

# TAGMA TIMES

NEWSLETTER

(Technical Info. on Die, Moulds & Toolroom)

Volume: XXVIII / No. 12

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August 2022



## Transforming & growing



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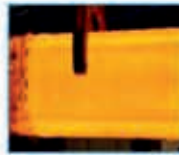
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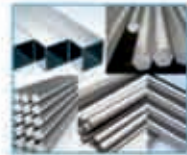
Cold Work Tools  
Steel



Plastic Mould  
Steel

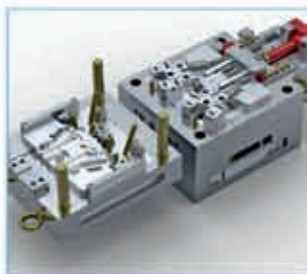
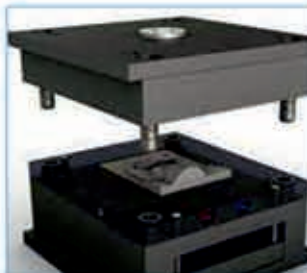


Aerospace  
Aluminum



Other Alloy Steel  
(En19, 24, 31, 36 etc.)

## MOULD BASE

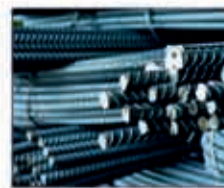




**Square Bars**



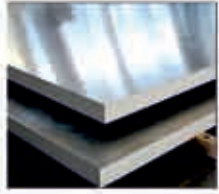
**M S Rounds**



**TMT Bars**



**Flat Bars**



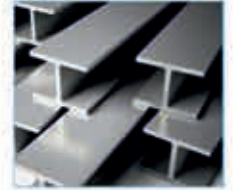
**M S Plates**



**H R Coils**



**M S Channels**



**M S Beams**



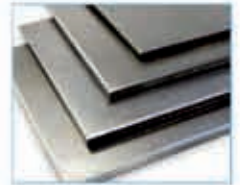
**P-20**



**Chequered Plate**



**M S Angle**



**SS 316**



**SS 304**



**P - 20**



**SS 316**



**SS P-20**

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# PRESIDENT'S MESSAGE

Dear Tooling Fraternity,

**T**he pandemic impacted several businesses, globally as well as domestically. But the most affected were the SMEs and MSMEs. Some businesses shut shop, while some did whatever it took to stay afloat. As the pandemic gradually fades away, it has offered us all a ray of hope. The markets have opened up, the Indian economy seems to be bouncing back to pre-COVID levels and is looking bullish for the coming days.

According to the National Statistical Organisation, the Indian economy has expanded by 8.7% in 2021-22, against a 6.6% contraction in 2020-21. The nominal Gross Domestic Product (GDP) or GDP at current prices in 2021-22 is estimated to attain a level of INR 236.65 lakh crore, as against INR 198.01 lakh crore in 2020-21, showing a growth rate of 19.5%.

IBEF, on its website, stated that India's GDP at current prices stood at INR 51.23 lakh crore (US\$ 694.93 billion) in the first quarter of FY22, as per the provisional estimates of GDP for the first quarter of 2021-22. The manufacturing Gross Value Added (GVA) at current prices was estimated at US\$ 77.47 billion in the third quarter of FY22. India has the potential to become a global manufacturing hub and by 2030, it can add more than US\$ 500 billion annually to the global economy.

In fact, a survey conducted by the Federation of Indian Chambers of Commerce and Industry (FICCI), claimed that capacity utilisation in India's manufacturing sector stood at 72.0% in the second quarter of FY22, indicating a significant recovery in the sector.

According to the Department for Promotion of Industry and Internal Trade (DPIIT), India received a total Foreign Direct Investment (FDI) inflow of US\$ 58.77 billion in FY 2021-22. Between April 2000 and March 2022, the automobile sector received an inflow of US\$ 32.84 billion. India is an attractive hub for foreign investments in the manufacturing sector. Several mobile phones, and luxury and automobile brands, among others, have set up or are looking to establish their manufacturing bases in the country.

To boost India's manufacturing, employment generation, import reduction, and export growth, the Centre announced the Production-Linked Incentive (PLI) scheme, covering 14 significant sectors of the economy, involving a total outlay of INR 3 trillion. The PLI Scheme for semiconductor manufacturing is at INR 760 billion and aims to make India one of the leading manufacturers globally of this critical component.

As per the report by the Ministry of Heavy Industries, the PLI Scheme for the automobile and auto component industry in India has been successful in attracting a proposed investment of INR 74,850 crore against the target estimate of investment of INR 42,500 crore over a period of five years.

These developments are positive sign for us toolmakers. We must gear up for the huge opportunities coming our way. Speaking of opportunities, TAGMA will be organising the International Tooling Summit (ITS) 2022 to help you better understand the emerging trends and prospects in the manufacturing industry. ITS, India's biggest knowledge-sharing platform for the tooling fraternity, is expecting more than 400 delegates from 15+ industries and over 30 speakers from different fields to attend this edition. I invite you all to be a part of the event and make the most of it.

I hope to see you there!

**D. M. Sheregar**

President,

TAGMA India

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## Indexable milling Cutter

### Indexable Cutter SSV type

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## Honouring the real heroes

India's Independence Day marks a historic event in history books. But for every Indian, it's a feeling – a feeling of pride in our freedom fighters; their sacrifices and efforts have given us a free democratic nation. So, on this momentous occasion, as India celebrates 76 years of freedom, I'd like to wish you all a very Happy Independence Day. From colonial rule to becoming one of the strongest democracies in the world, India has come a long way and what better way to celebrate the journey than 'India ka Amrit Mahotsav'?

"...people from around the world are coming to India to try their luck. They are bringing new technology along with them. They are generating new employment opportunities. India is becoming a manufacturing hub. It is building a foundation for a Self-reliant India. Be it manufacturing of electronic goods or mobile phones, today the country is progressing at a very fast pace. Which Indian wouldn't be proud when our BrahMos is exported to the world? Today, the 'Vande Bharat' train and our metro coaches are becoming objects of attraction for the world," said Honorable Prime Minister Shri Narendra Modi when referring to the PLI schemes during his Independence Day speech this year.

As he pointed out, the world is looking at India with hope and as a land of opportunities. The credit for this definitely goes to the hard work and perseverance of our countrymen, the real heroes, who have ensured continuous progress of the nation over the past 75 years. There have been tremendous developments and initiatives that have helped shape the India we live in today. Our 'In Focus' section highlights some of those great contributions as well as excerpts from the Prime Minister's speech that directly impact the manufacturing industry.

In other exciting news, we are gearing up for the 6th International Tooling Summit to be held in Gurugram on September 21 & 22, 2022. We have already confirmed an excellent lineup of speakers and a huge number of delegates have registered for the event. With over 30 speakers coming from various industries, it would be an excellent opportunity for toolmakers to learn from the experts. Block your calendars! We look forward to seeing you at ITS 2022.

**Nishant Kashyap**

Editor

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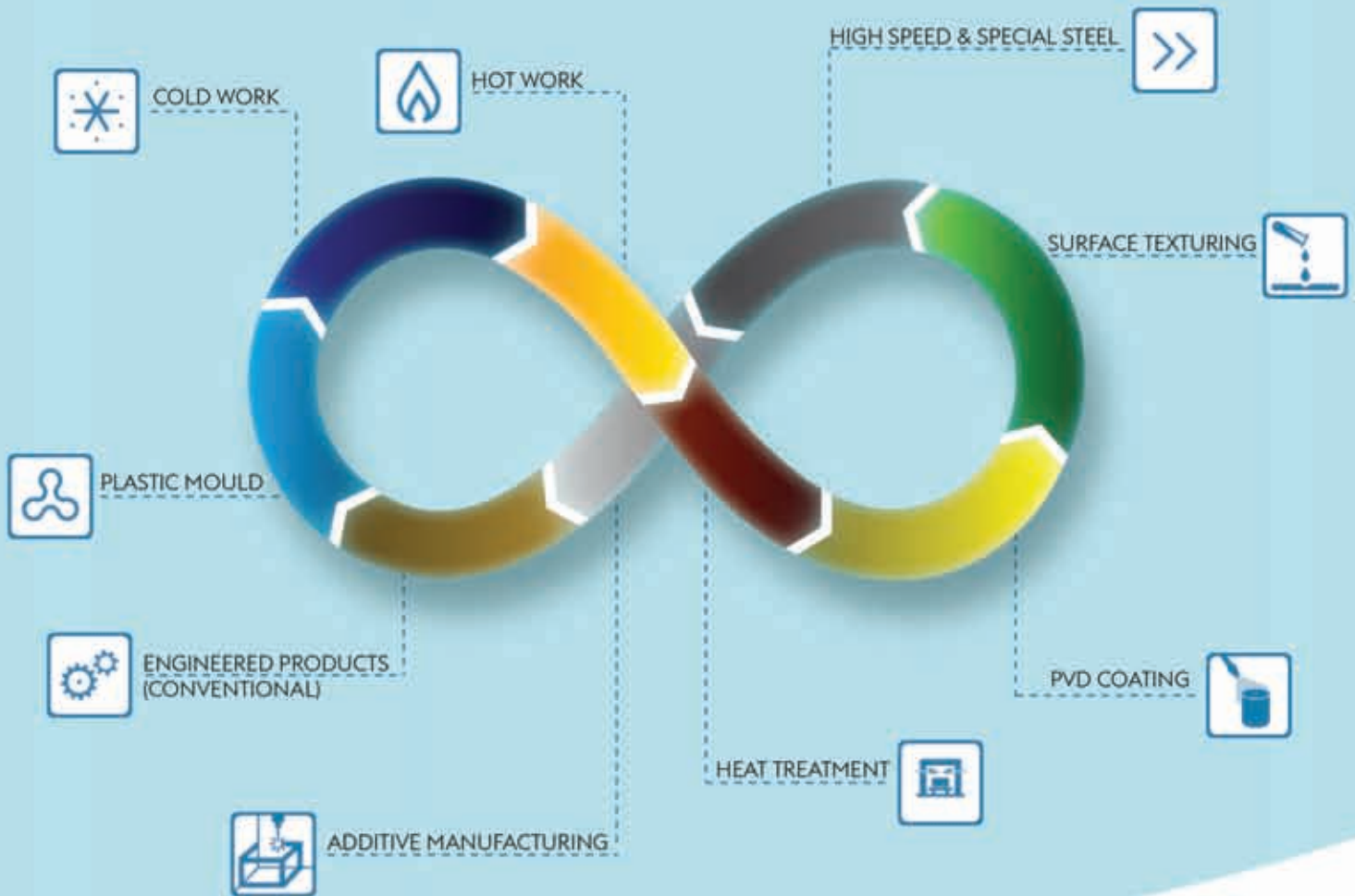
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ONE STEP AHEAD.

## Tata Motors signs Definitive Agreement for the acquisition of Ford India's Sanand plant

**TATA** Passenger Electric Mobility Limited (TPEML), a subsidiary of Tata Motors Ltd., and Ford India Private Limited (FIPL), have recently signed a Unit Transfer Agreement (UTA) for the acquisition of FIPL's manufacturing plant at Sanand, Gujarat, for a total consideration, exclusive of taxes, of INR 725.7 crore.

FIPL will continue to operate its Powertrain Manufacturing Facility by leasing back the land and buildings of the Powertrain Manufacturing Plant from TPEML on mutually agreed terms. The closure of the transaction will be subject to the receipt of relevant approvals from the government authorities and fulfilment of customary condition precedents. The government of Gujarat, TPEML and FIPL have already executed a tripartite MoU on May 30, 2022, to support all relevant approvals for the



above transaction.

This acquisition is timely and a win-win for all stakeholders. It will unlock a state-of-the-art manufacturing capacity of 300,000 units per annum, which is scalable to 420,000 units per annum. Mr. Shailesh Chandra, Managing Director, Tata Motors Passenger Vehicles Limited and Tata Passenger Electric Mobility Limited, said, "The agreement with FIPL... is beneficial to all stakeholders and reflects Tata Motors' strong aspiration to further strengthen its market position in the Passenger Vehicles

segment and to continue to build on its leadership position in the Electric Vehicle segment. It will accelerate the growth and development of the Indian auto industry by taking a progressive step forward towards building a future ready 'Aatmanirbhar Bharat'."

Mr. Steve Armstrong, Transformation Officer of Ford Motor Company, said, "This announcement marks an important step forward in Ford's ongoing business restructuring in India, which is part of our Ford+ plan for strategic transformation... The shared values of trust, ethics and putting people first were the driving force behind our agreement with Tata Motors. We are confident that both the state-of-the-art manufacturing set-up as well as the world-class talent will continue to prosper under the new leadership and help Tata Motors to scale new heights."

## Tata Motors signs an MoU with EC Wheels India Pvt. Ltd. for the biggest EV fleet deployment in Eastern India

**KEEPING** the vision of a clean & green environment alive and supported by its move towards sustainable transportation, Tata Motors recently announced its partnership with EC Wheels India Pvt. Ltd. (an Associate of Steelman Group), an app-based urban transportation service in Kolkata, to deploy 1,000 XPRES T Electric sedans for cab transportation. With a commanding EV market share of 90% in the east, the signing of this MoU makes for the biggest ever EV fleet order in the region. As part of this partnership, the company will commence deliveries in phases.

Mr. Ramesh Dorairajan, Senior General Manager – Network



Management & EV Sales, Tata Motors Passenger Vehicles Ltd., said, "Tata Motors has always been focusing on the faster adoption of EVs in the mobility space, helping grow India's e-mobility market. We are delighted to partner with EC Wheels India Pvt. Ltd. for the largest deployment of electric sedans in the fleet segment for the eastern region. With a market share of

90% in the EV fleet segment in India and the Eastern region, X-PRES T EV has created a new benchmark as it offers enhanced safety, fast charging solution, a premium interior theme along with dynamic performance at an affordable price. With this association, we have taken a giant leap towards the future of mobility, helping the country to #EvolveToElectric."

