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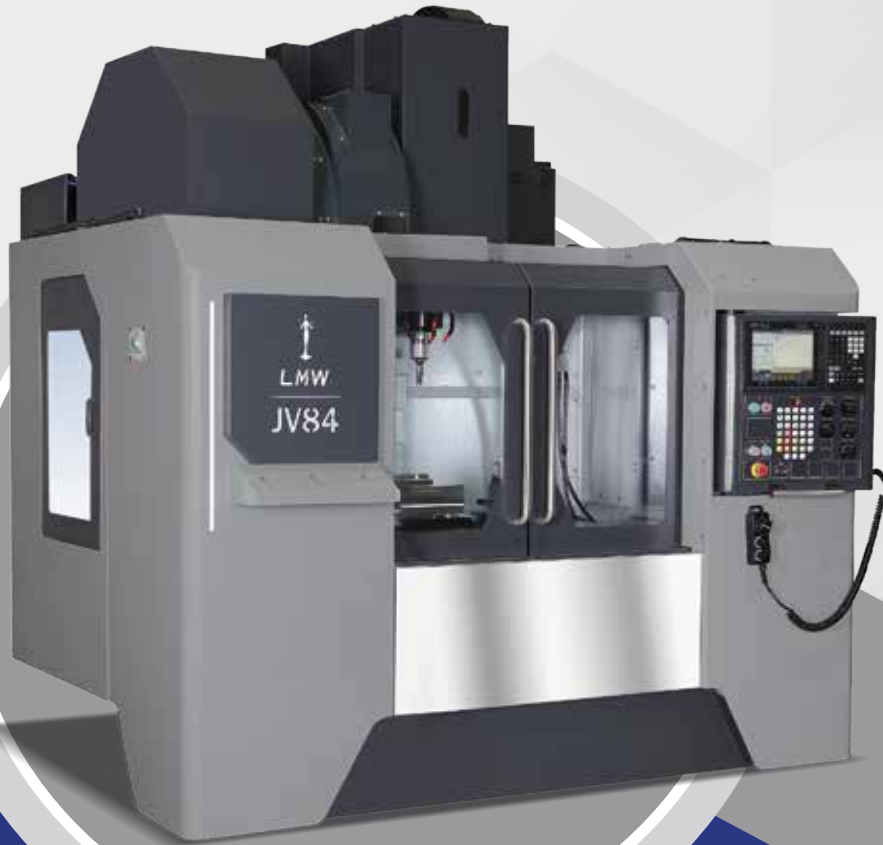


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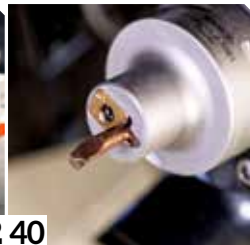
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IMPRINT

PUBLISHER
DIRECTOR GENERAL, IMTMA

EDITORIAL

Editor-in-Chief
Soumi Mitra

Chief Copy Editor
Poonam Pednekar

Assistant Editor
Sovan Tudu

Senior Correspondent
Murali Sundaram

Correspondent
Nityasree Kumaraswamy

VIDEOGRAPHY

Video Producer
Merenzungla Longkumer

Videographer
J Jayabharathi
Abinesh Umapathi

Video Editor
Akhilesh Singh
Jyotipriyo Pal

DESIGN

Magic Wand Media

SALES & MARKETING

Indian Machine Tool Manufacturers' Association
(IMTMA)

Murali Sundaram, Magic Wand Media Inc
murali.sundaram@magicwandmedia.in

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MOHINI KELKAR
PRESIDENT
IMTMA

Dear Readers,

It is with great enthusiasm and delight that I present this foreword to the readers of Modern Manufacturing India (MMI) magazine. As President of Indian Machine Tool Manufacturers' Association (IMTMA), one of the foremost thoughts that comes to my mind is to work on improving "reliability" of Indian machine tools. The manufacturing industry is at the threshold of exponential growth and, therefore, reliability in manufacturing processes and machines will be a major factor to achieve and sustain this growth. The manufacturing industry has been working hard on quality and TPM (Total Productive Maintenance) for the past 25 to 30 years. Now is the time to work on reliability that goes beyond quality.

The reliability of machine tools is central to efficient manufacturing, and when they fail, it jeopardizes due date commitments, disrupts the production process and leads to erosion of customers. In letter and spirit, reliability encompasses performance, accuracy, precision, availability and consistency in machine tool building. By meeting these parameters, our industry can build globally competitive machines, increase domestic market share, expand in overseas markets and enhance the perception of Indian engineered goods. Building such reliable machine tools starts right from the design stage and extends to the entire cycle of manifestation, encompassing manufacturing, assembly, testing, installation and maintenance.

