting micro and small industries to cleaner forms of energy and the facilitation of investment-grade energy audits in 60 clusters, with expansion to 100 clusters, will greatly benefit MSME units in the forging sector. Overall, this budget is a significant step towards 'Viksit Bharat', and we at AIFI are optimistic about its positive impact on the forging industry and the broader manufacturing sector.

Vikas Bajaj, President, Association of Indian Forging Industry (AIFI)

(Source: Deccan Chronicle)



While the budget provides a robust framework for growth, the effective implementation of these policies will be crucial. We hope for continued support from the government in addressing specific issues faced by the auto retail sector, such as the transition to green mobility and the need for policies that support sustainable practices... The budget lays a strong foundation for future growth, and we are optimistic about the positive impact it will have on the auto retail industry.

Manish Raj Singhania, President, Federation of Automobile Dealers Association, New Delhi

(Source: Reuters)



The budget, a blueprint for Viksit Bharat, will drive sustainable yet inclusive growth, especially in the manufacturing industry, at a rapid pace. Focus on strengthening of MSMEs through Credit Guarantee scheme and credit support during stress period, measures to bolster energy security and encouragement to start-ups by abolishing angel tax are indeed steps in the right direction. Further, the proposals for personal Income Tax will put more money in the hands of people thus fuelling consumption leading to economic growth... ACMA is also delighted by the measures announced towards employment, skilling, internships and research. Reduction in customs duty to nil on critical minerals such as lithium, copper, cobalt, nickel etc. will encourage cell manufacturing in the country and add to the evolving EV ecosystem in the country.

Shradha Suri Marwah,

President, ACMA, & CMD, Subros

(Source: ACMA)



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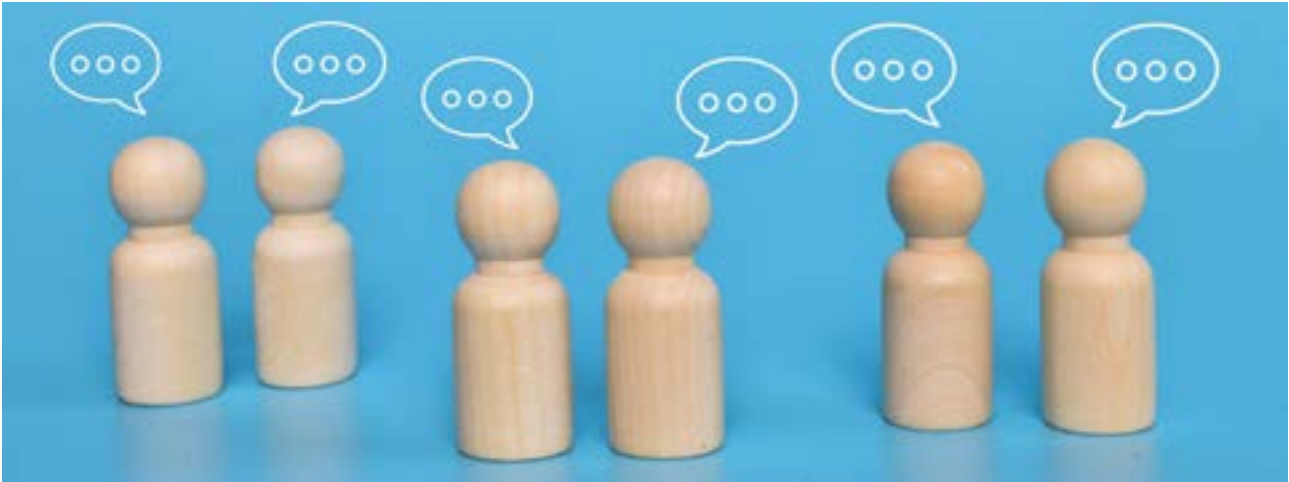
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Industry titans offer their insights



“We are the envy of the world in terms of our growth in GDP. We are the preferred destination of the world for investment because of the belief in our future. But the vital task ahead for us is to ensure that this growth is now accompanied by an explosion in job-creation. Hence for me, the most important element of the budget was strong evidence that the Government recognises this to be its most important mission. And that skilling to make young people employable is as important as employment. The schemes announced are promising. But they need to be tracked closely to ensure that the incentives are working and if any tweaks/modifications are required. And the private sector needs to step up to the crease and do its part by investing in both employment & employability... If we don't all pull together for this task, the demographic dividend will go back to being a demographic disaster.

Anand Mahindra, Chairman, Mahindra Group

(Source: X)

“We welcome the Union Budget 2024 and commend the government's budgetary priorities aimed at fostering innovation, research, and development in the manufacturing sector. The initiatives announced, such as the credit guarantee scheme and reduction in customs duties on critical raw materials, are poised to strengthen India's manufacturing ecosystem. These measures will not only incentivize additional employment in the manufacturing sector but also provide the necessary financial and technological support to MSMEs, allowing them to compete globally and contribute significantly to the economy. Additionally, the establishment of investment-ready industrial parks and the reduction of input costs through customs duty cuts will boost domestic manufacturing and export competitiveness. We look forward to leveraging these opportunities to drive sustainable growth and technological advancement in the automotive industry, aligning with our vision for a prosperous and 'Viksit Bharat'.