Mr. Mayank Bindal, Promoter Director, EC Wheels India Pvt. Ltd. (Snap-E), an Associate of Steelman Group, said, "We are thankful to Tata Motors for partnering with us. Through this association, we aim to contribute in creating a large EV mobility ecosystem in Eastern India, thereby reducing carbon emissions into the environment. With the best-in-class electric vehicles offered by Tata Motors, we intend to provide the customers with incomparable cab services in West Bengal and hope to continue this association on a long-term basis providing an elevated customer experience on our platform."



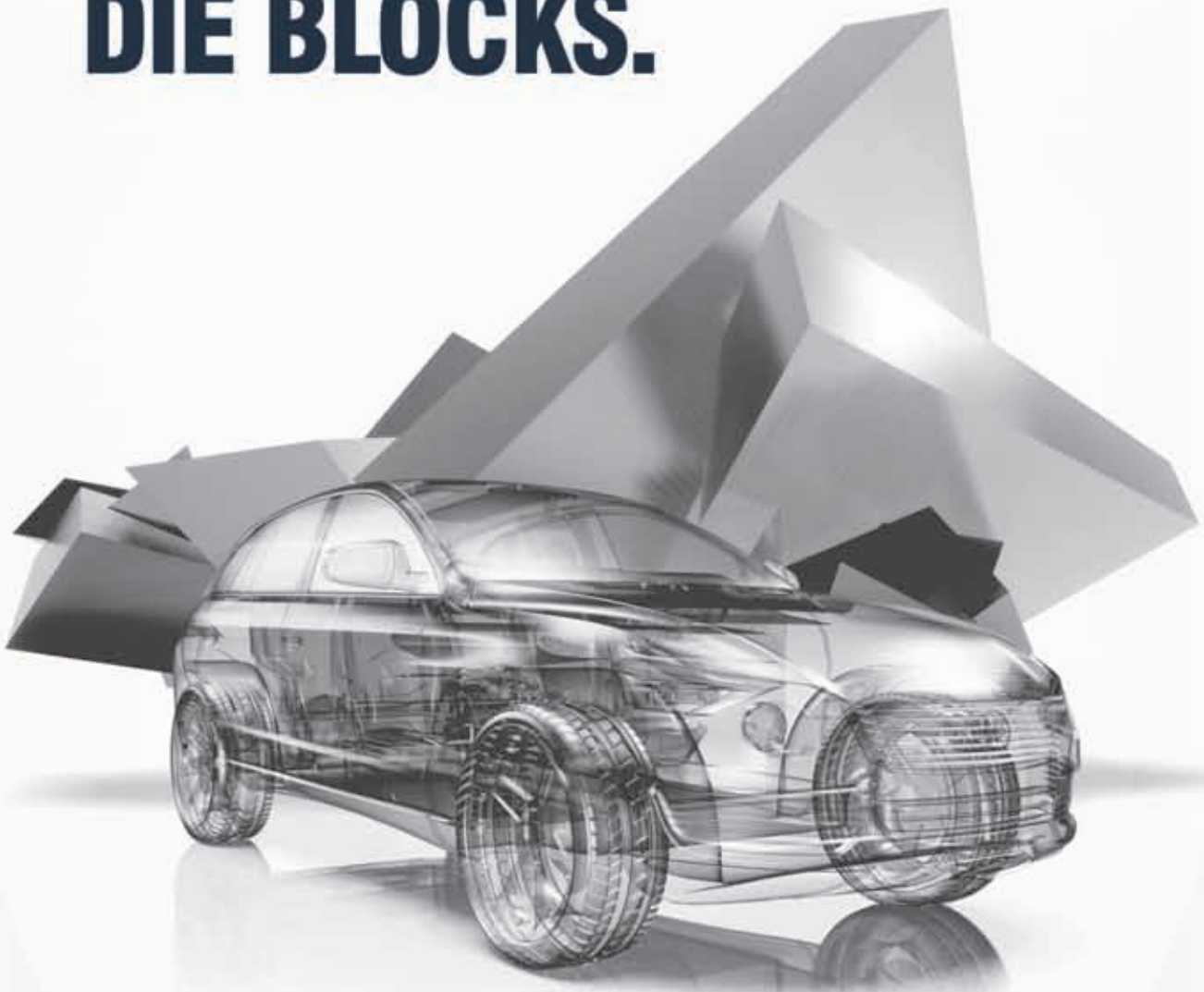
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## Government offers use of indigenous 5G testbed free of cost to recognized start-ups, MSMEs up to January 2023

**WITH** an objective to boost the 5G ecosystem within India and to achieve the objectives of 'Aatmanirbhar Bharat' and 'Make in India', the Government of India has decided to offer the use of indigenous 5G testbed free of cost to the Indian government recognized start-ups and MSMEs for the next six months up to January 2023. It is available at a very nominal rate to all other stakeholders. Department of Telecommunications, Government of India, has strongly urged all 5G stakeholders i.e. industry, academia, service providers, R&D institutions, government bodies, equipment manufacturers, etc., to utilise the 5G testbed facilities and expertise to test and facilitate the speedy development & deployment of their products in the network. Those interested, may apply through web portal <https://user.cewit.org.in/5gtb/index.jsp> for accessing and using the 5G testbed.

The 5G testbed is available at five locations viz., Integrated testbed at



Image used for representation only.  
Courtesy Envato Elements.

CEWiT /IIT-Madras and other testbeds are at IIT-Delhi, IIT-Hyderabad, IIT-Kanpur and IISc Bangalore. CEWiT / IIT-Madras offers end-to-end testbed with various testing services for RAN level, PHY level, etc., and other test equipment. IIT-Hyderabad has facilities for gNB testing, UE testing, end-to-end interoperability testing and NB-IoT testing, while IISc Bangalore hosts the V2X and 5G open-source testbed, IIT-Kanpur hosts the base-band testbed and IIT-Delhi hosts the NB-IoT and VLC testbed.

The end-to-end testbed is compliant with the global 3GPP standard and the ORAN standard. Indigenous 5G testbed provides an open 5G testbed that enables R&D teams of Indian academia and industry to validate their products, prototypes, algorithms and demonstrate various services. Further, it provides complete access for research teams to work on novel concepts/ideas holding potential for standardization in India and on global scale. It provides the facilities of 5G networks for experimenting and demonstrating applications/use cases of importance to Indian society like rural broadband, smart city applications and intelligent transport system (ITS) and shall help Indian operators to understand the working of 5G technologies and plan their future networks.

The development of this Indigenous testbed is a key milestone step for India becoming self-reliant in the 5G technology domain and now leading towards 5G 'Aatmanirbhar Bharat'.

## SIDBI partners with SVC Bank for empowering MSMEs

**SVC** Co-operative Bank Ltd. (SVC Bank) and Small Industries Development Bank in India (SIDBI) recently announced entering into a partnership through an agreement signed by Shri Ashish Singhal, MD, SVC Bank, and Shri Sanjeev Gupta, GM, SIDBI, in Mumbai. As per the agreement, SIDBI will extend refinance facility to SVC Bank to facilitate an improved flow of credit to MSMEs.

Mr. Singhal said, "The MSME sector is the backbone of the Indian economy in terms of exports, employment creation and revenue to exchequers. SVC Bank has been supporting MSMEs as a trusted partner for more than 115 years. We believe that access to

affordable capital will prove to be a shot in the arm for the sector. In line with the Government of India's vision of an 'Aatmanirbhar Bharat', SIDBI has proven to be the driving force for



resolving the issues relating to MSMEs. We are proud to partner with SIDBI as the first UCB to participate in their vision of empowering the MSMEs."

SIDBI has recently decided to extend refinance assistance to eligible scheduled Urban Co-operative Banks

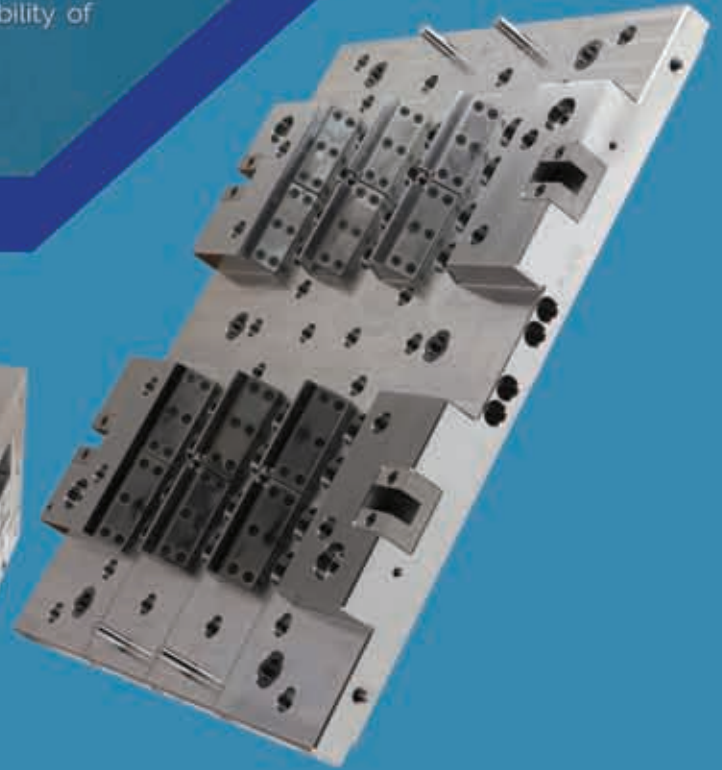
(UCBs) and Regional Rural Banks (RRBs). This is the first such agreement executed with a UCB. SIDBI will sign more such agreements with other UCBs and RRBs across various states. Shri Gupta said, "We consistently work towards offering an empowered ecosystem to Indian MSMEs... The focus is on aligning with the leaders across all segments, which can boost economic participation and upscale of India's most promising aspirational powerhouses termed as MSMEs. We are elated to partner with SVC Bank. Being a century-plus young bank, SVC has demonstrated success in empowering communities. We will, in time, expand our refinance services to other banks as well."



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## HAL and Safran to develop new helicopter engines in joint venture

**HINDUSTAN** Aeronautics Limited (HAL) and Safran Helicopter Engines have signed an agreement to create a new joint venture intended to develop helicopter engines. Through a Memorandum of Understanding (MoU), signed by Mr. R. Madhavan, CMD, HAL, and Mr. Franck Saudo, CEO, Safran Helicopter Engines, in the presence of Mr. Olivier Andriès, Safran CEO, both the partners will extend their long-lasting partnership by establishing a new aero-engine company in India. It will be dedicated to the development, production, sales and support of helicopter engines and one of its main objectives will be to meet the requirements of HAL and Ministry of Defence's future helicopters, including the 13-ton IMRH (Indian Multi-Role Helicopter).

Mr. Madhavan said: "Safran Helicopter Engines has



been our valued partner for several decades. We now look forward to utilize this opportunity to leverage HAL's experience in manufacturing of more than 15 types of aircraft and helicopter engines to jointly co-develop and manufacture engine with immediate focus on IMRH and its naval variant the Deck Based Multi Role Helicopter (DBMRH). This partnership will involve and utilize the Indian defence manufacturing ecosystem within India."

Mr. Franck Saudo said: "The creation of this new joint venture marks a turning point in our relationship with HAL and the Indian MoD with the development and production of a new generation of helicopter engine. We are proud to further expand our structuring partnership with HAL, which began more than 50 years ago, and which was recently illustrated with the development and production of the Shakti engine and the inauguration

of our joint venture Helicopter Engines MRO Pvt. Limited (HE-MRO). With a fleet of over 1,000 engines, India's Armed Forces are one of the largest operators of Safran-designed helicopter engines."

HAL and Safran Helicopter Engines have already multiple partnerships, including the Shakti engine, which powers HAL-produced helicopters, including the Dhruv, Rudra and the Light Combat Helicopter (LCH). The Ardiden 1U variant also powers the new Light Utility Helicopter (LUH). More than 500 Shakti engines have already been produced. Through HE-MRO joint venture in Goa, HAL and Safran Helicopter Engines will also provide MRO (Maintenance, Repair and Overhaul) services for TM333 and Shakti engines in service with Indian Armed Forces. It will be operational by the end of 2023.

## Homegrown Polymatech to invest \$1 bn in chip manufacturing in India

**DOMESTIC** chip manufacturer Polymatech Electronics recently said it will invest \$1 billion in the country towards semiconductor manufacturing by 2025. Polymatech has signed a memorandum of understanding with the Tamil Nadu Government with an initial investment of \$130 million. Established in 2007, the company said it has imported all equipment for semiconductor manufacturing from Japan.

"With a team of the best global minds in tech and our investment in the business, we are sure to be able to

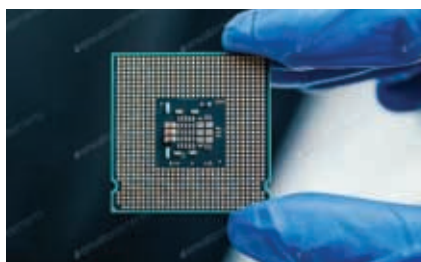


Image used for representation only. Courtesy Envato Elements.

capitalise on the industry's potential and scale the semiconductor market in India," said Nandam Eswara Rao, Founding President, Polymatech.

Polymatech has successfully

completed all the required trials with the first phase of imported machinery that has a capacity of 250 million chips. To make India a leading semiconductor manufacturing hub, the government announced an INR 76,000 crore Production-Linked Incentive (PLI) scheme package last year.

"We plan to become one of the largest chip manufacturers in Asia by 2025," said Rao. Prime Minister Narendra Modi said in May that India's own consumption of semiconductors is expected to cross \$80 billion by 2026 and \$110 billion by 2030.