India ranks among the top ten machine tool producing nations, holding the ninth position, as per the World Machine Tool Survey 2025 report by Gardner Intelligence. While this is a commendable ranking, we have the

potential to climb several rungs higher when the reliability of machines is elevated to the levels of those made by the developed countries.

IMTMA's flagship event, IMTEX FORMING 2026, focusing on metal forming and manufacturing technologies, will be held at BIEC in Bengaluru from January 21-25, 2026 with Tooltech, Digital Manufacturing, and WeldExpo as concurrent events.

Let us join hands to ensure that every machine, equipment, subsystem, or component leaving the factory floor embodies precision, endurance and consistency as we build for the globe while offering machines in the local market. This will build customer trust and redefine our long-term competitiveness.

IMTMA's flagship event, IMTEX FORMING 2026, which focuses on metal forming and manufacturing technologies, is slated to be held at Bangalore International Exhibition Centre (BIEC) in Bengaluru from January 21 - 25, 2026. Tooltech, Digital Manufacturing, and WeldExpo will be held concurrently. IMTEX FORMING 2026 will be a significant gathering of technology, innovation, and opportunities, an ideal platform for industries to connect, collaborate, and leverage momentum.

As we look ahead to 2026, the horizon for the machine tool and manufacturing industries gleams with promise. IMTMA will remain steadfast in its mission to foster industrial progress at a rapid pace while keeping our readers abreast of the developments in manufacturing.

I wish readers an inspiring and enriching reading experience with this edition of MMI.

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JIBAK DASGUPTA
DIRECTOR GENERAL & CEO
INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION
BANGALORE INTERNATIONAL EXHIBITION CENTRE

Dear Readers,

EMO Hannover 2025 marked a triumphant chapter for the Indian Machine Tool Manufacturers' Association (IMTMA). The global event celebrated innovation and collaboration, highlighting India's growing prominence on the world manufacturing stage. Across the event, we observed purposeful interactions and valuable knowledge exchanges, reflecting the confidence and curiosity that Indian engineered goods now evoke worldwide. Indian-made technologies no longer play a secondary role; they are shaping the global narrative of advanced manufacturing. For Indian machine tool builders, it was both a reunion with long-standing partners and the start of some promising new alliances, marking yet another significant step in India's journey toward global industrial leadership.

As we build on this remarkable success, the momentum shifts towards IMTEX FORMING 2026, where India's manufacturing excellence will once again take center stage. The spirit of innovation observed at EMO Hannover will find a new expression in Bengaluru, where global collaborations, cutting-edge technologies, and innovative ideas will

The spirit of innovation observed at EMO Hannover will find a new expression at IMTEX FORMING 2026 in Bengaluru, where global collaborations, cutting-edge technologies, and innovative ideas will continue to shape the future of metal forming and manufacturing technologies in India

continue to shape the future of metal forming and manufacturing technologies in India. Metal forming currently accounts for nearly 30 percent of the Indian machine tool market and is projected to grow rapidly in the coming years. In FY25, the consumption of metal forming machine tools was INR 9,139 crore, while production was valued at INR 2,696 crore. Overall, machine tool exports increased by approximately 6 percent year-on-year.

This edition of Modern Manufacturing India (MMI) has metal forming as its focus and includes an article from IMTMA that provides detailed insights into IMTEX FORMING 2026 and how the Indian machine tool industry is

bracing itself to meet the needs of the manufacturing industry.

Readers are encouraged to share their feedback and suggestions for new features to further enhance this magazine.