Anurag Garg, Country Head & Managing Director, Vitesco Technologies India

(Source: Deccan Chronicle)

“Exciting to see the Union Budget 2024-25 prioritizing DPI, critical minerals, and job creation. The focus on developing DPI applications in agriculture and other areas lays the data foundation for making India the AI hub of the world. The Critical Mineral Mission will be a game changer of India's energy transition journey. Great to see emphasis on women's employment too. This budget sets a strong foundation for India's tech-driven future.

Bhavish Aggarwal, CEO, Ola

(Source: X)



The Budget 2024 is a visionary and pragmatic blueprint designed to propel

our economy forward and foster a sustainable future. I am confident that this budget presented by Hon'ble Finance Minister Nirmala Sitharaman will stimulate consumption, attract substantial investments, and stabilize inflation. This budget successfully addresses the dual imperatives of economic growth and fiscal responsibility. The Government of India has undertaken exemplary initiatives to fuel the next generation of economic reforms. With an optimistic growth forecast of 7% for the fiscal year 2024-25, this budget reflects the significant progress our nation has made across various sectors. It embodies the government's vision of a Viksit Bharat, emphasizing on employment & skill development, infrastructure advancement, manufacturing, energy, technology & innovation, and research & development. The provisions for the rural economy and infrastructure, coupled with land reforms and ease of doing business, will further boost the overall economy. Furthermore, this budget reinforces our commitment to supporting youth, farmers, women, and the underprivileged, ensuring inclusive growth and prosperity for all. Budget 2024 positions India as a technology-driven and knowledge-driven economy, reaffirming our commitment to sustainable development. It is a decisive step towards realizing our national aspirations and strengthening our position on the global stage.

Dr. Pawan Munjal, Executive Chairman, Hero MotoCorp

(Source: LinkedIn)



The Union budget for FY25 demonstrates the nation's outlook toward inclusive, tech-focused and sustainable growth, in line with the Government's long-term vision of Viksit Bharat. Many of the key priorities identified in the budget, such as promoting skill development, driving employment and inclusivity, accelerating infrastructure development, energy security, fostering innovation, will act as catalysts for sustainable growth across manufacturing industries, including the automotive sector... Several new initiatives have been announced to further improve the ease of doing business, especially for the MSME sector. The new credit guarantee scheme announced for them has the potential to transform MSMEs, often constrained by capital, to scale and modernize. The development of industrial parks offering a 'plug and play' mode will reduce the lag between planning and execution. These initiatives will benefit auto component manufacturers and other MSMEs by providing them with an excellent opportunity to invest in the right technologies, state-of-the-art machinery, and equipment, enhance operational efficiency, and improve market positioning.

Shailesh Chandra, Managing Director, Tata Motors Passenger Vehicles Ltd. and Tata Passenger Electric Mobility

(Source: Business Standard)



We welcome the Government's consistent approach towards fiscal

consolidation, supporting capex in infrastructure by reconfirming the allocation of INR 11.11 lakh crore in the Budget, as well as additional allocations towards improving urban and rural infrastructure. We also welcome the Government's focus on employment generation, skilling, women's empowerment, MSMEs, and climate change mitigation, along with their encouragement to the states to carry out land and labor reforms and further improve ease of doing business. We believe this Budget paves the way for the next generation of reforms, which we are confident will lead India to its deserved place as Viksit Bharat.

Sunil Mathur, Managing Director and Chief Executive Officer, Siemens Limited, India

(Source: X)



This is a visionary Budget that silently strengthens

the long term with a substantial capex increase and simultaneously supports current priorities of job creation, MSMEs, skilling and women empowerment while still keeping better-than-expected fiscal discipline. The focus towards agri-resilience reforms, the rural sector and the eastern states of India will help in inclusive growth. The thinking on multiple pathways towards clean energy transition to meet the imperatives of employment, growth and environmental sustainability is a welcome step and Maruti Suzuki will be happy to contribute to it with all possible technologies.

Hisashi Takeuchi, MD and CEO, Maruti Suzuki India

(Source: India Today)

Images used for representation only. Courtesy Envato Elements.



Innovations Shaping the Future of Automotive Mould Manufacturing

The emergence of high-performance polymers, new moulding techniques, and advancements in Industry 4.0 technologies are set to significantly impact the automotive mould manufacturing sector's approach to sustainability and efficiency. To remain competitive, manufacturers will need to stay updated on the latest materials and processes as well as put strategic measures in place to address challenges like fluctuating material costs, technology integration, and stringent environmental regulations. In the evolving landscape of automotive mould manufacturing, opportunities in lightweighting, electrification, and smart manufacturing await those ready to embrace the future.

Sudhanshu Nayak

The automotive industry has undergone significant changes in recent years with the introduction of innovative plastic injection moulding. These advancements have not only improved the look and performance of vehicles but are also transforming the concept of

mobility as a whole. The development of high-performance polymers and bio-plastics, as well as the precision of micro-moulding and the incorporation of industry 4.0 technologies, represent a renaissance in the manufacturing process.

As the integration of automation, robotics, and data analytics enables

production facilities to evolve into smart factories, real-time monitoring, predictive maintenance, and optimised processes are increasingly becoming standard practices, positioning companies to enhance productivity and reduce or eliminate downtime. Additionally, the rise of electric vehicles is

creating new opportunities for mould manufacturers. Lightweight yet sturdy components such as battery casings and electric motor housings are driving the demand for materials and moulding techniques that can meet these requirements.