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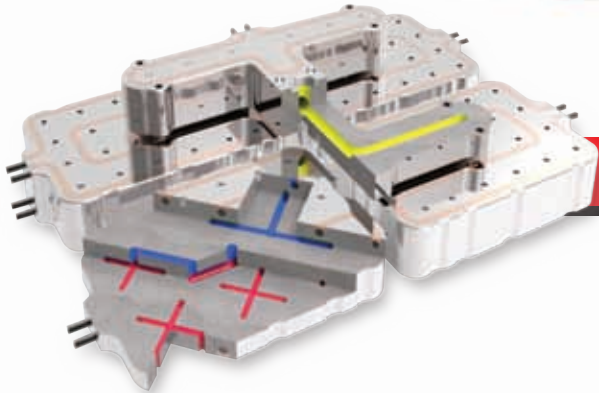
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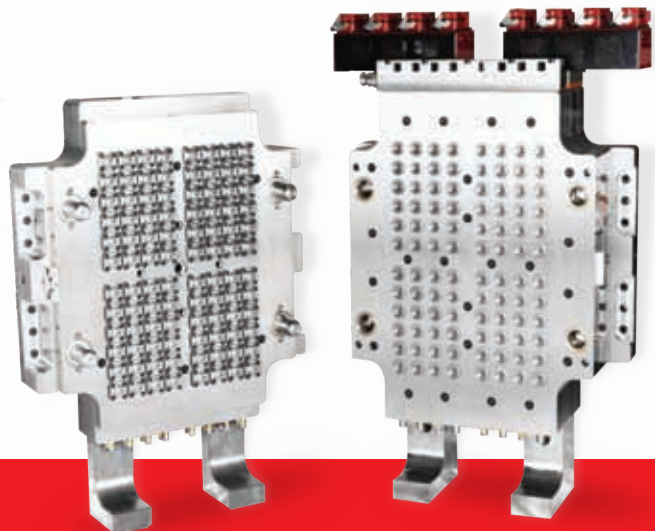
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## Bharat Fritz Werner announces launch of the Photon 4000G

**BHARAT** Fritz Werner Ltd. (BFW) and m2nxt (a BFW subsidiary), India's leading CNC and Industry 4.0 machines and solutions companies, are proud to announce the launch of its PHOTON 4000G Laser-DED machine, Made in India and available worldwide.

BFW specializes in cutting-edge advanced manufacturing technology platforms, with more than 50,000 machines and systems installed worldwide. BFW sensed the industry need and opportunity for cost-effective and large-format metal-additive manufacturing in the Laser-Powder & Laser-Wire Directed Energy Deposition (DED) segment. It entered the DED metal AM industry in September 2021 and has a very technology-driven global team to drive this business.

BFW's 60 years of expertise in machine tools gives it the capability and infrastructure to develop and manufacture the world's largest, fastest, and lowest price L-DED machine to exact specifications and reliability. BFW also prides itself in its capability, commitment, and track record to provide world-class customer support for installation, commissioning, training, and expert consultancy to any customer worldwide.

BFW's first system is the PHOTON 4000G, which will be available from January 2023. This system boasts, among many other advantages, of:

- ▶▶ 36 cubic m hermetically sealed Argon Chamber (33% larger than any other commercial AM system)
- ▶▶ 10.4 cubic m part build envelope (200% larger than any other inert chamber commercial AM system)
- ▶▶ Industry-first dual-deposition heads on dual ram gantry – for Powder & Wire deposition
- ▶▶ Industry-first standard spec 6KW fibre laser with a beam splitter to direct variable power to both heads
- ▶▶ Standard features include a 3mx3mx4m argon chamber with a

stainless steel interior, multiple laser safe viewports & glove ports, full-size front & rear doors, motorized parts table, heavy-duty tilt/rotate the table, real-time process monitoring via pyrometry/thermography/machine vision, full 5-axis control/build software, ID cladding head with 2m length, and much more, a game-changer in the DED industry.



BFW has announced a starting MSRP of Euro 1,990,000, which translates into Euro 190,000 per cubic meter of part build volume, 2.5x to 20x lower than other L-DED machine manufacturers. Printing large/huge parts in the Photon 4000G will be significantly more economical, by an order of magnitude, than other L-DED argon chamber machines. Such compelling economic business cases bring game-changing opportunities, competitive advantages, and technical capability to potential users for printing large/very large metal alloy components. Specialising in freeform fabrication, hybrid manufacturing and repair applications for the aerospace, defence, oil and gas, power, mining, and heavy industries, BFW intends to install Photon 4000G machines in its Dr. Abdul Kalam Centre of Excellence in Bangalore for contract manufacturing, as well as effectively market & support the machine in India and globally.

"I have applied and marketed the most premium DED equipment in the industry over the past 20 years.

I talked to hundreds of potential & existing industrial users and identified a large global opportunity to satisfy a glaring unmet need – the significant gap between demand and availability of truly industrial-grade yet affordable L-DED systems and the practical experience required to ensure good results and economic viability. I have contract-printed parts priced at more than \$250,000, and the BFW Photon 4000G can print similar parts at less than half that cost once amortization and operational costs are considered. It is also evident that the new wave of metal AM industrial manufacturing will be driven by Laser-DED," stated DED industry veteran Ashok H. Varma, EVP & Global Leader, Additive Manufacturing at BFW.

"Most currently installed systems are in laboratories or light industrial applications; many are 'Do It Yourself systems', many are underpowered, undersized, or overpriced systems, many are idle or under-utilised, with few suppliers and users having the practical experience to optimally utilise this technology and reduce 'time to value'. We believe we, at BFW, will be instrumental in closing the gap between supply and demand of large, very large, and huge 3D-printed parts using laser-powder and laser-wire metal deposition, for free-form fabrication and fine/heavy cladding/repairs," added Varma.

"BFW and m2nxt have introduced market disruptive high technology products for the last six decades. Photon 4000G is one more such product, which will not only bring technology differentiators but would be the First IoT-enabled Smart AM machine," said Ravi Raghavan, MD, BFW.

BFW will soon announce the rollout of several other Photon machine models including Photon 2500 and Photon 1000 series, with gantry and robot, mobile systems for in-situ repair/manufacturing and hybrid AM configurations.

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# Saluting India's spirit of self-reliance

India and countries across the world celebrated India's 75th year of Independence. As every Indian's heart filled with pride remembering the contributions of our country's leaders while seeing the tricolor fly high, Prime Minister Narendra Modi lauded each citizen's 'Aatmanirbhar Bharat' spirit for helping the nation become self-reliant during his speech at the Red Fort on August 15, 2022. Excerpts...

## On Economic Development

"Potential of the economic advancement of India is dependent on the strength of the grassroots. Hence, we must acknowledge and strengthen the potential of our small farmers, entrepreneurs, small and medium sized enterprises, cottage industries, micro industries, street vendors, domestic labourers, daily wagers, auto rickshaw drivers, bus service providers, etc. These form the largest population, who need to be empowered. Being able to do so shall guarantee India's potential and therefore, our efforts are going

in the direction of giving maximum emphasis to this strata, which is the fundamental grass root force of our economic development."

## On PLI Scheme

"Speaking of the PLI scheme, one lakh crore rupees, people from around the world are coming



# In Focus: India@75

to India to try their luck. They are bringing new technology along with them. They are generating new employment opportunities. India is becoming a manufacturing hub. It is building a foundation for a Self-reliant India. Be it manufacturing of electronic goods or mobile phones, today the country is progressing at a very fast pace. Which Indian wouldn't be proud when our BrahMos is exported to the world? Today, the 'Vande Bharat' train and our metro coaches are becoming objects of attraction for the world."

## On 'Aatmanirbhar Bharat'

"Today is also the birth anniversary of Maharishi Aurobindo. I bow at the feet of that great man. But we need to remember the great man, who gave a call for 'Swadeshi to Swaraj' and 'Swaraj to Suraj'. This is his mantra. We all need to think how long we will be dependent on other people of the world. Can we outsource when our country needs food grains? When the country decided that we will meet our food requirements, did the country demonstrate it or not? Once we take a resolution, it is possible. And, therefore, 'Aatmanirbhar Bharat' becomes the responsibility of every citizen, every government and every unit of society. 'Aatmanirbhar Bharat' is not a government agenda or a government programme. This is a mass movement of society, which we have to take forward."

"I also want to salute the little children between 5 and 7 years of age. The nation's consciousness has been awakened. I have heard from countless families that 5-7 year old children tell their parents that they do not want to play with foreign toys. When a 5-year-old child makes such a resolution, it reflects the spirit of self-reliant India in him."

"I also call upon the private sector to come forward. We have to dominate the world. One of the dreams of



a self-reliant India is to ensure that India does not lag behind in fulfilling the needs of the world. Even if it is the MSMEs we have to take our products to the world with 'Zero Defect - Zero Effect'. We have to be proud of 'swadeshi!'"

## On Digital India

"Today, we are witnessing the structure of Digital India. We are looking at start-ups. Who are these people? This is that pool of talent who lives in Tier-2 and Tier-3 cities, or in villages and belongs to poor families. These are our youngsters who are coming before the world today with new discoveries. We have to give up the colonial-era mentality. Instead, we must rely on our capabilities."

"Today, we are all set to enter the 5G era. You don't have to wait too long before we match the global steps. We are ensuring that optical fiber reaches each and every village until the last mile. I am fully informed that the dream of Digital India will be attained through rural India. Today, I am happy that four lakh Common Service Centers of India are being developed in villages, which are being managed by the youth of that village. The nation can take pride in the fact that four lakh digital entrepreneurs are being nurtured in the villages, and the rural population is becoming accustomed to benefit from all the services. Such is the power of India to become a technology hub in itself"

"This Digital India movement of developing semiconductors, entering the 5G era, spreading the network of optical fibres is not just to establish ourselves as modern and developed, but it is possible because of three intrinsic missions. The complete transformation of the education ecosystem, revolution in health infrastructure and improvement in the quality of agricultural life will be possible only through digitalisation." 🌈

*Text and images courtesy Press Information Bureau*

# A journey of milestones

Growing stronger one achievement at a time, India has come a long way from being a colony to a developing nation. As India celebrates 75 years of independence, we take a look at some of the milestones that the country has achieved over the years.

**Nishant Kashyap and Kimberley D'Mello**



File Photo

1951

## First IIT is set up in Kharagpur

The 'Indian Institute of Technology' was adopted before the formal inauguration of the Institute on August 18, 1951, by Maulana Abul Kalam Azad. The layout of the present campus and the design of the buildings were carried out by a host of engineers and architects under the guidance of an eminent Swiss architect Dr. Werner M. Moser. A large amount of financial help was available for procuring a number of machine tools from the ministry of industry and supply. The Institute Workshop was supposed to be one of the best in the country. On September 15, 1956, the Parliament of India passed an act known as the Indian Institute of Technology (Kharagpur) Act declaring this Institute as an Institute of national importance. The Institute was also given the status of an autonomous University.

Source: [www.iitkgp.ac.in](http://www.iitkgp.ac.in)

1955

## First computer installed in Kolkata

A small electronic digital computer called HEC-2M (Hollerith Electronic Digital Computer-2M) produced by the British Tabulating Machines Works, Letchworth, was ordered in 1954. Monimohan Mookerji and Amaresh Roy completed their training in the British Tabulating Machines Works at Letchworth. They visited different computing machine laboratories in Europe and returned to India in 1956. The HEC-2M was received in February 1956 and installed by them within a month and was ready for operation by the end of March 1956. This was the first electronic computer to be installed in India and the Indian Statistical Institute was the first to turn out trained programmers.

Source: [www.isical.ac.in](http://www.isical.ac.in)



Image Courtesy: Wikipedia

# In Focus: Mega Achievements

||||  
1956



## First atomic reactor went critical

On August 4, 1956, India's first atomic reactor, Apsara, went critical at the Bhabha Atomic Research Centre. It was the first research reactor in Asia to achieve criticality. It was a pool-type reactor of 1 MW power with highly enriched uranium as fuel (4.5 kg) in the form of plates. Light water was used as both moderator and coolant. The maximum neutron flux was around 1013 neutrons/cm<sup>2</sup>/s. It was mainly used for production of isotopes, basic research, shielding experiments, neutron activation analysis, neutron radiography, and for testing neutron detectors. Apsara was permanently shut down in June 2009.

Source: [www.barc.gov.in](http://www.barc.gov.in)



Image Courtesy: Bhabha Atomic Research Centre (BARC), Department of Atomic Energy (DAE), Government of India

||||  
1958

## First-ever Ambassador car produced

Post-Independence, Hindustan Ambassador was the first-ever car to be manufactured in India. The Ambassador car was considered India's sturdy solution to deal with uneven roads. It was large enough to accommodate many passengers. And, in case of any problems, the car was engineered such that it could be easily fixed by a low-skilled mechanic. Building on India's economical aspirations, the car, over time, became a symbol of social status and was used mostly by state authorities. Production of the iconic Ambassador cars started in 1958. During its more than six-decade-long journey, the Ambassador witnessed a few modifications and improvements until the manufacturing company, Hindustan Motors, ceased production in 2014.

Source: [www.theprint.in](http://www.theprint.in)



Image Courtesy: Ratnesh Rai/Unsplash

||||  
1959

## Rourkela Steel Plant is commissioned

Built in 1955 and commissioned by the then Indian President Dr. Rajendra Prasad in 1959, Rourkela Steel Plant (RSP) is the first integrated steel plant in the public sector in India. It was set up with German collaboration with an installed capacity of 1 million tonnes. Subsequently, its capacity was enhanced to 2 million tonnes of hot metal, 1.9 million tonnes of crude steel and 1.67 million tonnes of saleable steel. After implementing a massive modernisation and expansion, Rourkela Steel Plant has enhanced its capacity to 4.5 million tonnes of hot metal and 4.2 million tonnes of crude steel. It is controlled and operated by Steel Authority of India (SAIL).

Source: [www.sail.co.in](http://www.sail.co.in)



The then Indian President Dr. Rajendra Prasad delivering his address at the inauguration of Blast Furnace #1 at Rourkela Steel Plant.