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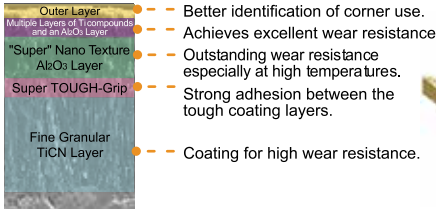
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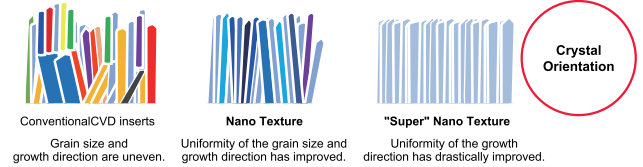
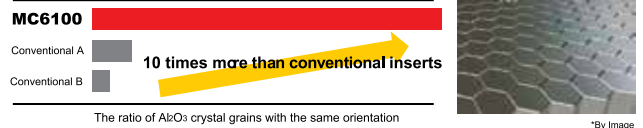
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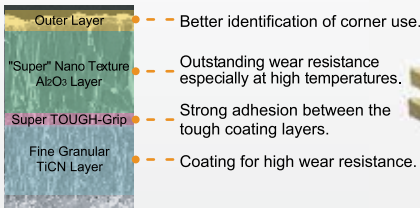
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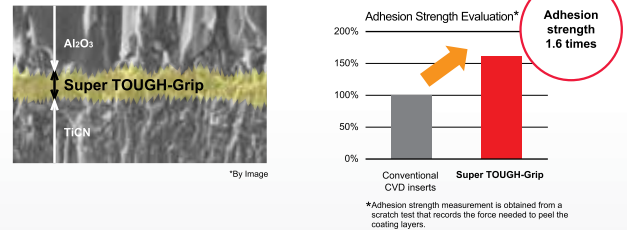
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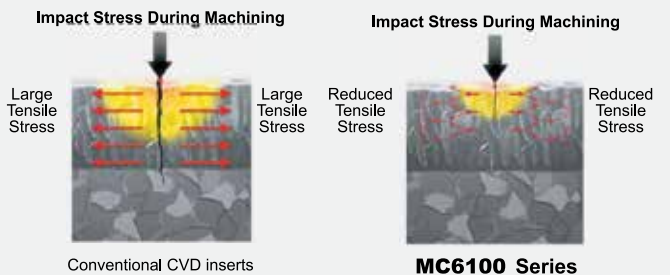


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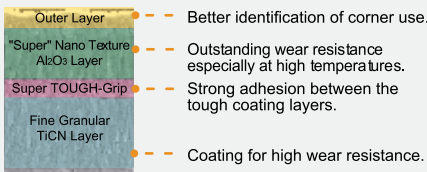
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Soumi Mitra

SOUMI MITRA
Editor-in-Chief
Modern Manufacturing India
soumi.mitra@magicwandmedia.in

REDEFINING LEADERSHIP FROM THE PITCH TO THE PRODUCTION FLOOR

The year 2025 is redefining frontiers. The triumph of the Indian women's cricket team in clinching the World Cup stands as a resounding testament to what sustained focus, relentless preparation, and the confidence to rise above limitations can accomplish.

In a span of a few days, the country took pride once again when the Indian women's blind cricket team won the inaugural Blind Women's T20 World Cup. Blind cricket demands profound teamwork and communication. Every run scored is anchored in trust, which is a reminder that strong collaboration can outperform individual brilliance.

A parallel transformation is reshaping Indian manufacturing. In its 75-year history, the Indian Machine Tool Manufacturers' Association (IMTMA) has, for the first time, elected a woman president—an inflection point that signals the industry's readiness to align leadership with the demands of a modern, globally integrated manufacturing economy. This is more than a milestone; it reflects an ecosystem that recognizes diversity, perspective, and forward-leaning governance as strategic imperatives.

This convergence of breakthroughs—on the field and within industry corridors—illustrates a deeper shift in India's collective mindset. Together, these narratives articulate that as India accelerates toward becoming a global manufacturing powerhouse, such moments are indicators of an ecosystem aligning itself with the aspirations of a new era.

In a global environment characterized by rapid technological upheaval, reconfigured supply chains, and escalating competitive pressures, the organizations poised to lead are those that anchor themselves in inclusive leadership, foster a culture of continuous innovation, and build the institutional resilience necessary to thrive amid uncertainty. In doing so, it defines the contours of an industrial future driven by capability, foresight, and a commitment to transformation.

We invite you to engage with the curated content presented in this issue and share your perspectives. Happy Reading!

"If your actions create a legacy that inspires others to dream more, learn more, do more, and become more, then, you are an excellent leader."