The sector is primed for a quantum leap. However, issues such as material cost volatility, technology integration, environmental concerns, and rigorous competition, among others, are acting as hurdles to its growth. While these hurdles may seem daunting, one cannot discount the potential rewards. From the automotive mould manufacturing perspective, some significant focal growth areas appear to be lightweighting, electrification, smart manufacturing, sustainability, additive manufacturing, autonomous vehicles, and greater customisation. These trends will further help the industry in shaping more efficient, cleaner, and individual vehicles. Innovative mould manufacturers will continue to come up with new technologies and invest in research and development; the future of mobility belongs to them.

Recent Advances in Technology

Manufacturing of automotive moulds is undergoing significant changes due to recent developments. For instance, innovations in high-performance polymers, like polycarbonate and polyamide, deliver higher mechanical strength and are more resistant to heat than the usual engine covers, transmission parts, and components used in the interior parts. At the same time, it is hard to miss the industry's inclination towards bio-based plastics derived from renewable sources that minimise carbon footprints without compromising on performance.

New moulding techniques are also undergoing innovative changes. For instance, gas-assisted injection moulding makes use of nitrogen to hollow out thick sections of parts, reducing weight and material usage without affecting the structural integrity—making it



Revolutionising Production

- The latest automation and industry 4.0 technologies, namely robotics and data analytics, are changing production processes in a big way.
- Integration of robotics enhances efficiency and precision; at the same time, data analytics and the IoT provide real-time monitoring and optimisation that enhance predictive maintenance and reduce downtime, thereby saving costs while enhancing productivity.

suitable for large complex parts like instrument panels and door handles. Multi-material injection moulding combines different materials in one process to produce parts with different properties: rigid cores with soft-touch surfaces, providing an added advantage to the ergonomic and safety features of automotive parts. High-precision micro-moulding produces parts that are detailed and have tight tolerances, catering to the ever-growing demand for small components.

Challenges in Automotive Mould Manufacturing

Growth in the automotive mould manufacturing industry has brought a list of associated challenges that require innovative solutions. Some of the challenges include:

Material and Economic Issues

- **Unstable Material Prices:** The instability in raw material prices, especially of high-performance polymers, impacts production costs. This scenario demands strong hedging and possible replacement strategies without influencing the final component quality.

- **Supply Chain Disruptions:** The recent events have already made vulnerabilities in global supply chains serious. Such disruptions can result in a lack of material supply and delays. Companies can offset these through diversified sourcing, strategic inventory management, and strong relationships with suppliers.
- **Economic Downturns:** This includes recessionary conditions characterised by a fall in demand for automotive production and consequently a drop in demand for moulds. Flexible manufacturing capabilities and a diversified customer base will help businesses weather such fluctuations.

Technological and Operational Challenges

► Integration of Technology:

Advanced technologies like automation, IoT, and AI require huge investments and skilled labour. Incremental implementation and continuous training can ensure a smoother transition here.

► Mould Design Complexity:

With increasing complexity in the design of automotive components, the mould designs used are also becoming complex. Using advanced simulation tools and design optimisation software can smoothen the process and reduce errors.

- **Quality Control:** Maintaining a consistent level of product quality necessitates vigorous systems of quality management, which involve statistical process control as well as advanced technologies of inspection.

► Lack of Skilled Manpower:

The dearth of skilled professionals, namely mould makers and engineers, has been negatively impacting the functioning of production lines. Investing in apprentices and training programs to skill manpower could help resolve the issue.

Market and Competitive Challenges

- **Fierce Competition:** As competition in the automotive business becomes even more aggressive, cost reductions and faster time-to-market have become the prime objectives of every manufacturer. This makes it necessary to innovate without stopping, optimise processes, and build relations with customers.
- **Shorter Product Life Cycles:** Automobile designs change at a rapid pace, which in turn requires moulds to be modified frequently. In this scenario, agile manufacturing processes and modular mould designs can be used.
- **Price Pressure:** This is the most common customer demand – reducing prices without compromising on quality. There's a need to institutionalise the process of sustaining profitability with value engineering and cost-reduction programs.

Faced with these potential challenges, automotive mould manufacturers need to significantly improve their competitiveness and long-term sustainability to overcome them.

Sustainable Future Growth

Huge growth prospects for the automotive mould manufacturing sector are expected with the interaction of a number of industry trends. Another key driver is the ever-rising demand for fuel-efficient and 'green' vehicles. To address these needs, manufacturers are increasingly using lightweight materials, and plastic injection moulding is replacing heavier metal components.

The EV market also offers major opportunities to mould manufacturers. EVs require special components, like battery housings and thermal management systems, dedicated tooling and materials. Advanced moulding techniques would form the backbone of making those efficiently and in large volumes.

Industry 4.0 technologies are rapidly changing today's



manufacturing landscape as well. Automation, robotics, and data analytics are driving precision, lowering costs, and accelerating production cycles. It is these technologies that realise smart factories, which are able to adapt and respond to the market's dynamics.

The challenges in the development of autonomous vehicles and individual customisation within the car industry show new challenges but also opportunities for mould makers. First, these cars require highly developed sensors, cameras, and other electronic components requiring high-precision moulds. Another trend is the need for flexible

production processes to be able to create a large variety of components efficiently for the production of more customised vehicles.