Image Courtesy: SAIL

1963

## First-ever rocket launched

The launch of the first sounding rocket – the US Nike Apache sounding rocket – from Thumba near Thiruvananthapuram, Kerala, on November 21, 1963, marked the beginning of the Indian Space Programme. The Nike Apache weighed 715 kg and reached an altitude of 207 km with a 30-kg payload. Over the years, India has amazed the world with its forays into space, such as its science missions to the moon in 2008 and Mars launched in 2013.

Source: [www.isro.gov.in](http://www.isro.gov.in)



Image Courtesy: ISRO



Dr Sarabhai and Dr Kalam. A photograph from the early stages of the Indian space programme.

Image Courtesy: ISRO

1969

## ISRO is formed

ISRO was formed on August 15, 1969. ISRO then embarked on its mission to provide the nation space-based services and to develop the technologies to achieve the same independently. Throughout the years, ISRO has upheld its mission of bringing space to the service of the common man, and to the service of the nation. In the process, it has become one of the six largest space agencies in the world.

Source: [www.isro.gov.in](http://www.isro.gov.in)

1973

## Longest rail service in India inaugurated

On January 26, 1973, the Jayanti Janata Express was introduced between New Delhi and Ernakulam/Mangalore. It was the first “classless” (all second-class coaches) train. By the late 80s it had acquired FC and AC-2 coaches and was named Mangala Express by then. This was the first train with completely reserved accommodation, a dining car for service of food, and a well-equipped library on wheels with a book stall.

Source: [indiarailinfo.com](http://indiarailinfo.com), [onmanorama.com](http://onmanorama.com)



Image Courtesy: Central Railway

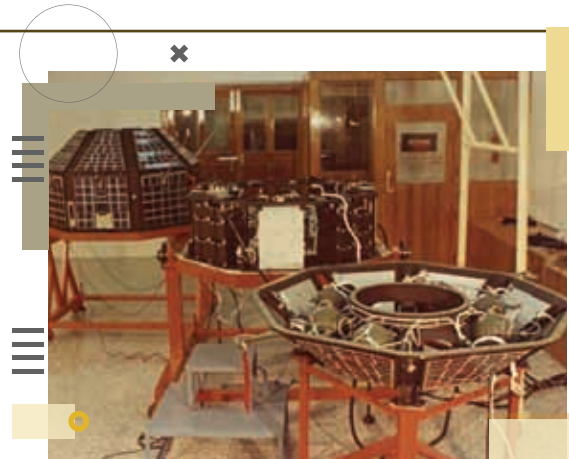
# In Focus: Mega Achievements

1975

## First Indian satellite launched from Soviet cosmodrome

The Aryabhata spacecraft, named after the famous Indian astronomer, was India's first satellite. It was completely designed and fabricated in India and launched by a Soviet Kosmos-3M rocket from Kapustin Yar on April 19, 1975. Designed by Indian scientists at the Indian Satellite Centre at Bangalore with assistance from Soviet scientists, the satellite had undergone tests at the Soviet cosmodrome for a few weeks before it was launched.

Source: [www.isro.gov.in](http://www.isro.gov.in)



Dis-assembled mode tests of Aryabhata.  
Image Courtesy: ISRO

1983

## First batch of Maruti cars rolls out

Maruti Udyog Ltd. was incorporated on February 24, 1981, but the company rolled out its first "people's car", Maruti 800, a 796 cc hatchback, in December 1983. For two decades on, the vehicle went on to rule the Indian roads. Maruti transformed the Indian automotive industry. It not only unlocked India's manufacturing potential but also introduced world-class best practices in production and quality control. Over the years, Maruti 800 became an example of India's capability to manufacture quality vehicles not only for India but also for the globe.

Source: [www.forbesindia.com](http://www.forbesindia.com)



Image Courtesy: Wikipedia

1989

## Agni missile successfully launched

Agni-I was first tested at the Interim Test Range in Chandipur at 7:17 am on May 22, 1989. It was capable of carrying a conventional payload of 1,000 kg (2,200 lb) or a nuclear warhead. Agni missiles consist of one (short range) or two stages (intermediate-range). Dr A.P.J.A. Kalam, chief architect of Agni and the brain behind the success of the IGMDP, had said: "Agni gives us the confidence that we are capable of producing any kind of missile. We are now self-sufficient both in design and missile technology."

Source: [www.indiatoday.in](http://www.indiatoday.in)



AGNI-1. Image Courtesy: DRDO

1998

## Tata launched indigenously developed car

Tata introduced the Indica on December 30, 1998. Following closely its promise of 'more car per car', the hatch was spacious inside and really affordable. The entire car, including its 1.4-litre petrol engine named 475DL, was developed in India. Tata Indica was termed the most modern car at that time, as it was equipped with modern features that were seen only in imported cars.

Source: gomechanic.in



Image Courtesy: Wikipedia



1998

Image Courtesy: Wikipedia

## India conducted Pokhran-II tests

India had conducted nuclear explosions between May 11 and May 13 in 1998. These nuclear weapon tests comprised a number of underground explosions at the Pokhran test site. Among these tests included the successful detonation of a thermonuclear weapon. The Pokhran-II was the second instance of nuclear testing conducted by India. The first test, which was code-named 'Smiling Buddha', was conducted in May 1974.

Source: www.ctbto.org

2008

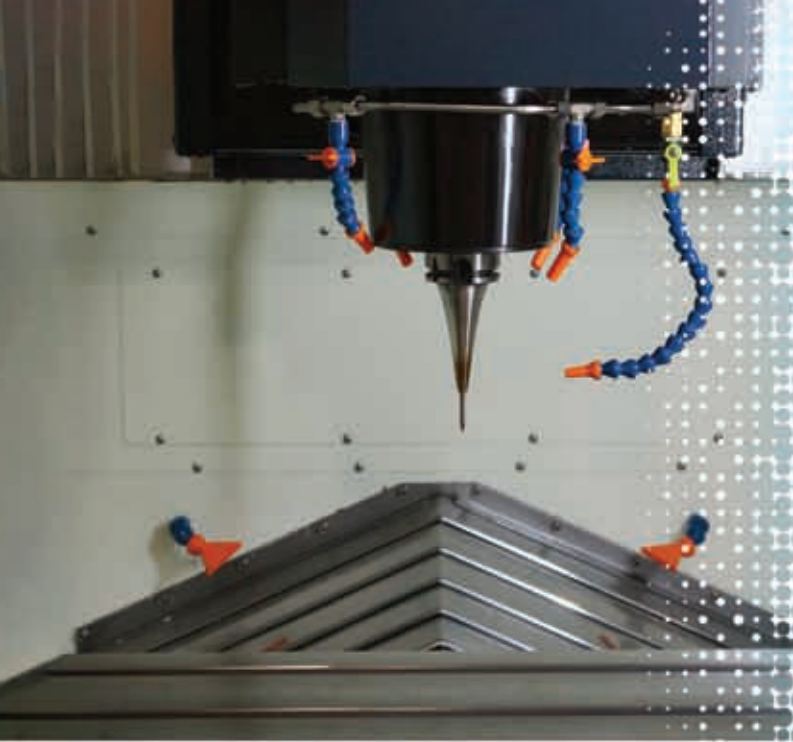
## Chandrayaan-1 launched

Chandrayaan-1 was India's first mission to the moon. It was successfully launched on October 22, 2008, from SDSC SHAR, Sriharikota. The spacecraft orbited around the moon at a height of 100 km from the lunar surface for chemical, mineralogical and photo-geologic mapping of the moon. The spacecraft carried 11 scientific instruments built in India, USA, UK, Germany, Sweden and Bulgaria. After the successful completion of all the major mission objectives, the orbit was raised to 200 km during May 2009. The satellite made more than 3400 orbits around the moon and the mission was concluded when the communication with the spacecraft was lost on August 29, 2009.

Source: www.isro.gov.in



Image Courtesy: ISRO



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Image Courtesy: Wikipedia

2009

## First nuclear submarine, INS Arihant, launched

On July 26, 2009, India launched its first nuclear-powered submarine capable of firing ballistic missiles. The submarine Arihant is the first of two similar submarines to be built indigenously with technical help from Russia. Its design is based on the Russian Akula-1 class submarines. The Arihant's 83Mw pressurised water reactor (PWR) has also been built with considerable assistance from the Russians. The Rare Materials Project of the Department of Atomic Energy (DAE) in Ratnahalli, Mysore, supplied the highly enriched uranium, while the submarine was built in an enclosed dry dock at the Shipbuilding Centre in Visakhapatnam.

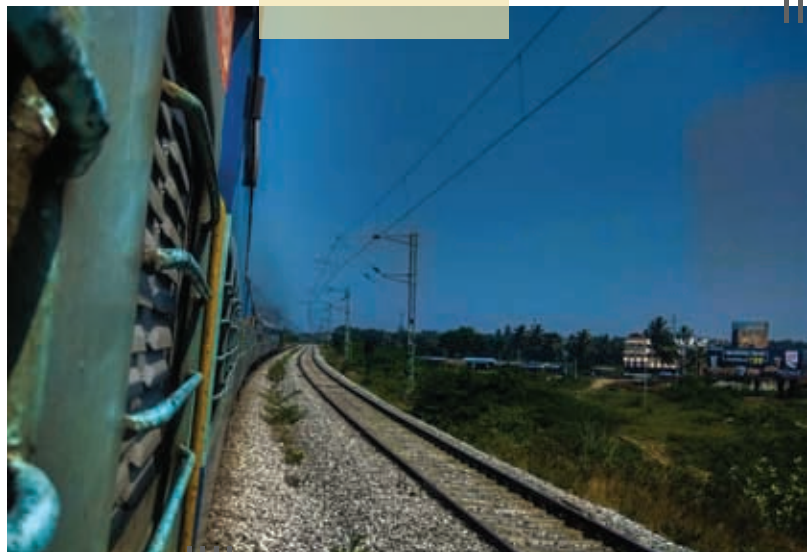
Source: Reuters, Business Standard

2011

## Longest rail in India announced

The Vivek Express covers the longest train route in India (i.e. 4,247 km). It runs between Dibrugarh in Assam and Kanyakumari in Tamil Nadu. The train crosses nine states and has 58 stops. The announcement of the Vivek Express was made in 2011 by Mamata Banerjee, the then Railway Minister of India, while presenting Railway Budget 2011-12. The train route was established to commemorate the 150th birth anniversary of Swami Vivekananda.

Source: News18, The Sparrow



Representation Image Courtesy: Vishwasa Navada K/Unsplash



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Launch of the Mars Orbiter Mission.

Image Courtesy: Wikipedia

2013

## Mangalyaan journeyed to Mars

ISRO launched its first spacecraft to Mars on November 5, 2013. The Mars Orbiter Mission (MOM) or Mangalyaan, was indigenously built to study Mars and test key technologies to explore the solar system. The mission marked India's first venture into interplanetary space, making it the first Asian country and fourth in the world to reach Mars. The earlier three to successfully explore Mars were the United States, the Soviet Union and the European Space Agency (ESA).

Source: [www.planetary.org](http://www.planetary.org)

2017

## 104 satellites launched in a single flight

In its thirty ninth flight (PSLV-C37), ISRO's Polar Satellite Launch Vehicle successfully launched the 714 kg Cartosat-2 Series Satellite along with 103 co-passenger satellites on February 15, 2017, from Satish Dhawan Space Centre SHAR, Sriharikota. This was the thirty eighth consecutively successful mission of PSLV. The total weight of all the 104 satellites carried on-board PSLV-C37 was 1378 kg.

Source: [www.isro.gov.in](http://www.isro.gov.in)



Image Courtesy: ISRO

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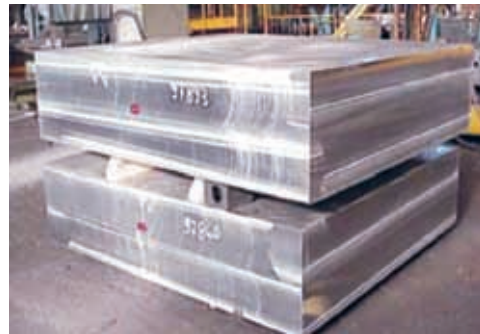
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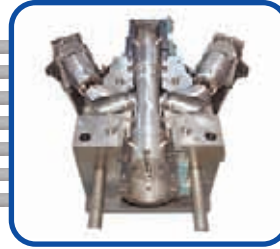
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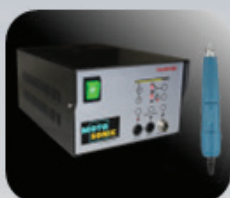
Ultrasonic cavitation formation & rapid implode process removes dirt & other contamination from the items thoroughly & deep from the pores & crevices & also from the difficult intricate shapes of the item which is difficult to reach for conventional cleaning. Ultrasonic cleaning process is much faster & exceeds in cleaning efficiency when compared with conventional cleaning. It cleans so gently that it does not leave any form of scratch or surface damage of the object.

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# ‘We need to come out of the notion that we want to serve the best and the biggest’

“Like everybody else, I also was quite fascinated to work directly with the biggest company possible – be it in automotive or aerospace. But now, I would say, there’s no need to rush into that. It’s quite an expensive proposition to work directly with OEMs. I would definitely recommend developing your potential as a Tier-2 or Tier-3 for two to five years and then graduating to the next levels,” says **Vipul Vachhani, Founder & CEO, Jaivel Aerospace.**



**Q You seem to have great passion for the aerospace industry. How has been your journey with Jaivel Aerospace so far?**

I started the company in 1998 in Rajkot, Gujarat, with the help of “two assistants” – one computer and one machine – and for the first five to six years, that is how we operated in Rajkot. It was challenging in the beginning, as India’s aerospace industry was still at a nascent stage and global aerospace companies were not sourcing parts

from India like they presently do. After establishing our company in Rajkot, we began small operations in Mumbai and Bengaluru. However, we realized that if we want to cater to global aerospace giants, we will need to establish a base outside India. So, in December 2004, we set up our operations in the UK. It took us at least two years to get our feet under the table. Over the years, we have earned enough credibility to work directly with renowned companies such as Boeing, Rolls-Royce, and Airbus, among others. That’s how I would describe our journey so far.