- Dolly Parton

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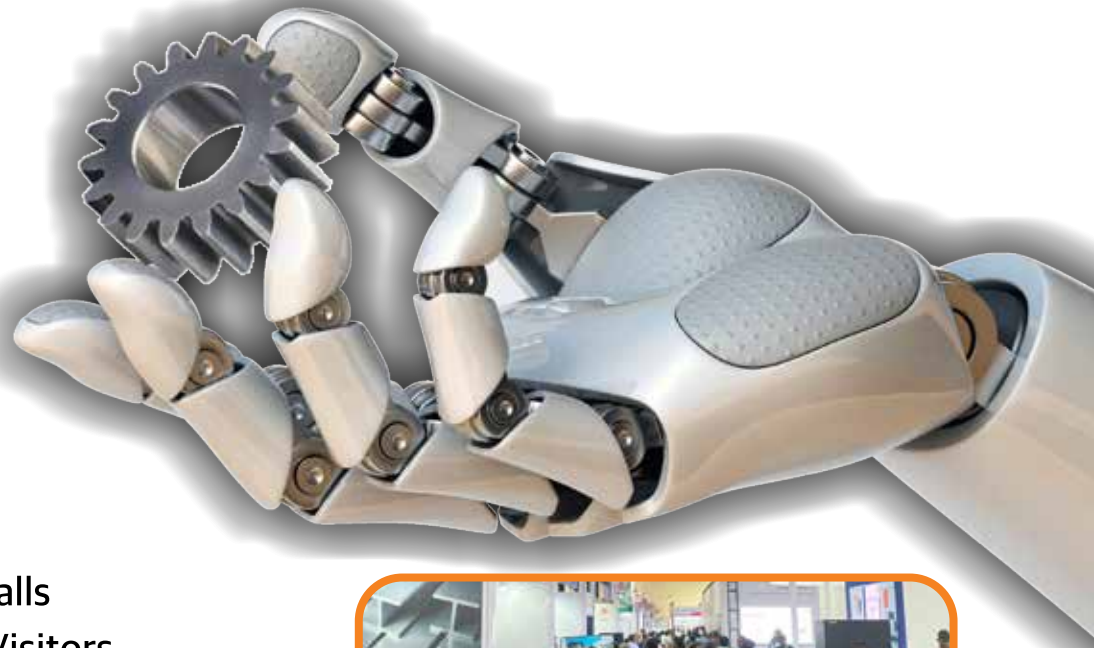
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MACHINE TOOL INDUSTRY RECORDS 11% GROWTH IN Q1 FY26

India's manufacturing momentum remains strong despite a mixed economic backdrop. In September 2025, the Manufacturing PMI held firm at 57.7, reflecting healthy factory activity, while inflation eased to record lows, supporting growth. Within this environment, the Indian machine tool industry posted steady expansion in FY26, with production up 11 percent year-on-year to INR 2,615 crore.

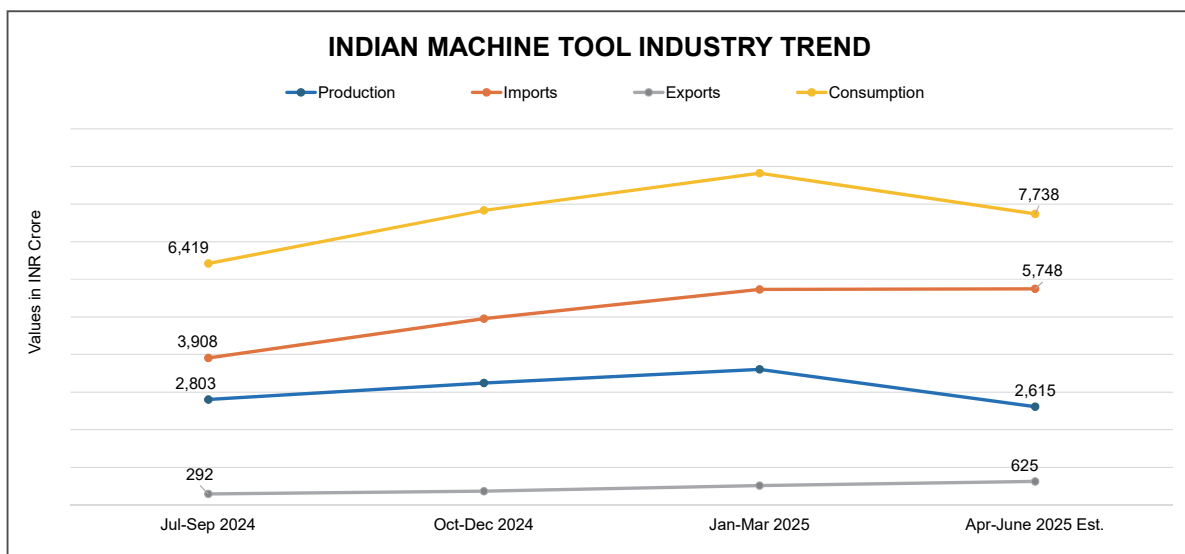


Table 1. Indian Machine Tool Industry Trend

Source: IMTMA

The economic indicators for September 2025 showed a mixed trend. The Manufacturing PMI (Purchasing Managers' Index) stood at 57.7, with an average of 58.7 in the second quarter of FY26, showing strong factory activity. The Services PMI was also high at 60.9 in September, averaging 61.4 in the same quarter, indicating steady growth in the Services sector. However, overall IIP (Index of Industrial Production) growth moderated to 4.0 percent in August 2025 from 4.3 percent in July 2025 due to slower growth in manufacturing output.

Inflation Trends Ease
 CPI (Consumer Price Index) inflation fell to 1.5 percent in September 2025, breaching the lower end of the RBI's target band and mark-

ing its lowest level in the 2012 base series, while core CPI inflation rose to a 25-month high of 4.7 percent. Meanwhile, WPI (Wholesale Price Index) inflation eased to 0.1 percent in September 2025 from 0.5 percent in August 2025, mainly due to a decline in food prices and a slower rise in non-food articles.