Opportunities Galore

In conclusion, lightweighting, electrification, Industry 4.0, and autonomous vehicles collectively lay a stronghold on the growth momentum of the automotive mould manufacturing industry. Whoever can successfully steer these trends and make investments in advanced technologies will have the advantage when capitalising on these opportunities. ♦

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Rethinking and Redesigning: Upgrading an Automotive Tool with Additive Manufacturing

A major advantage of additive manufacturing (AM) is its design flexibility, which allows us to rethink existing processes in completely new ways. One example is a lamination tool used in the automotive industry to adhere materials to car interiors, a process known as drape forming. After designers and engineers at Materialise recognized flaws in the process, they took up the challenge to redesign the tool with AM.



The challenge: Eliminate issues caused by using conventionally manufactured tools

Experts at the Metal Competence Center are very familiar with applying AM technology to applications in the automotive industry. They are constantly rethinking old processes with AM. This is how the team identified a point within the production process that often causes inconsistency, time delays, and excess scrap – drape forming.

Traditionally, this process uses a metal tool that contains heating and cooling channels to glue a material, such as leather, onto an area within a car's interior, such as a door panel. Because the tool is made by milling solid metal blocks, the channels

can only be drilled in a straight line, therefore limiting the design possibilities. This often resulted in long cycle times and inconsistent heating and spreading of the glue, leading to a waste of time and material when the result isn't up to strict quality standards required for the industry.

The solution: Redesign with additive manufacturing

When the Design & Engineering team came upon these issues, they immediately recognized the ways in which additive manufacturing could elevate the tool — while continuing to use aluminum to meet temperature and pressure restrictions.

"When we redesign a part for automotive additive manufacturing, it's not just about improving the original design," says Tim Hermanski, Design Engineer at Materialise. "It's about thinking up innovative ways to give the tool new life. How can we optimize the design to push it beyond its intended purpose? Thanks to 3D printing's design flexibility, we were able to do just that. We don't stop at 'good enough!'"

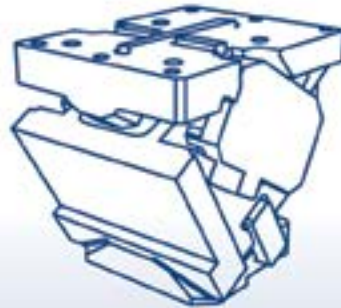
While redesigning a part for additive manufacturing, it's crucial that the team has a deep understanding of the application and how to design for 3D printing. The Metal Competence Center team is well suited to do so because the center combines the expertise of experts in AM software,

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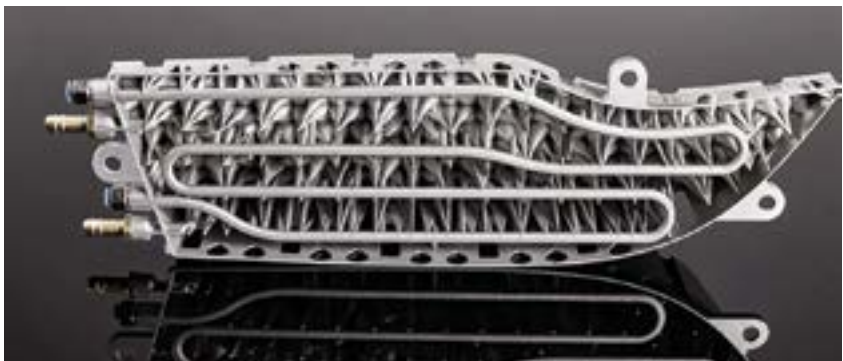
production, and design. With this know-how and Materialise software to streamline the process, the team fully rethought the part using AM.

The result: A 3D-printed part that's lighter, cheaper, and more performant

Thanks to the combined capabilities of the team and metal AM, the redesigned part offers many advantages over the original design.

First of all, the flexibility in design meant that the team could combine two components into one and reduce the part's mass by 51%. Where the milling technology only allowed for straight channels, AM enabled more organic shapes for these channels to follow that minimized the amount of material needed. A lighter part is easier for the operator to handle and costs less to make. The team further optimized the part with an orientation that doesn't require support structures, reducing material costs and the time and effort required for post-processing.

Another benefit of the optimized channels was a boost in performance. The team designed the channels closer to the surface to ensure heating and cooling that is homogenous



and quick. As mentioned earlier, consistency during this step was a major drawback of the initial design, so this improved flow plays an important role in reducing scrap.

The redesign of this lamination tool illustrates several of the many opportunities additive manufacturing

offers — especially when it comes to production tooling. From cars to marshmallows to agricultural equipment, additive manufacturing's value in production is clear. ♦

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'Auto component industry's revenues to grow by 5-7% in FY2025, after a strong FY2024'



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Operating margins to see a YoY improvement of ~50 bps in FY2025. Industry likely to incur capex of INR 20,000-25,000 crore in FY2025; capex to hover around 8-10% of operating income over the medium term, according to ICRA.