In terms of the kind of solutions we provide, our core business has been designing manufacturing processes. It’s a niche service offering and a good proposition, wherein we design the complete manufacturing process for either entire systems or subsystems and also engineer it and roll it out on the customers’ shop floor. For example, when a large OEM or a Tier-1 company wants to manufacture a fuel system or a landing gear system, we come into the picture. When it comes to the process of manufacturing complex products, a lot of jigs fixtures and tooling is required. We design and manufacture those jigs fixtures in our facility in Ahmedabad. We basically provide end-to-end tooling and engineering solutions to our customers.

**Q In recent times, there has been significant development in the Indian aerospace and defence sectors. What emerging trends do you see in the global aerospace industry vs the Indian aerospace industry?**



# Tool Talk

Differentiating the trends between the two can be challenging because the aerospace industry is now globalised. As a nation, we can be viewed as a new entrant or a new contender looking to provide products and services in that arena. But we are catching up. In fact, now there are many players in India, who are already serving the global aerospace industry.

If we look at the scenario before the pandemic, it was predicted that this decade would belong to manufacturing. Between 2005 and 2015-18, the industry was highly focused on ramping up production. In fact, before the pandemic, it was projected that over the next 10 to 15 years, a significant volume of aircraft will be manufactured. Most OEMs and engine manufacturers have an order book of about 15 to 17 years, which is quite robust. The pandemic disrupted everything, but those demands have definitely not gone away. The pandemic slowed down growth. But now, if we look at the trend during the last 7-8 months, and the projections that various aircraft companies are showing, it seems like things are returning to the pre-pandemic scenario.

Besides, there has been significant disruption at the supply-chain level in the last 2 to 2.5 years. Several small players have not been able to sustain and it will still take at least two years to get back into a proper rhythm. This is the current scenario. From an Indian aerospace industry perspective, I think all of this presents a significant opportunity because when the situation is steady, it is difficult for new players to come into play. When the scenario is dynamic, it presents an opportunity for new players to come up with solutions, which could be better than the ones being currently used or even far more reasonably priced, or it could be both.

**Q Does this mean that the pandemic didn't have much of an impact on the growth of the aerospace industry overall?**

No, it did not. In fact, the airline traffic over the last 3-5 months has been significantly higher than any airline or airport could handle. This scenario was particularly witnessed in Europe and also in the US.

**Q Recently, many Indian conglomerates have forayed into aerospace and are forging partnerships with global companies. How will these developments impact the Indian aerospace industry and component providers?**

I would say there is fantastic news! Let me explain why. I have seen people often compare the

**“Aerospace is an extremely mature industry; the technology, production line, and supply chain are all set. So, entering into it is a little bit more challenging and needs a slightly different mindset.”**

opportunities in aerospace with IT. What happened in the IT industry back in the late 90s and 20s led to India gaining a prominent place in the world in the IT sector. When those IT opportunities came into play, the whole world was trying to figure out what to do with this technology.

But aerospace is different. Aerospace is an extremely mature industry; the technology, production line, and supply chain are all set. So, entering into it is a little bit more challenging and needs a slightly different mindset. I would compare the journey with the automotive industry. Most Indian toolmakers have been serving the automotive industry from the first Maruti 800 back in the 1980s till today. Handholding from OEMs and also investing their time, effort and money to provide world-class solutions to global automotive players are factors that have helped them develop a good understanding of the tools needed by the automotive industry.

The aerospace industry will also have a similar journey. Aerospace will be slightly tougher because this is a document-heavy industry that requires certain types of certifications and standards. From a quality perspective, many Indian companies are at par with global toolmakers, but from a documentation or traceability point of view, those are the gaps to really focus on.

**Q How would you describe designing and building a mould for the aerospace sector? How is it different from any other industry, like, for instance, automotive?**

Quite significantly, comparable to automotive and definitely to medical. Having said that, when I look at it from an aerospace perspective, there is a significant amount of performance requirement and in terms of volume, reliability, and warranty of the mould performance, aerospace is slightly kinder on those topics because volumes are not at the automotive level. Just to give you an idea of the volume, Airbus manufactures close to 55-60 aircraft in a month of different models; same is the case with every other major aircraft manufacturer. So, all the parts are required in that sort of number,

but where things differ from automotive is the traceability, documentation, quality standards, and ensuring that every part is meeting the specifications. There is absolutely no margin for error.

In terms of how Indian suppliers should approach the aerospace industry, I would say that if you look at the supply chain tree, OEMs, which manufacture the aircraft, do not buy moulds. So, moulds come from Tier-3 or Tier-4 suppliers. Let's take the example of the seating system to elaborate on my point. Companies, which provide the seating system, could either buy the plastic components or make them in-house. They are the ones, who will look for moulds. So, the ideal companies for mould makers to approach would be the Tier-1 and Tier-2 suppliers.

I would also suggest that we need to come out of the notion that we want to serve the best and the biggest. Like everybody else, I also was quite fascinated to work directly with the biggest company possible – be it in automotive or aerospace. But now, I would say, there's no need to rush into that. It's quite an expensive proposition to work directly with OEMs. I would definitely recommend developing your potential as a Tier-2 or Tier-3 for two to five years and then graduating to the next levels.

**Q What kind of tools does the aerospace industry need? Can you shed light on some details?**

The tools and moulds are not very different from the automotive industry. Wherever plastic parts are used in an aircraft, we need tools there. But first, let's understand where the plastic is on an aircraft. In a commercial aircraft, plastic is used in the interiors. That's where 90% of the demand for plastic moulds comes from. Other plastics are used in relatively simpler applications such as cables, cable racking systems, etc. My understanding is that over the next 10 years, we will not see any metal in a seating system. At the moment, there are metal brackets and metal elements in the interior, but as the material evolves and we get high-strength plastics, it will replace the metal parts as well. Overall, the types of moulds in some cases are not as complex as automotive moulds. For example, the lighting system moulds I have seen in automotive is quite a complex piece of tool.

**Q Do you think that Indian die and mould manufacturers are fully equipped to serve the demands of the aerospace industry?**

I don't know the answer to this question. The reason is that it varies from company to company. But I can give you my best judgment. If the Indian tooling industry is so successful in automotive, then I am

**“It takes time to establish a name in the aerospace industry and many give up halfway. However, the opportunity is immense.**

sure they can do well in aerospace too. In terms of meeting those requirements, whatever is the step up if I were to quantify that the quality or the capability step up would be relatively small. The management system, documentation, traceability, and control of the processes might be a slightly bigger step for the Indian tooling industry to take.

**Q Can you elaborate on what would be the requirements?**

The first thing is that every component that goes in an aircraft should be traceable for at least 11 years. This means that if your customer comes 10 years later and asks you to send the inspection report of the part you manufactured 10 years ago, you should be able to respond to the company with full details. That's one aspect of it.

The second thing is let's say something has gone wrong and it needs half a day to resolve the problem, you should be prepared to understand what has gone wrong, correct it and make sure it never happens again. First of all, to document why it happened and then prove that it is never going to happen in the future is a time-consuming process, it needs a system and process.

**Q So, how can a company with a decent-sized tool room equipped with all the necessary machines and software, which has been serving the automotive industry for a long time, venture into the aerospace sector? What kind of skill set and infrastructure will it need?**

Here, I assume the toolmaker has all the necessary certifications, such as ISO 9001, etc., to serve the automotive industry. As I said earlier, the aerospace industry requires certifications and documentation. So, I would firstly acquire an AS9100 certificate, which is a must for the aerospace industry. AS9100 is the standard built on ISO 9001 with few additional requirements that suit the aerospace industry.

Secondly, there's a need to work on training the existing employees. One needs to have people with the right level of honesty, integrity, and skill set. I would work on the skill development of my manpower.

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the customer, I would work on what could make me different and better. So, probably working on the USP would be better before making that move.

In terms of infrastructure, I don't see any major changes. Most toolmakers use five-axis CNC machines, CMMs and many other good-quality wire EDM, which are sufficient to serve the aerospace industry as well. What will make a difference is that if there are regularly calibrated machines so that it is reliable throughout.

**Q During an interview with Mr. Vaidya, VP & Business Head, Godrej Aerospace, which happened a few years ago, he had said that the opportunity in the aerospace industry is so immense that if done correctly, it will give you the same amount of business as the automotive industry within a decade. Do you agree with his viewpoint? Why?**

I would completely agree with his viewpoint. Having said that, there is quite a significant entry barrier. It takes time to establish a name in the aerospace industry and many give up halfway. However, the opportunity is immense. The aerospace industry is the only industry that will have visibility of 10-15 years. They know exactly what they want in the future, how much they are going to manufacture, and aspects like that. No other industry has that luxury; this is just the nature of the industry. So, once you are an established supplier for a particular product range of any aerospace OEM or Tier-1, they don't usually change the supplier unless the supplier becomes difficult to deal with. There is a level of reliability with which you can make the investments and future plans. That's one of the biggest attractions from the business perspective.

**Q The book called 'I Love STEM' (where STEM stands for Science, Technology, Engineering and Mathematics) mentioned that Elon Musk believes in in-house work. He prefers not to rely on suppliers and wants to control supply chains. By doing that, he can cut costs and make better products. SpaceX manufactures between 80% and 90% of its rocket engines, electronics, and other parts. Many companies in the automotive and aerospace domains also have captive tool rooms. Is it viable to source tools from in-house captive tool rooms or must they continue to source them from commercial tool rooms?**

That's a good question! There are two schools of thought at the top level - vertical integration versus the distributed supply chain. The concept of vertical integration evolved in the early days of the automotive world, where organizations, like Ford, even owned

**Overall, I see the aerospace industry as a great industry to operate in. The industry is growing rapidly in the country and it would be worth venturing into.**

iron ore mines. This was a great example of vertical integration. Eventually, the distributed model evolved and automotive OEMs began to work with many suppliers; they chose to focus on product building and designing.

The aerospace industry, over the last 20-30 years, has worked towards a completely different direction; they want to deal with as few suppliers as possible. An aircraft manufacturer essentially focuses on designing a product, building a product, certifying a product, and operating a product, but the part manufacturing mostly takes place outside the company. I don't think personally this is a significant challenge, but I believe toolmakers will continue to get a good amount of business from the aerospace industry. As far as Mr. Musk is concerned, he deals with the situation very differently, which sometimes we don't understand, as it is unconventional.

**Q What does the aerospace industry expect from tooling suppliers? Do you have any suggestions for Indian toolmakers?**

In terms of expectations, the aerospace industry does not differentiate the expectations between mould suppliers versus jigs and tooling suppliers versus component suppliers. There are some functional aspects that will vary from product to product. But otherwise, the first thing that will be discussed is about your systems and processes. I have seen aerospace companies audit during the introductory session. They don't even want to take a tour of the factory floor. They first want to see your documentation and systems. If it is not in order, they will not move ahead irrespective of however good your machines, software and capabilities are.

Data is also high on priority. They would like to know how well is the data security managed, how well is the confidentiality rolled out in the organization, how you educate your people and for that how you educate your suppliers and every stakeholder. These are some things that they are interested in. They are completely ok if there are some failures, but how you manage failures is something they are keen to understand. Overall, I see the aerospace industry as a great industry to operate in. The industry is growing rapidly in the country and it would be worth venturing into. 🌈



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# ‘Manufacturing SMEs should evaluate new technologies’

**“Traditional approaches might not help in matching the steps or keeping pace with the global industry. New approaches and solutions can help them stay relevant, competitive and resilient,” says Santosh Prasad, Manager - Technical Support, DesignTech Systems Pvt. Ltd.**

**Q What are some of the technologies that will shape the future of manufacturing?**

I believe that technologies such as Industrial Internet of Things (IIoT), Augmented Reality (AR) and Advanced Automation will shape the future of manufacturing and will usher the industry towards smart manufacturing and Industry 4.0. Advanced automation and robotics are key to building a smart plant and manufacturing facility. Also, AI-based systems, and Machine Learning, are the new technologies that will see a rise in adoption in the coming days.

**Q Could you elaborate on how Industrial Internet of Things could do so?**

Of course! Industrial Internet of Things (IIoT) will help companies run diagnostics on their plant machines or systems operations. It will red flag the imminent functioning or operational issues in advance. This will enable companies to address them before they occur. So, with information on aspects such as rise in temperature or pressure, vibrations, or required servicing, such as adding oil, etc., companies will be able to ensure maximum uptime of their systems. This in turn will increase the overall productivity and efficiency of their manufacturing plant operations. The real-time data is captured through sensors. With the help of the right software, a performance dashboard of the machine is created, which helps companies analyse the performance

of the systems. Overall, the manufacturing dashboard can give a company a better perspective on their plant’s manufacturing effectiveness.

**Q What about the role of Augmented Reality?**

Augmented Reality (AR) helps create enhanced, interactive, and immersive digital experiences, which can be used to develop training content for the plant personnel. So, AR can teach them how to operate, commission, troubleshoot or carry out the servicing of the machine or systems. These experiences reduce the messaging ambiguity and can be made available in multiple languages. Because it is an audio-visual guide with interactive instructive guidelines, it enhances the overall learning experience, while also ensuring the quality of training imparted is most effective. AR experiences are visually rich and extremely detailed. With these experiences, the service and maintenance staff or people handling the equipment can get adept at using the machinery and can refer to the content whenever they feel the need to. A real-time expert’s assistance can also be availed while using AR solutions.