Fiscal and Revenue Indicators
 The Government of India's (GoI) gross tax revenues (GTR) grew by 0.8 percent during April-August FY26, reflecting a 1.0 percent contraction in direct taxes and a 2.9 percent growth in indirect taxes. GoI's total expenditure rose by 13.8 percent during the same period, driven by a 7.2 percent increase in revenue expenditure and a 43.4 percent rise in capital expenditure.

The fiscal and revenue deficits stood at 38.1 percent and 37.9 percent, respectively, of their annual budget estimates for FY26.

Stable Credit Growth
 In the Financial sector, gross bank credit growth remained stable at 10.0 percent in both July and August 2025, indicating steady credit demand in the economy. In the external sector, net FDI turned negative in August 2025, with outflows of US\$ 0.6 billion, while net FPI (Foreign Portfolio Investment) also recorded outflows of US\$ 2.6 billion for the second consecutive month, reflecting weaker foreign investment.

Trade Deficit Widens
 The merchandise trade deficit widened to a 13-month high of US\$ 32.1 billion in September

Source: Data & Policy Team, IMTMA

2025, up from US\$ 26.5 billion in August 2025, mainly due to an increase in the non-oil trade deficit. Merchandise exports recorded moderate growth of 6.8 percent, while imports grew by 16.7 percent, reversing from a (-)10.1 percent decline in August 2025, driven largely by a surge in gold imports. Meanwhile, global crude oil prices fell to a four-month low of US\$ 66.5 per barrel in September 2025, following expectations of a rise in OPEC+ output from November 2025.

Global and Domestic Growth Outlook

The OECD (Organisation for Economic Co-operation and Development) projected global growth at 3.2 percent in 2025 and 2.9 percent in 2026, while India's growth is expected to remain strong at 6.7 percent in FY26 and 6.2 percent in FY27.

Machine Tool Industry Registers 11% Growth

The production of the Indian Machine Tool industry in Q1 FY26 is estimated to have increased by approximately 11 percent year-on-year, reaching around INR 2,615 crore (US\$ 306 million). The industry's imports in Q1 FY26 saw a rise of 40 percent year-on-year, amounting to INR 5,748 crore (US\$ 672 M). Machine tool exports from India reported a growth of 108 percent, amounting to INR 625 crore (US\$ 73 M) and consumption was estimated to have increased by about 26 percent to reach INR 7,738 crore (US\$ 904 M).

Import and Export Composition

The total machine tool imports in April to September 2025 (H1 FY26) was INR 11,464 crore

(US\$ 1,326 M) China (28%), Japan (22%), and Germany (13%) emerged as the top countries for imports, contributing 63 percent of the total machine tool imports in April to September 2025 (H1 FY26). Presses, Vertical Machining Centers (VMCs) and Horizontal Machining Centers (HMCs) were the top categories of machinery imported valued at INR 4,574 crore (US\$ 530 M) at about 38 percent of total machine tool imports in H1 FY26.

For exports, VMCs, Presses, and HMCs were the top three categories of machinery exported valued at INR 749 crore (US\$ 86 M) at about 53 percent of total machine tool exports in H1 FY26. The total machine tool exports in April to September 2025 (H1 FY26) was worth INR 1,426 crore (US\$ 165 M).

In Q1 FY26, exports soared 108% to INR 625 crore. Imports rose 40%, led by machines from China, Japan, and Germany, while domestic consumption climbed 26 percent to INR 7,738 crore. Presses and machining centers remained the most traded products.



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IMTEX FORMING 2026: BRINGING NEW-AGE METAL FORMING TECHNOLOGIES

Metal forming is undergoing a major transformation as industries demand higher precision, faster production, and greater design freedom. This shift is being driven by the rise of automation, digital integration, and new-age manufacturing technologies. IMTEX FORMING 2026 aims to showcase this transition and celebrate human ingenuity and machine intelligence.

Artificial intelligence (AI) is now enhancing the art and science of metal forming, improving precision, consistency, and speed in every operation across the shop floor. At the same time, additive manufacturing and hybrid manufacturing are also gaining ground, enabling manufacturers to shape metal,

create complex geometries, and combine subtractive and additive techniques in a single workflow.