ICRA expects the growth in the revenues of the Indian auto component industry (represented by a sample of 46 auto ancillaries with aggregate annual revenues of over INR 3,00,000 crore in FY2024) to ease to 5-7% in FY2025, from the highs of ~14% in FY2024. Operating margins are set for a YoY improvement of ~50 bps in FY2025, benefitting from better operating leverage, higher content per vehicle, and value additions, while remaining

exposed to any sharp volatility in commodity prices and foreign exchange rates. Further, ICRA projects the industry to incur capex of INR 20,000-25,000 crore in FY2025 towards capacity expansion and technological developments. Capex is anticipated to hover around 8-10% of operating income over the medium term, with the PLI scheme also contributing to accelerating capex towards advanced technology and EV components.

Giving more details, Vinutaa S., Vice President and Sector Head – Corporate Ratings, ICRA Limited, said: "Demand from domestic original equipment manufacturers (OEM) constitutes over 50% of sales for the Indian auto component industry and the pace of growth in the segment is expected to moderate in FY2025. Growth in replacement demand is pegged at 5-7%, after two to three years of healthy growth, following a relatively weak Q1 in the current

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fiscal. Exports, which account for close to 30% of the industry's revenues, are likely to be impacted by subdued growth in end-user markets. Nevertheless, ancillaries will benefit from supplies to new platforms, as the global OEMs diversify their vendor base and increase outsourcing."

The projected moderation in revenue growth in FY2025 stems from the expected moderation in the growth pace of the domestic OEM segment. On the exports front, new vehicle registrations in Europe and the US are expected to remain tepid over the next few quarters, impacted by the weak global macroeconomic environment and geopolitical tensions. Nevertheless, factors like rising supplies to new platforms because of vendor diversification initiatives by global OEMs/Tier-I players and higher value addition, partly stemming from an increase in outsourcing, augur well for Indian auto component exporters. Further, there would be opportunities for Indian players in metal casting and forgings with the winding up of plants in the European Union due to viability issues. The aging of vehicles and increased sales of used vehicles in global markets are also expected to aid in the export of components for the replacement segment in overseas markets. Over the medium-to-long term, ICRA expects electric vehicle (EV) linked opportunities, premiumisation of vehicles, focus on localisation, and changes in regulatory norms to support stable growth for auto component suppliers.

Further, the disruption along the Red Sea route has resulted in a surge in container rates by 2-3 times in YTD CY2024 compared to CY2023, while shipping time has also increased by

~2 weeks. Given that close to two-thirds of the auto component exports are made to North America and Europe, and one-third of the imports is made from these regions, a sharp and sustained increase in freight rates could have a bearing on margins for these players over the next few quarters.

The industry's liquidity position remains comfortable, especially across Tier-I players supported by stable cashflows and earnings. ICRA expects coverage metrics for the sector to remain comfortable going forward, aided by healthy accruals and relatively low incremental debt funding despite an increase in the cost of borrowings. Most of the auto ancillary players rated by ICRA are in the investment grade, reflecting a healthy credit profile stemming from stable cash accruals and comfortable debt levels. Rating upgrades have been higher than downgrades since FY2022, indicating improvement in the credit profile in the last several quarters.

At present, only 30-40% of the EV supply chain is localised. Chassis components that require minimal technology upgradation are manufactured locally. There has been substantial localisation in traction motors, control units and battery management systems over the years, while battery cells, which constitute 35-40% of vehicle cost, are still entirely imported. The relatively low localisation level gives rise to manufacturing opportunities for domestic auto component suppliers. The EV policy 2024 for electric four wheelers would also help generate incremental demand for component makers, because of the domestic value addition mandated. For parts that are

already used in internal combustion engine (ICE) vehicles, there could be technological advancements in certain cases, resulting in higher content per vehicle. There could also be opportunities for ancillaries in manufacturing components from other alternate fuel vehicles, as their penetration increases.

ICRA expects EVs to account for around 25% of domestic 2W sales and 15% of passenger vehicle sales by 2030. This would translate into a strong market potential for EV components by 2030. The EV transition process is likely to affect the engine and drive transmission components and could also have a bearing on the aftermarket demand because of fewer moving parts. However, supplies to alternative applications, new products, and export opportunities are likely to mitigate the impact to an extent. Also, the EV migration is expected to be gradual, and ICE components will continue to have a sizeable demand over the medium term.

On investments by auto component suppliers, Vinutaa added, "ICRA's interaction with large auto component suppliers indicates that the industry has incurred a capex of over INR 20,000 crore in FY2024 and is estimated to spend another INR 20,000-25,000 crore in FY2025. The incremental investments would be made towards new products, product development for committed platforms, and development of advanced technology and EV components, apart from capex for capacity enhancements and upcoming regulatory changes. R&D, though, is still at an average of 1-3% of operating income, significantly lower than the global counterparts. ICRA expects auto ancillaries' capex to hover around 8-10% of operating income over the medium term, with the PLI scheme also contributing to accelerating capex towards advanced technology and EV components." ♦