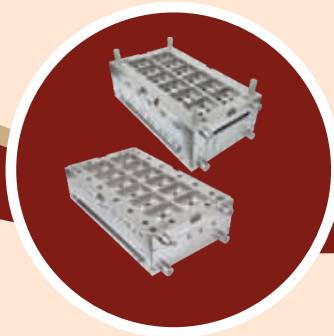
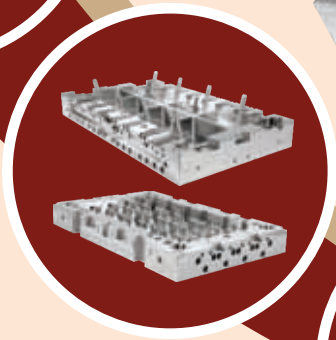
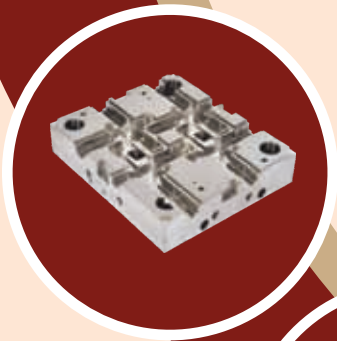
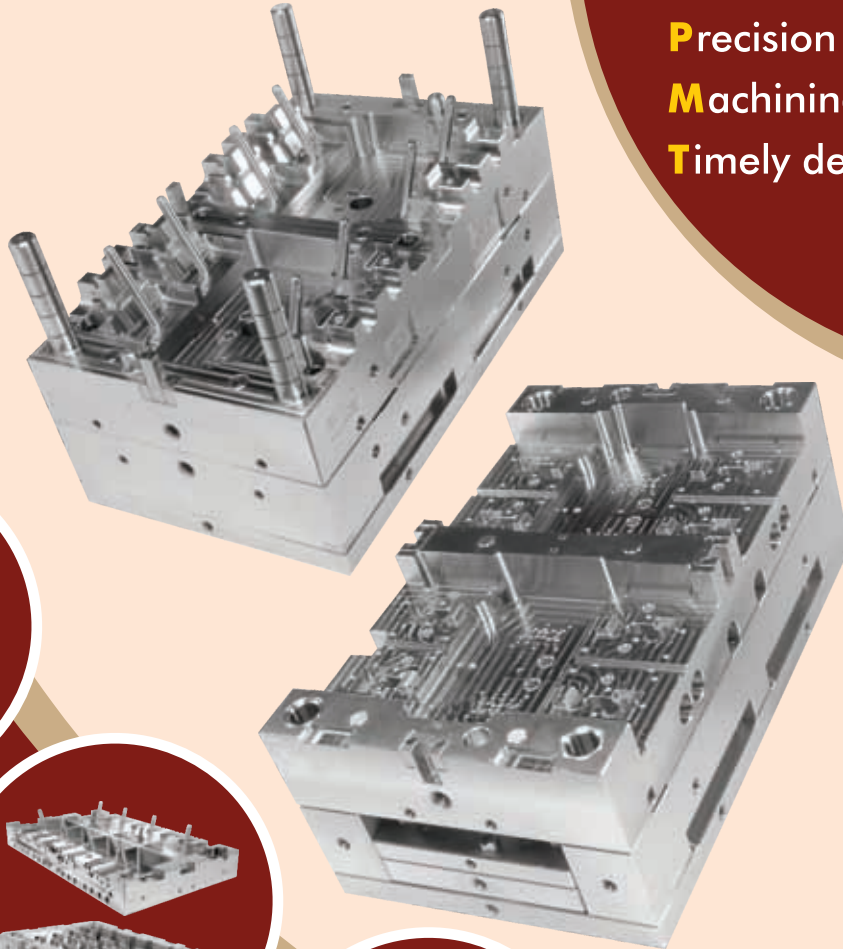
**Q How will the adoption of digitalization impact the manufacturing industry post the pandemic?**

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standstill. While the world is still grappling with the effects of the pandemic, on the manufacturing front, companies have realised the importance of digitalization. They are now looking to invest in tools and technologies that can help them manage, monitor and carry out the operations remotely in the best possible way. In a nutshell, in the post-pandemic world, companies will invest to implement greater digitalization to reduce the impact on manufacturing output should the crisis ever strike again.

**Q Do you have any suggestions for Indian manufacturing SMEs with regard to the adoption of these technologies?**

Yes, I do. While the initial investment of implementing smart technologies might be higher, but with a detailed ROI calculation, and as per the key application imperatives of the company, they can start adopting technologies that can help them stay competitive and resilient. One of the important suggestions is companies should envision the imminent change in the global manufacturing scenario, and stay prepared to match that level of

product throughput and quality excellence. This can only be achieved if they move with the time and upgrade their processes and technologies that can ensure higher output and greater efficiency.

Companies here are sceptical or apprehensive to make investments in new technologies. But many of these solutions such as 3D printing or additive manufacturing, product lifecycle management, etc., are now proven and tested to know that they can benefit manufacturers here too. These technologies can actually help companies build better products faster and streamline or configure optimized manufacturing processes for maximum efficiency.

Manufacturing SMEs should evaluate new technologies, understand if and how they will benefit from them, calculate the ROI, and if they are convinced that these technologies will help them grow their business with tangible results, then they should implement them at their facilities. Traditional approaches might not help in matching the steps or keeping pace with the global industry. New approaches and solutions can help them stay relevant, competitive and resilient. 🌈

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**Contact Person:** Mr. Jitendra Lakhotia – Director / Mr. Bharat Agarwal – Director

**Email Id:** jitendra.lakhotia@aakarfoundry.com; sandip.khot@aakarfoundry.com; sales@aakardies.com

**Website:** www.aakardies.com

**Activities:** Design Development & Manufacturing of dies, moulds, Jigs - fixtures, relation gauges, press tools, rubber/ plastic moulds, including for automotive & non automotive applications.



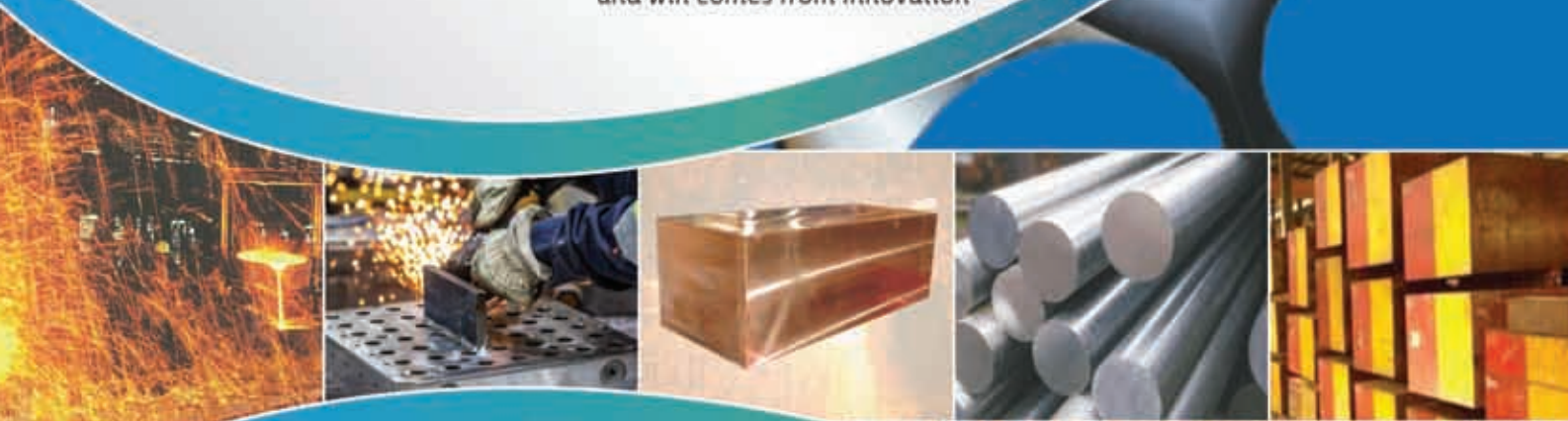


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1.2714, 1.2367, 1.2767,  
DHA1, KDA1,  
TGGP13 (ORVAR SUP Equiv.)

### Plastic Mould Steel

1.2311, 1.2738,  
1.2738 HH, 1.2316,  
1.2085, 1.2083,  
PHX-SUPRA,  
TGP-80 (NAK80 Equiv.)

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## ‘I see a very bright future for the Indian tooling industry!’

“However, unless we make a serious attempt to upgrade ourselves to the international level of toolmaking, we cannot create any impact on this demand. This calls for gaining knowledge of what is happening around the world in all tooling-related activities... This is exactly what TAGMA tries to provide through its ITS Summits,” says **T. S. Gopalakrishnan, Director - Marketing, Multiple Special Steel.**



### Q Tell us about your company and its product range.

Multiple Special Steel Pvt. Ltd. has its head office in Bengaluru and stockyards in Pune, Coimbatore, and Noida. We are a multi-specialty service centre dealing not only in European origin Italian LucchiniRS-make tool steel grades but also high-strength aluminium for aerospace applications and plastic injection molding tool inserts and tool steel for aluminium die casting & tool steel for press tools. We are both ISO 9001:2015 & EN 9120:2018 certified for aerospace. We are also in the QDL list.

### Q Your views about the upcoming International Tooling Summit 2022 and how it can help the Indian tooling fraternity?

The International Tooling Summit brings the latest know-how in the field of tooling from around the world to the member tool rooms here in India. It's a platform in which OEMs, Tier-1, Tier-2, Tier-3 companies, and MSME tool rooms come together for a meaningful and mutually beneficial interaction. This helps member tool rooms better understand the needs of OEMs and gives OEMs an understanding of the capacity and capability of the tool rooms.

### Q What are the current trends in the Indian die and mould industry?

The advent and exit of the pandemic made the world realise that over dependence on a geographical zone or a particular country can have disastrous consequences. While this realisation comes as a blessing to our Indian tooling/ die and mould industry, it brings with it a plethora of opportunities coupled with challenges. Fortunately, the government is ready to support MSME tool rooms by helping them to upgrade their skill set.

### Q How do you see the future of the Indian tooling industry?

I see a very bright future for the Indian tooling industry! Especially since the world is ready to support our tooling industry as a viable alternative to Chinese tools. However, unless we make a serious attempt to upgrade ourselves to the international level of toolmaking, we cannot create any impact on this demand. This calls for gaining knowledge of what is happening around the world in all tooling-related activities of designing/ CAD-CAM/ pre-machining/ VMCs-HMCs/ 5-7 axis machining/ heat treatment/ new and better alternatives in materials for making tooling inserts and the range of new & better polymers keeping in mind the varied requirements and safeguarding the environment. This is exactly what TAGMA tries to provide through its ITS Summits.

### Q How would you describe your experience of the previous ITS editions?

I have been an active TAGMA member and attended all the ITS Summits right from ITS-2017, which was conducted in Mumbai, ITS-2018, which took place in Chennai, to ITS-2019, which was held in Pune and even ITS-2021, which took place virtually. All these summits witnessed the participation of OEMs in search of good toolmakers, while the toolmakers who attended these summits got to understand the expectations from OEMs. Toolmakers also learned about how they need to work on building their tooling capacity and capability to meet the OEMs' specific requirements. 🌈



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### Cold Work Steel

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# Precision tooling maker improves mold quality, increases competitive strength

Godrej Tooling uses NX to meet stringent customer requirements

**T**o remain competitive in the tooling industry, a company must produce precise, quality parts and equipment. Godrej Tooling, a division of Godrej and Boyce, has been doing just that since 1935. The company's ability to deliver on its promise of "tooling our customers' competitiveness" is borne out in its ISO 9001, ISO 14001 and OHSAS 18001 certifications, as well as work for major automakers including Honda, Toyota, Suzuki, Mahindra & Mahindra, Tata Motors, Caparo and Valeo.

A major factor in Godrej Tooling's success is its use of the most advanced manufacturing technology. In fact, Godrej Tooling has significant experience with a number of computer-aided design (CAD) systems. However, NX™ software from Siemens Digital Industries Software is Godrej Tooling's preferred choice for mold design.

"Juggling multiple systems can be a daunting task, but Godrej Tooling takes it in stride, typically importing 3D component files from our customers in the STEP/IGES format," says Jayesh M. Rathod, senior general manager and head of engineering die-casting at Godrej Tooling. "When component

**Now, we can make complex component models usable for tooling without losing valuable time to data restoration.**

**Jayesh M. Rathod,**

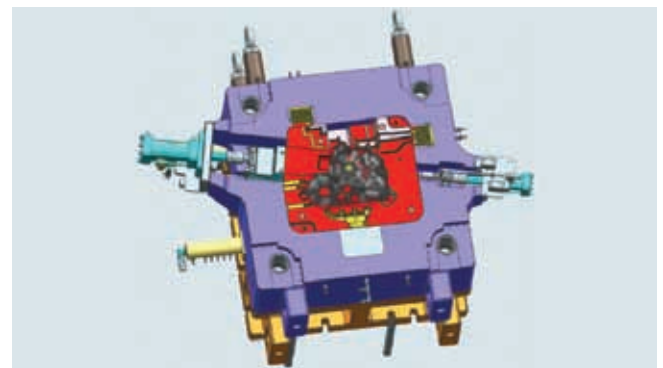
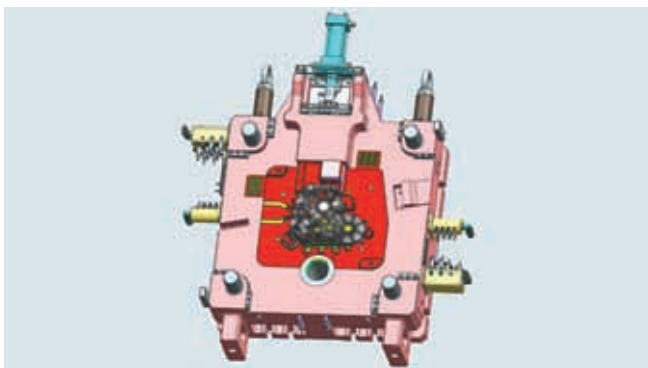
Senior General Manager and Head of Engineering Die-casting,  
Godrej Tooling

models are imported to NX for tool design creation, the process runs smoothly and efficiently. This contrasts with data loss, errors and other problems we too often experience using other CAD systems."