Rise in Demand, Rise in Expectations

Although metal forming currently accounts for 29 percent of the Indian machine tool market, the segment is expected to grow

in the coming years. In FY25, consumption of metal forming machine tools was INR 9,139 crore, with production valued at INR 2,696 crore. Overall, metal forming machine tool exports increased by approximately 6 percent year-over-year. Among the exports, presses topped the list, followed by press brakes, bending



Source: Magic Wand Media

from rudimentary today, with advanced processes now shaping metal into precise, high-value products. Sheet metal forming, stamping dies, press brakes, CNC punch presses, and laser waterjet cutting are gaining increasing acceptance. Newer techniques like hot stamping, hydroforming, flow forming, and electromagnetic forming are gaining popularity. On the heavier manufacturing side, bulk forming technologies such as forging, casting, extrusion, and pressure die casting play a crucial role in shaping critical metal components.

Factors Driving This Transformation

Self-reliance in Aerospace, Defence, and other sectors is leading to a shift from globalization to localization. Many small and medium-sized enterprises (SMEs) are manufacturing drones, missile navigation systems, and related products. A preference for premium, high-performance products, government incentives for technology adoption, and an industry-wide move from lower-end to premium and exotic offerings also support this transition.


There is also a growing focus on lightweighting and safety in Automotive, Aerospace, and Railway sectors. The rising adoption of electric vehicles, the push to

reduce carbon footprints, and the promotion of a circular economy are other factors. Overall, the Indian market is willing to pay for quality, reliability, convenience, and prestige.

IMTEX FORMING 2026

The transformation in metal forming manufacturing will be on full display at IMTEX FORMING, Asia's largest exhibition on metal forming and manufacturing technologies, scheduled from January 21-25, 2026, at Bangalore International Exhibition Centre (BIEC) in Bengaluru.

Organized by Indian Machine Tool Manufacturers' Association (IMTMA), IMTEX FORMING 2026 will host exhibitors from 22 countries across four exhibition halls, covering 46,000 sq mt of exhibition space. Germany, Italy, Japan, and Taiwan will have dedicated country pavilions. Tooltech, Digital Manufacturing, and WeldExpo will run concurrently, alongside key knowledge events such as the International Seminar on Forming Technology, i2 Academia Square, and the Jagruti-IMTMA Youth Programme.

IMTMA anticipates approximately 50,000 visitors from diverse manufacturing industries to attend IMTEX FORMING 2026 and celebrate human ingenuity and machine intelligence. 

Although metal forming currently accounts for 29% of the Indian machine tool market, the segment is expected to grow in the coming years. In FY25, consumption of metal forming machine tools was INR 9,139 crore, with production valued at INR 2,696 crore.

machines, and shearing machines. Industries' expectations are rising, driven by the demand for quality and volume. A shift from traditional machines to fully automated ones with digitally integrated systems is thus inevitable.

Technologies in Transition

The evolution of technology in the Metal Forming sector is far



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79TH ANNUAL GENERAL MEETING

Indian Machine Tool Manufacturers' Association (IMTMA) held its 79th Annual General Meeting (AGM) on September 10, 2025, at Bangalore International Exhibition Centre, Bengaluru.



Leveraging our Industrial Capabilities


A Special Session was organized before the Business Session of the AGM. Dr Ajit Ranade, Economist, Senior Fellow and Trustee, Pune International Centre, delivered a keynote address on 'Indian economy, growth in manufacturing sector and likely scenario for the future'. Dr Ranade outlined a roadmap for India's growth amidst global headwinds. He emphasized the need for strategic resilience and balance between global alignments and national interests. Envisioning a highly optimistic outlook for India in 2030, Dr Ranade stated that India could rank among the top three countries in the world by PPP (purchasing power parity), with manufacturing accounting for about 25 percent of GDP. He added that India's future competitiveness will depend not only on overcoming global turbulence but also on leveraging its industrial strengths to foster a new phase of growth.

Raghu Venkataraman, Principal Consultant at Goldratt Consulting, delivered a presentation on Breaking Supply Chain Bottlenecks. He emphasized the importance of the supply chain as the foundation of manufacturing excellence. He stated that by identifying and eliminating bottlenecks, organizations can enhance speed, reliability, and sustainable growth.

improve efficiency, reduce errors, and focus on higher-value strategic work.

On an Upward Growth Trajectory

Rajendra S Rajamane, President - IMTMA, outlined IMTMA's activities for FY 2024-25 and highlighted the strong performance of India's economy and the vital role of the country's Machine Tool industry in its manufacturing growth story.

Emphasizing the Machine Tool industry's progress, Rajamane observed that production rose by 7 percent to INR 14,566 crore, while consumption increased by 17 percent to INR 31,781 crore in FY 2024-25, placing India ninth in global production and fourth in consumption, as per Gardner Intelligence's World Machine Tool Survey. Rajamane further said, "The integration of AI, machine learning, and smart factory technologies will redefine the manufacturing landscape, and the Indian Machine Tool industry will play a pivotal role in this transformation. 