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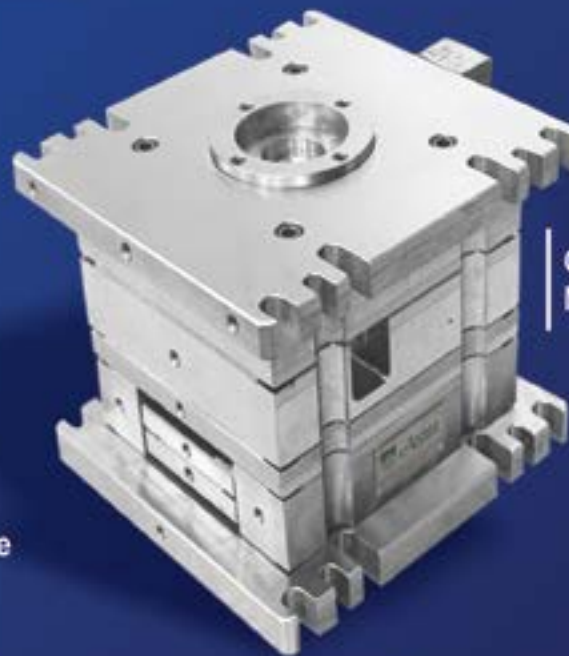
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Empowering youth for a brighter automotive future

Tata Motors' 'Automotive Skill Labs' initiative nurtures over 4000 students annually with future-ready automotive skills.

Reaffirming its commitment to nurturing talent and creating a skilled workforce for the automotive industry, Tata Motors, in collaboration with Navodaya Vidyalaya Samiti (NVS), has established dedicated 'Automotive Skill Labs' at Jawahar Navodaya Vidyalayas (JNVs). To date, 25 labs, fully equipped with essential tools, have been set up across select JNVs in Maharashtra, Karnataka, Gujarat, Jharkhand, West Bengal, Uttar Pradesh, and Uttarakhand. This unique industry-academic joint initiative equips approximately 4000 students annually with practical automotive skills, with 30% of students enrolled being girls.

Aligned with the vocational courses envisioned in the 'National Education Policy 2020', Tata Motors' 'Automotive Skill Labs' focuses on providing secondary and senior secondary students (studying in standards 9th to 12th) with essential subject knowledge, hands-on skills, and valuable industry exposure—all within the school premises. Additionally, students can visit Tata Motors' plants, interact with service and dealership professionals, and attend lectures by industry experts to gain real-world experience and

deepen their knowledge. Furthermore, instructors teaching at these labs are provided with the necessary training at the company's plant locations. A testament to this immersive learning experience is an E-Rickshaw constructed by the students at the Skill Lab in Pune.

Upon successful completion of the programme, students receive joint certificates from Tata Motors and NVS. Post-schooling, the students can opt for a Diploma in Manufacturing Technology, including a full stipend and on-the-job training at Tata Motors' manufacturing facilities. Alternatively, those interested in continuing with Tata Motors can pursue a BTech in engineering—a 3.5-year executive education programme in collaboration with select engineering institutes—leading to permanent employment after five years.

Emphasizing the commitment to enriching the lives of youth and bridging the skills gap in the automotive industry, Vinod Kulkarni, CSR Head, Tata Motors, said, "Our 'Automotive Skill Labs' empowers youngsters from the underserved communities with employable skills, relevant for the evolving automotive sector in India. It creates pathways

for students in grades 9th-12th to pursue higher education and secure employment opportunities. Contributing to the 'Skill India Mission', this programme instills innovative thinking, entrepreneurial spirit, analytical mindset and critical communication skills amongst the students. The response from girl students has strengthened our commitment to empower future leaders who will contribute to India's prominence on the global stage as envisioned by 'Viksit Bharat' @2047."

In 2023, over 1,600 students from this programme participated in the National Automobile Olympiad organised by the Automotive Skill Development Council (ASDC), out of which 17 succeeded in reaching the second stage of the competition. ♦

Article and Images Courtesy: Tata Motors Limited.



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Mr. K.B.N Murali Krishna
Email Id: adityatools.toshiba@gmail.com
Activities: CNC Roughing.

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Contact Person: Ms. Anuradha Datti - Partner
Mobile: +91-7995019301 / 7995019300
Email Id: sales@ctqtooltech.com
Website: www.ctqtooltech.com
Activities: Manufacturer of Mould Bases, LPDC & HPDC.

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Contact Person: Mr. V Maheswaraju - Proprietor /
Mr. V. Sravani
Email Id: innovativeengineers999@gmail.com
Activities: CNC- Roughing.

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Contact Person: Mr. O Subha Reddy - Proprietor /
Mr. O Sujatha
Email Id: jayalakshmiengineeringworks@gmail.com
Activities: Blockup - Milling.

LAXMI SAI ENGINEERING WORKS

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Contact Person: Mr. Ramarao - Proprietor
Email Id: laxmisaienggworks@gmail.com
Activities: Blockup - Milling.

MARUTHI INDUSTRIES

Plot No. 49, Phase - I, Road No.15,
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Tel: +91 9866473675

Contact Person: Mr. G Ravinder - Proprietor /
Ms. Sujatha
Email Id: maruthiindustries1511@gmail.com
Activities: Blockup - Milling CNC-Roughing.

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Contact Person: Mr. U Gudarai - Proprietor / Mr. U Pavani
Email Id: pavanienggservices@gmail.com
Activities: CNC - Roughing.

PRECISTO

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Tel: +91 9000588388

Contact Person: Mr. Indukuri Siva Rama Krishna Varma -
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Mobile: +91 9000588388
Email Id: precisto2018@gmail.com
Activities: Plano Milling, CNC, Jig Boring, Side Work and
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Contact Person: Mr. Venkatarao Ravada - Proprietor /
Podirla Paparao - Accounts & Administrative
Email Id: rkindtech2020@gmail.com
Activities: Plastic Injection Mould Mfg & Production Die
Child Parts. Job Work - Plastic Production.