## Streamlining data handling

"NX has effective tools to facilitate data handling, such as its 'examine geometry' and 'heal geometry' functions," notes Rathod. "NX helps our engineers quickly and effectively repair the 3D input we receive from customers; it gives us a real edge in this area. Now, we can make complex component models usable for tooling without losing valuable time to data restoration."

In addition, Godrej Tooling utilizes the synchronous technology of NX, which represents a breakthrough



# Case Study

step forward in productivity. With synchronous technology, users no longer have to choose between constraint-driven or history-free modeling, no longer have to be a programmer to re-use a model, and no longer need to worry about using data from multiple CAD technologies. Rathod points out, "Using synchronous technology, we can modify the geometry directly, as needed. By eliminating the need to work with data history, we realize big dividends in terms of faster design time."

## 20 percent faster turnaround

"NX has helped us significantly reduce die design turnaround because, with synchronous technology, we've significantly streamlined the model editing and change management process," notes Rathod. "Among gains, we've calculated that using NX has helped us reduce overall CAD model editing and patching time by 20 percent."

There's more.

A typical die casting, once manufactured, is subjected to trials. After the trials, components are inspected and changes recommended. Such modifications typically mean adding or reducing thicknesses at certain areas or editing select features. This process is also handled very effectively via synchronous technology. Rathod estimates that 60 percent of errors are rooted in the engineering change management process, with synchronous

### CHALLENGES

- ▶▶ Continue to be preferred provider
- ▶▶ Keep up with latest technology
- ▶▶ Enhance competitive edge

### KEYS TO SUCCESS

- ▶▶ Work with wide range of CAD/CAM systems
- ▶▶ Enable better data exchange
- ▶▶ Control engineering changes

### RESULTS

- ▶▶ Reduced CAD model editing and patching time
- ▶▶ Streamlined change management process
- ▶▶ Improved data integrity
- ▶▶ Enhanced solutions portfolio
- ▶▶ Increased competitive strength

technology dramatically reducing or eliminating such errors during this cycle.

Overall, Godrej Tooling has gained substantial time and process efficiencies using NX. Moreover, this has resulted in tooling solutions that are continuously improving in terms of time-to-market, quality and innovation. Rathod concludes, "Most importantly, with NX, we're always enhancing our portfolio and advancing our business objectives. Our competitive position has never been so strong." 🇮🇳

Article and images courtesy: © Siemens 2022

## New Members in August 2022

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**Tel:** +91-98456 211722

**Contact Person:** Mr. Kantharaju Revanna – Proprietorship/  
Ms. Manjula K

**Email Id:** kudumaprecision@gmail.com

**Activities:** Manufacture of injection mould, jigs and fixtures, Mould base, Precision engineering components and injection moulded plastic parts.

### LAKSHMI PRECISION TOOLS

No 43, Below Kanva Mart, Rukmini Nagar, Nagasandra Post, Bangalore – 560073, Karnataka

**Tel:** +91-99004 66775

**Contact Person:** Mr. S. Mahesh- Proprietor/  
Ms. Roopavathi - Manager

**Email Id:** lakshmiprecisiontools@gmail.com

**Website:** www.lakshmiprecisiontools.com

**Activities:** Tool and Die Making.

### SREE KRISHNA ENGINEERING

No 65/2, KCG Industrial Area, Kamakshipalya, Bangalore – 560079, Karnataka

**Tel:** +91-98864 92960/99809 94951

**Contact Person:** Mr. Bhalaji SV / Mr. Gopinathav V /  
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# ‘Domestic CV industry on recovery path; volumes to grow by 12 -15% in FY2023’

Industry growth to be supported by gradual improvement in the macroeconomic environment, replacement cycle and healthy demand from the end-user industries; CV OEMs to witness improvement in financial performance over the near term, according to ICRA Research.



Image used for representation only. Courtesy Envato Elements

ICRA Research expects the Indian commercial vehicle (CV) industry to witness a robust volume growth of 12-15% in FY2023. This is borne by the fact that the industry has registered a healthy growth of 112% on a YoY basis in wholesale dispatches in Q1 FY2023 (albeit on a low base) and is expected to continue its growth trajectory, given the improvement in the macroeconomic environment,

replacement cycle and healthy demand from the end-user industries. Further, the growth trends have continued into the current quarter also, with combined CV volumes of OEMs (Includes Tata Motors Ltd, Mahindra & Mahindra Ltd, Ashok Leyland Ltd, VE Commercial Vehicles Ltd, SML Isuzu Ltd) growing by ~87% in 4M FY2023, compared to the year-ago period. On the flip side, though headwinds such



as hardening of interest rates, elevated fuel prices, increasing vehicle prices to pass on the increase in commodity prices and geo-political issues may constrain the pace of recovery, the same is not expected to significantly slow down the momentum witnessed over the past couple of quarters.

According to Ms. Kinjal Shah, Vice President & Co-Group Head, ICRA Ratings, "The growth trends in the CV industry have been largely secular in nature, but more pronounced in the goods carrier sub-segment. Within goods carriers, growth in the medium and heavy commercial vehicles (M&HCV) sub-segment has been spurred by demand from the steel, cement and mining industries and a pick-up in economic activity, as the challenges related to the pandemic abated. This is expected to continue over the medium term, and ICRA expects volume growth of 15-20% for M&HCV (trucks) in FY2023. Within M&HCV (trucks), demand for tippers would continue to be supported by the pick-up in construction activity, while that for haulage trucks would be dependent on the general macroeconomic activity."

The light commercial vehicles (LCV) segment started recovering earlier than the M&HCV segment, supported by healthy demand from e-commerce as well as from agricultural and allied sectors. However, the segment witnessed an 8% sequential dip in volumes in Q1 FY2023, as the pent-up demand tapered off and the base effect caught up.

Ms. Sruthi Thomas, Assistant Vice President & Sector Head, ICRA Ratings, added, "The upswing in the e-commerce sector since the pandemic, and the resultant change in purchasing habits resulted in increased last-mile transport requirements, thus spurring demand for smaller trucks. Accordingly, the segment's quarterly volumes averaged at more than 125,000 units over Q3-Q4 FY2022, higher than the FY2018 levels and trending towards the industry highs reported in FY2019. The growth drivers for the segment remain largely favourable, especially the increased requirement for last-mile transportation from the ecommerce segment, while demand from the agricultural and allied sectors would remain dependent on stability of rural cash flows.

## **ICRA expects an improvement in the financial performance of CV OEMs over the near term, led by both volume and realisation growth, as the clout of factors constraining demand in the past couple of years continue to ease going forward.**

Accordingly, ICRA expects the segment volumes to grow by 8-10% in FY2023."

Recovery in the bus segment, which had remained elusive with the prolonged pandemic, set in finally from Q4 FY2022 onwards. In Q1 FY2023, the segment reported healthy volume growth of 258% on a YoY basis to 19,297 units, supported by the reopening of schools and offices and the gradual return to normalcy after the pandemic. The growth drivers for the segment remain favourable with the gradual opening up of offices and educational institutions, while other pandemic-induced challenges like aversion to public transport are expected to stabilise gradually. ICRA expects a growth of 60-65% in the segment in FY2023, albeit on a low base.

As per the ICRA research report on the commercial vehicle industry published in July 2022, ICRA expects the CV book of financiers to grow by 7-9% in FY2023. The overall financing environment would remain a key monitorable going forward, especially the trends in the asset quality of CV financiers, which would remain dependent on the ability of the borrowers to pass through the fuel cost and interest cost escalations adequately in the near term.

ICRA expects an improvement in the financial performance of CV OEMs over the near term, led by both volume and realisation growth, as the clout of factors constraining demand in the past couple of years continue to ease going forward. This is expected to support the gradual improvement in their credit metrics as well; however, the inflationary trends in input costs, and the ability of OEMs to pass on the same to customers without adversely affecting demand, would remain critical. 🌈

*Article courtesy: ICRA Limited*

# Recruitment and retention hinge on workforce development strategies



**T**oday's workforce is not what it used to be. Those individual companies' targets for recruitment now are definitely different than employees who've been in the workforce for the past 30 years. Current jobseekers want flexibility, advancement and equilibrium when it comes to their work-life balance. It is for these reasons that the end goal of a truly strategic workforce development plan, more than ever, is to attract the best and most talented individuals, then retain them once they are hired.

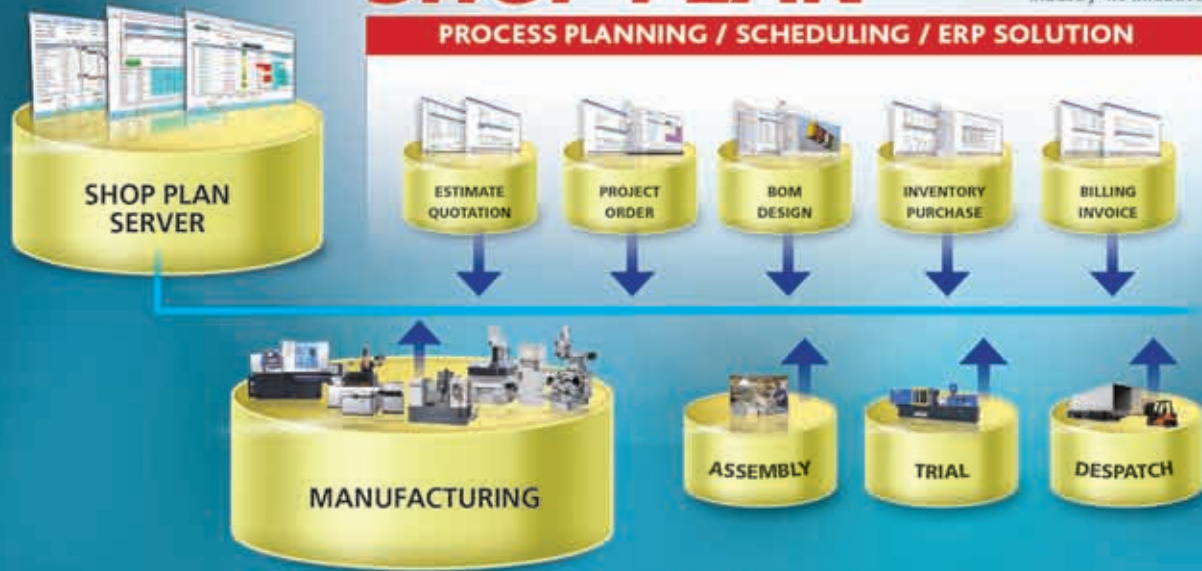
For our workforce development plan at Mazak, we applied well thought out strategies to how we approached job descriptions, compensation, training/advancement and work scheduling. All in an effort to improve our employee recruitment and retention.

As the first priority in structuring a strategic workforce development plan, we separated the production department from the rest of the business, then segmented that division into departments, individual

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supervisors and positions. Doing so allowed us to generate highly accurate job descriptions that better reflect the skill sets, experience and education/certification requirements for all positions.

These all-encompassing job descriptions provided us the answer to a very critical question. What are the necessary skills and talents needed for each position as well as what amount and type of training is required? With the answer to that question, we then turned our focus to the individual employee and evaluated each one to determine their potential for an effective succession plan and whether or not they are able to advance within the organization. Our goal is to avoid boxing in our employees to one position, and instead give them every opportunity possible to progress within the organization.

To ensure we also offer existing and potential employees compensation packages that are fair and competitive, we participated in several salary surveys to gain valuable data. With that data, we analyzed and restructured our compensation also based on positions, skill sets and experience.

Without a succession plan, companies are destined to fail. This is why, another key goal of our strategic workforce development plan was to continuously identify future leaders within the company. Once we do, we offer them several resources to help them advance and prepare for future leadership positions.

For career advancement, we've started what we call Mazak University, which is a system of inside training. Some of this is mandatory training, while the remainder is voluntary. Once completed, we allow employees to apply for internal job postings. Or, they can take advantage of tuition assistance from Mazak for attending Gateway Technical College. So, both internal and external training opportunities are an option.

Our strategy, as much as possible, is to fill the

lower-level jobs and provide the extra training an individual lacks and needs. Once they gain the skills and knowledge, we advance them to higher level positions to continue their growth within the company.

We call this our Destination Leadership program, where Mazak employees take ownership of their futures. Also, as part of the program, we've implemented external Leadership Training through ERA for those promoted to group leader, supervisor and/or management positions. Additionally, employees learn from mentors and cross-training opportunities.

Like opportunity for advancements, work schedule flexibility and job rotations, we've found, are critical ways to retain employees and keep them happy and engaged. To provide this flexibility, we offer, as part of our workforce development strategy, a four/10 work week currently for those on second shift.

Employees work four 10-hour days Monday through Thursday and have three-day weekends off. Plus, for those 10-hour days, they earn overtime pay.

Job rotations, much like four/10 work weeks do, not only prevent employee burnout, but help build a stronger more versatile workforce. This also provides a safety net so to speak because employees become cross trained in various positions and can fill in when needed. But, most importantly, it strengthens employee retention because they don't get bored with their job while they are also gaining valuable skills and knowledge.