IMTMA Elects its First Woman President

At the Executive Committee meeting held after the AGM, a new IMTMA Executive Committee for 2025 - 2026 was formed. Mohini Kelkar, Director - Business Development, Grind Master Machines Pvt Ltd, was elected as President, and Vikram Salunke, Managing Director, Accurate Gauging and Instruments Pvt Ltd, as Vice President for 2025 - 2026.

IMTMA witnessed a historic milestone by electing Mohini Kelkar as its first woman President.

Amit Pande, Co-Founder, TOTELY India, gave a presentation on AI agents to automate business workflows. In his presentation, he highlighted how AI agents are transforming business processes by automating routine tasks and streamlining complex operations. This change allows organizations to

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INDIA'S MANUFACTURING SHIFT: FROM SCALE TO STRATEGIC ADVANTAGE

As India's manufacturing momentum accelerates, the focus is shifting from volume to value. Backed by capital investment, policy reform, and human capital, India is redefining its role in the global manufacturing landscape.



Source: Magic Wand Media

India stands at the threshold of a historic industrial transformation. The country's Manufacturing sector is not just scaling up; it is pivoting towards genuine strategic depth, propelled by rising global interest, robust domestic demand, targeted policy incentives, and rapid technological progress.

Macro Drivers and National Momentum

India is the world's fastest-growing major economy, posting real GDP growth of 7.8 percent in Q1 FY26. Manufacturing currently contributes about 17 percent of the nation's GDP, with an ambitious goal to reach 25 percent by 2030 under the 'Make in India' and 'Atmanirbhar Bharat' initiatives.

The momentum is reflected in robust export performance: total exports grew by 6.18 percent year-on-year to US\$ 349.35 billion during April-August 2025. Within this period, the cumulative value of merchandise exports reached US\$ 184.13 billion—up 2.52 percent compared to the same period last year. With this visible expansion and ongoing policy support, the Manufacturing sector is widely expected to achieve the milestone of US\$ 1 trillion by FY26 and add over US\$ 500 billion annually to the global economy by 2030, steadily cementing India's position as a global manufacturing hub. Foreign direct investment inflows recorded a new high: overall FDI inflows stood at US\$ 81.04 billion in FY25 (a 14 percent

year-on-year increase), with the Manufacturing sector alone drawing US\$ 19.04 billion—an 18 percent annual jump. The inflow was well distributed across states and Union Territories, reflecting the nationwide appeal of India's investment landscape and the broad-based opportunities available across the country for global investors. At the same time, Overseas Direct Investment (ODI) trended sharply upward, touching US\$ 23.65 billion in FY25, a 63.7 percent increase from FY24. This duality underscores India's evolving role as both a magnet for inbound capital and a source of outbound investments, reflecting the country's deeper integration into the global financial and corporate landscape.

Devesh Tripathi
Senior AVP
Invest India



Shanvi Gupta
Manager
Invest India



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Foreign direct investment inflows recorded a new high: overall FDI inflows stood at US\$ 81.04 billion in FY25 (a 14 percent year-on-year increase), with the Manufacturing sector alone drawing US\$ 19.04 billion—an 18 percent annual jump.

Capital Goods: The Bedrock of Industrial Ambition

Amid this surge, the Capital Goods sector sits at the heart of India's manufacturing ecosystem. Capital goods—encompassing plant and process machinery, machine tools, power and electrical equipment, textile machinery, and advanced engineering solutions—are the 'industry of industries'. Investments here multiply productivity across downstream verticals such as Energy, Chemicals, Food Processing, Mobility, and Healthcare. In FY24, the Indian capital goods market touched US\$ 52 billion across key subsegments: Heavy Electrical Equipment, Plant Process Equipment, Earth Moving and Mining Machinery, Textile Machinery, and Machine Tools. It is projected to reach US\$ 81 billion by 2030 as both domestic and global project investments gather pace.

Recent years have witnessed India moving into the top echelon of FDI destinations for plant and processing machinery, machine tools, earthmoving and mining, and power and electrical equipment as global majors diversify their supply chains. The momentum is being amplified by policy support and targeted government initiatives. Central schemes such as the Remission of Duties and Taxes on Exported Products (RoDTEP), the MOOWR (Manufacture and Other Operations in Warehouse) Scheme for duty deferment, the Duty Drawback program, and the EPCG (Export Promotion Capital Goods) Scheme provide fiscal incentives and regulatory flexibility that stimulate technology adoption and capital investment.

In parallel, state-level incentives—including fixed capital subsidies reaching up to 50 percent, SGST reimbursement up to 300 percent of capex, interest subvention of 4-7 percent, and

stamp duty and electricity duty exemptions up to 100 percent in most parts of the country—are driving significant localization and value addition across manufacturing. The effectiveness of these structured policies is evident in the sector's rising competitiveness and its ability to rapidly scale both domestic production and export capacity.