S.V. MICRO TECH

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Contact Person: Mr.P SRI Ramullu - Proprietor /
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Activities: CNC - Roughing.

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Contact Person: Mr.S Veerraju - proprietor
Email Id: industriessvro@gmail.com
Activities: BLOCKUP-Milling.

SAI LAXMI TOOLS

Plot No 44 & 45 sub-station Post office,
Main Road, Phase II,
IDA Jeedimetla
Hyderabad - 500055, Telangana
Tel: +91 9948053003

Contact Person: Mr. M Rajesh - Proprietor
Email Id: sailaxmitools@gmail.com
Activities: Blockup milling, Fitting work, Grinding ,CNC.

WELCOME

New members

SAIEASH ENGINEERING WORKS PRIVATE LIMITED

Gala No. 1, Lawrence Industrial Estate,
Opp. Setco Chemicals, Valivphata,
Vasai (East), Palghar - 401208, Maharashtra

Tel: +91 9321024751

Contact Person: Mr. Arvind M. Gupta - Managing Director
/ Mr. Divyakumar Gupta - Director

Mobile: +91 9324407393

Email Id: divyakumar.gupta@saieash.com /
arvind.gupta@saieash.com

Website: www.saieash.com

Activities: Manufacturing of Plastic Moulds, Press Tools,
Precision Components, Jigs & Fixtures, Gauges.

SATHYA SAI ENTERPRISES

7A/6, Phase III, IDA Jeedimetla,
Hyderabad - 500055, Telangana

Tel: +91 9908337456

Contact Person: Mr. Gutha Samatha - Proprietor

Email Id: sathyasaienterprises@gmail.com

Activities: Laser Machine, Storage system, bending.

SRI CHANDIKA ENGG. WORKS

Plot No.4, # 5-9-285 / 16 / 4,
Near Andhra Jyothi, Rajiv Gandhi Nagar,
I.E. Kukatpally, Hyderabad - 500072, Telangana

Tel: +91 9959223848

Contact Person: Mr. Sridhar Patel - Proprietor

Email Id: chandikaenggworks@gmail.com

Activities: Blockup - Milling.

SRI VENKATESWARA PRECISION ENGG WORKS

Shop No 2-113 Floor,
Road No 16, Shobana Colony ,
old airport road, Balanagar
Hyderabad - 500042, Telangana

Tel: +91 9948648676

Contact Person: Mr. M.V. Bhanu Prakesh - Proprietor /
Ms. M Sandhya Rani

Email Id: svprecisionenggworks@gmail.com

Activities: Block milling , Jig baring, CNC.

SRINIVASA MICRO TECHNIC

Plot No 18, SY No 298,
Phase 1, IDA Jeedimetla,
Hyderabad - 500055, Telangana

Tel: 040-23077308

Contact Person: Mr. Srinivasa Rao - Proprietor

Email Id: srinivasamicrotechnic@gmail.com

Activities: CNC - Roughing.

T S TOOLING

Plot No. B-5/A, Sy. No.27,
Opp-Bhujanga Theatre, Pipeline Road,
Shapur Nagar, Jeedimetla,
Hyderabad - 500055, Telangana

Tel: +91 9704967716

Contact Person: Mr. M. Shivakumar - Managing Partner

Email Id: shivakumarm@tstooling.com

Website: tstooling.com

Activities: Manufacturing of Dies for Pressure Die Casting
Machines.

TOOLCOM INNOVATIVE SOLUTIONS PVT LTD

930 SF NO 222/2B,222/3B,
Sri subha Ganesh industrial estate,
Kovilpalayam via, Annur Taluk,
Coimbatore - 641107, Tamil Nadu

Tel: 04222962288

Contact Person: Mr. Mohanasundaram - Director /
Mr. Selvamani - Director

Mobile: +91 8946035912 / 7010846634

Email Id: enquiry@toolcom.in

Website: www.toolcom.in

Activities: We are the leading Manufacturers of Tools &
Dies, Injection Molding, Die Castings - Tools & Parts, Jigs
& Fixtures.

V.V.R ENGINEERING WORKS

Shed No. D5, IDA Phase 5,
Patancheru Sangareddy (Dist). TS,
Hyderabad - 502319, Telangana

Tel: +91 9848286441

Contact Person: Mr. A Vishnuv Ardhan Reddy - Proprietor

Email Id: vvreng@gmail.com

Activities: Hyderabad (Sidework)

VINNY ENGINEERS

Plot No. 399, 32-123,
Bhaskara Hospital, Shapur Nagar,
IDA Jeedimetla
Hyderabad - 500055, Telangana

Tel: +91 9989065478

Contact Person: Mr. N. Mahalakshmi - Proprietor

Email Id: neredimillimalakshmi@gmail.com

Activities: Blockup - Milling, Fitting Work, CNC.