While we've accomplished many goals to date within our strategic workforce development program, it is one that is continuous and dynamic. But, in the end, it allows Mazak to offer not just a job, but a career. 🌈

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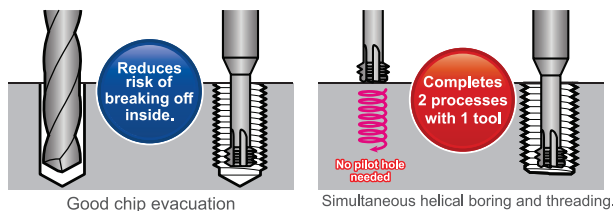
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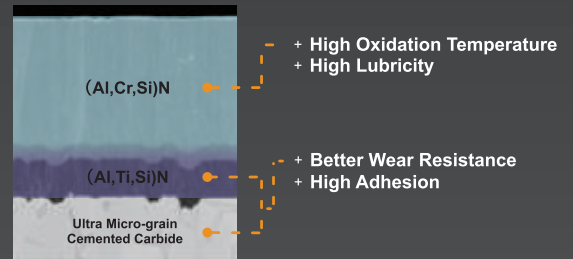
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made-to-measure tools designed to make fleet management efficient, convenient, sustainable and future-focused. Continental will provide both a Standard package for tire pressure and temperature measurement and, at a later date, an Advanced version capable of capturing a range of additional data, such as tread depth and tire condition.

## Predictive maintenance and data-driven tire diagnostics

In early 2022, Continental began the process of transferring the existing customer base to the new system. "With the successful migration of existing customers to the revamped ContiConnect, we have laid the foundations for future-focused tire asset management," says Ralf Benack, Head of Fleet Solutions EMEA at Continental. "The new On-Site App brings ContiConnect 2.0 directly to the user's smartphone, making it much more user-friendly. The



Ralf Benack, Head of Fleet Solutions EMEA, Continental

Driver App, On-Site App and new web portal mean Continental offers exactly the right solution for every purpose and every user," explains Benack.

Haulage companies will benefit from higher fleet efficiency, reduced costs and time savings, as they can proactively schedule maintenance work and workshop visits. This helps to prevent unforeseen breakdowns and stops them having to take trucks off the road. There is another advantage too: "Since ContiConnect enables better tire maintenance,

fleets can save fuel and avoid early tire replacement and on-road breakdowns, leading to a reduction in CO2 emissions," continues Benack.

## System increases planning reliability for processes

ContiConnect 2.0 has already proved itself in practical trials with selected customers. "The new portal is clearer and simpler to interpret, and the issues are displayed more explicitly," says Paul Broker, Fleet Engineering Director at G.Webb. "That's great for us in a busy office. We're able to extract the vital information that we need quickly and pass this through to the workshop to begin repair preparations. It seems like a simple improvement, but it has a massively practical benefit for us." G.Webb is a UK bulk haulage firm based in Cambridgeshire. As a long-time beneficiary of the Continental Digital Solutions range, the company had the practical knowledge and



Paul Broker, Fleet Engineering Director at G.Webb

experience to support Continental in a critical stage of the system's development. "The Continental Digital Solutions package has transformed the way we work," adds Broker. For example, there is much more predictability in workshop loading. "We rarely get blowouts now, where once it was a frequent occurrence." Adding more data about tread depths, remaining mileage and general rubber condition will further improve working processes. 🌈

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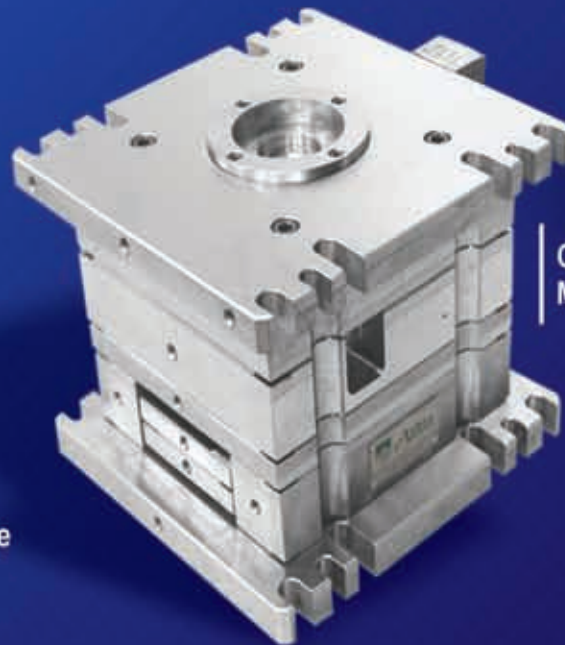


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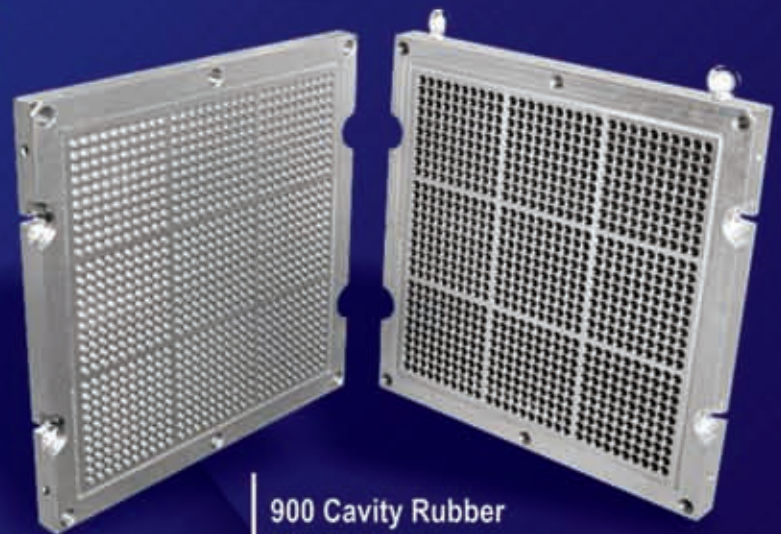
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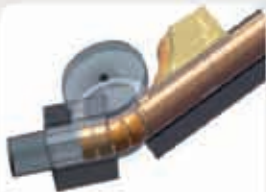
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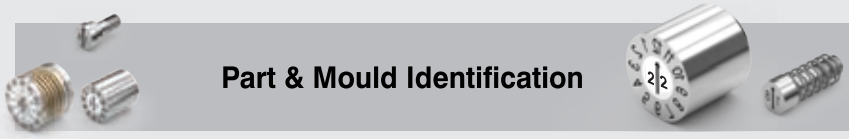
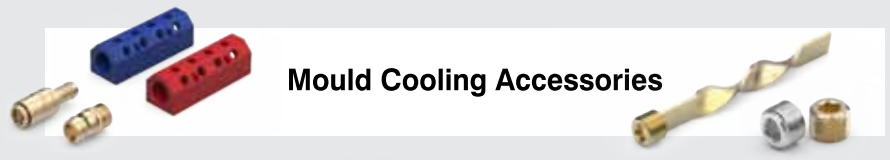
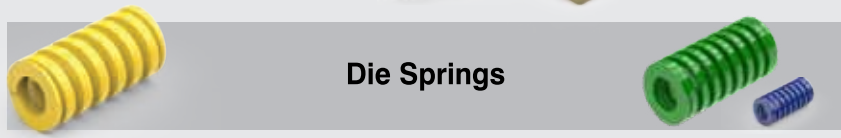
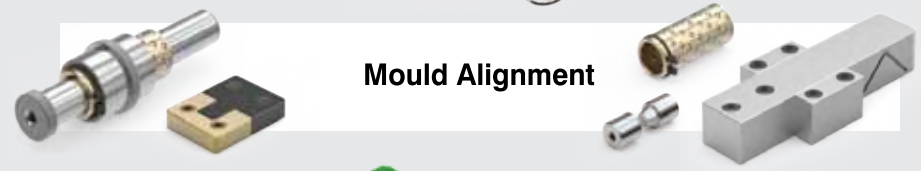
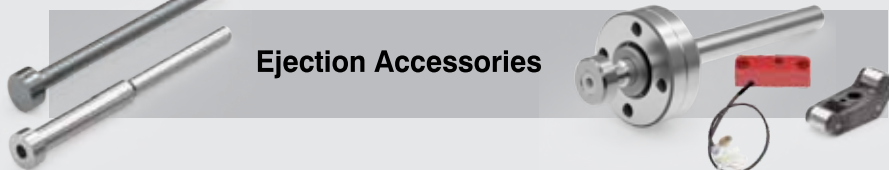
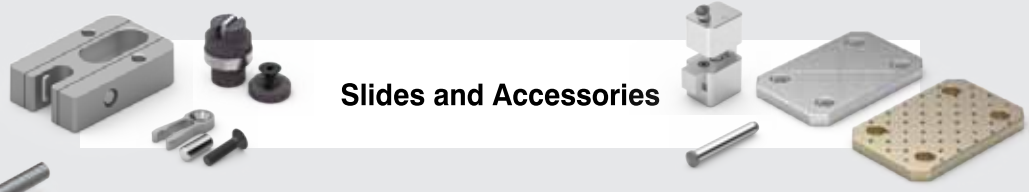
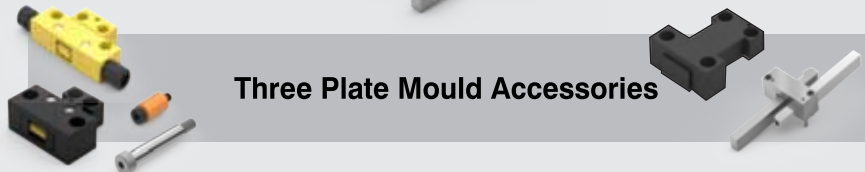
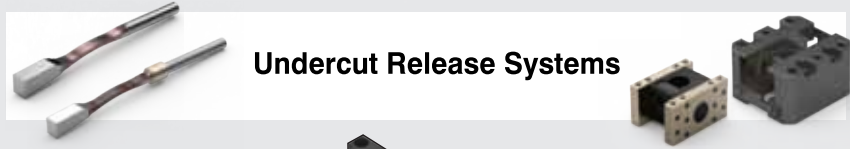
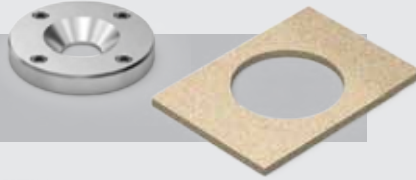
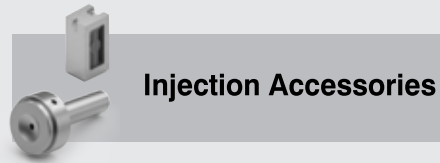
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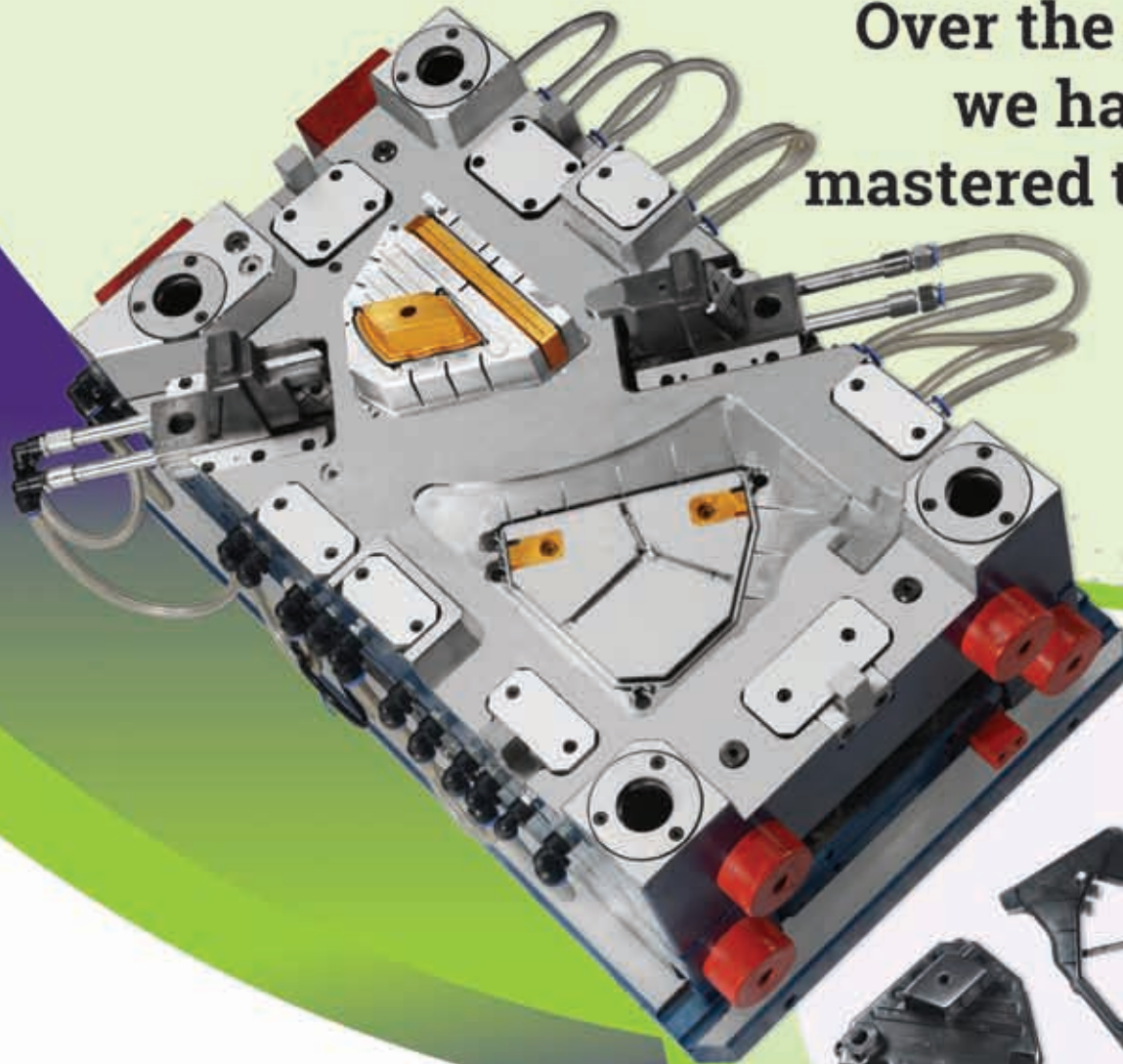
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