VM TOOLING

1st Floor, 6-123 / 1861 - 1874 / 101,
Pragathi Nagar Road, Kukatpally,
Medchal - Malkajgiri
Hyderabad - 500090, Telangana

Contact Person: Ms. G Sruthi

Email Id: sales.vmtooling@gmail.com

Website: vmctooling.in

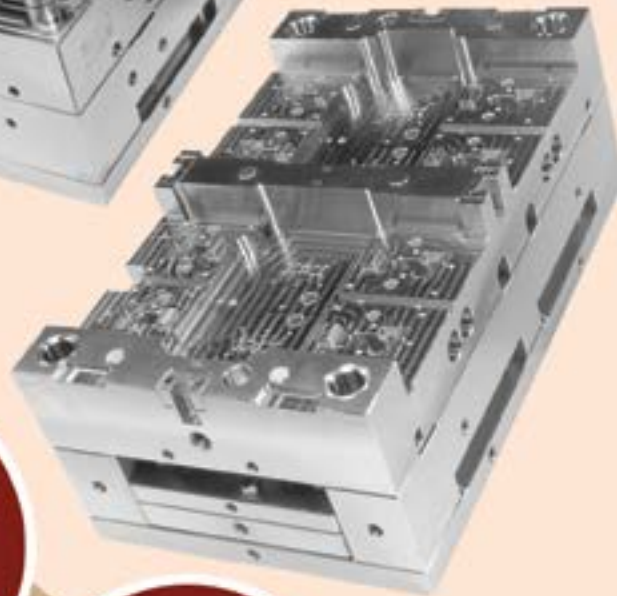
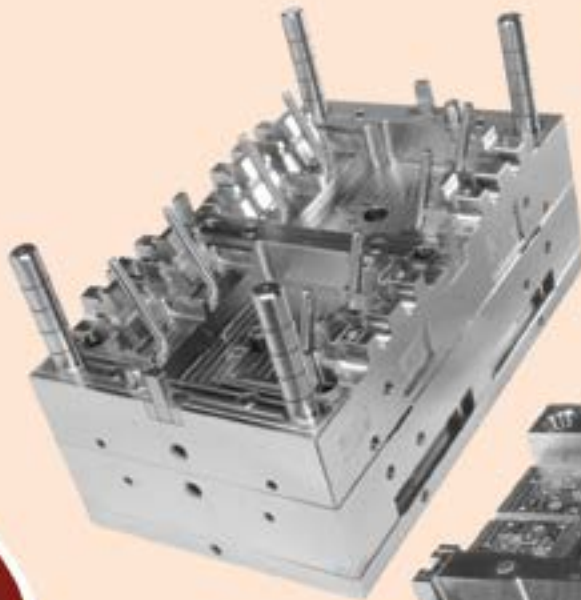
Activities: Cutting Tools and VMC and CNC related job
works.



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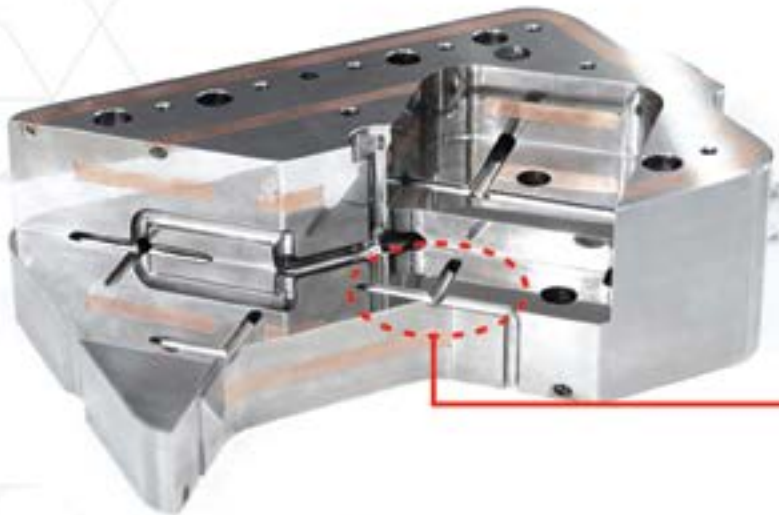


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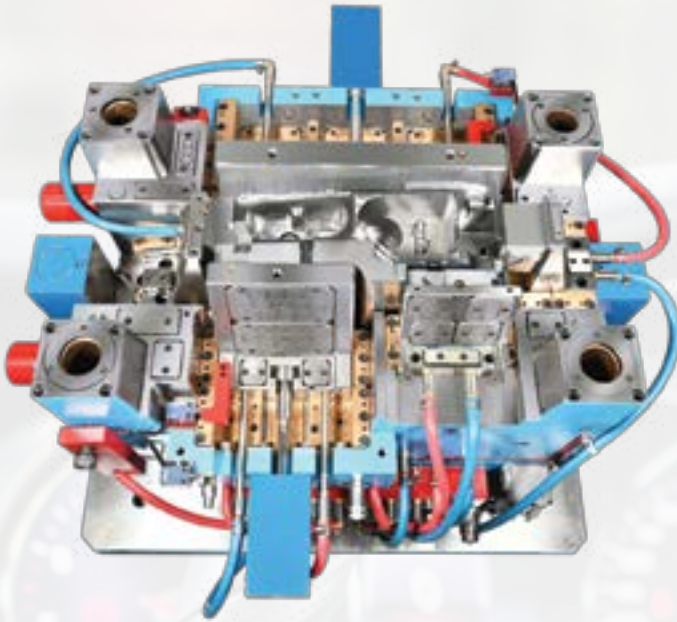
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