Crucially, capital goods are a lynchpin for critical national priorities:

- **Clean Energy Transition:** India's total installed energy capacity currently stands at 495 GW, with non-fossil or 'green' sources already contributing 248 GW, representing nearly 50 percent of the energy mix. By 2030, the country projects the energy grid to reach 784 GW in total capacity, of which around 500 GW, or 64 percent, will come from renewable and other non-fossil energy technologies. This dramatic growth trajectory is set to drive substantial demand for turbines, grid modernization equipment, and industrial electronics.
- **Infrastructure Build-out:** Massive investments in logistics, transport, smart cities, and data center ecosystems underpin steady demand for a wide array of capital equipment and automation systems.
- **Export Competitiveness:** Manufacturers with an India footprint stand to access not only the domestic market but regional export corridors across South Asia, the Middle East, Africa, and ASEAN, leveraging improved logistics and policy-driven trade facilitation.

Supply Chain Resilience and Human Capital

India is emerging as a resilient alternative—diversifying global sourcing for machinery, components, and advanced industrial systems. New investments in

warehousing, cold chain, and upstream logistics are lowering costs and improving just-in-time delivery for manufacturers.

India's competitive advantage is multi-dimensional. A rapidly growing working-age population—projected to increase from 735 million in 2011 to nearly 988.5 million by 2036—provides a substantial demographic dividend for the nation. This growth in workforce is complemented by fast-evolving technical skillsets and is mirrored in a rapidly urbanizing, aspirational consumer class. India is investing deeply in human capital through the Skill India Mission, thousands of upskilling centers, and industry-academia partnerships. These efforts have raised the Worker Population Ratio to 52.2 percent, while the Female Worker Population Ratio has risen to 32 percent, pushing female workforce participation to new highs.

The opportunity is further harnessed by key initiatives launched by the government such as the multi-modal National Logistics Policy, the PM GatiShakti scheme, and targeted skilling programs, ensuring that workforce development, infrastructure, and policy reforms drive sustained economic growth.

India's Industrial Future—Integrated, Innovative, Inevitable

India's manufacturing ascent is now structural, not cyclical. Urban demand, robust policymaking, skilled talent, and a thriving domestic and export market all reinforce the case for capital goods investment as a pillar of national growth. Risk management and localization remain key, but with the government continuing to lower policy and logistical barriers, India is poised to become not just the 'factory of the world' but an innovation and engineering hub. 

TR4F type

Radius Mill TR4F type

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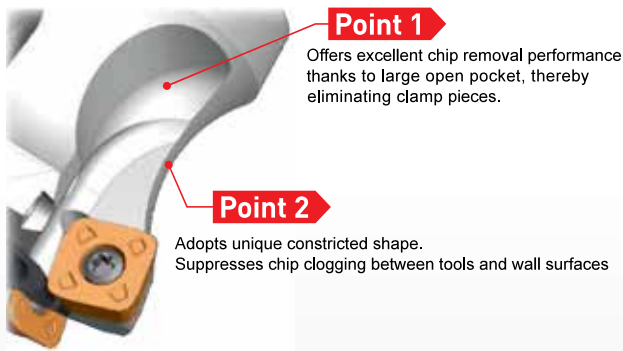
TR4F type to meet specific challenges posed by high-efficiency cutting

Issue

01 Although high-feed cutting is performed for shaping, resulting severe chip clogging and biting may reduce shaping efficiency.

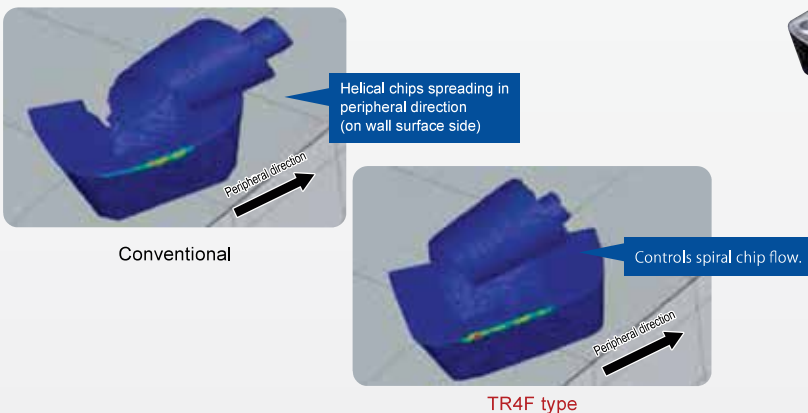
Proposed solutions

Adopts new body shape to enhance chip removal.
Suppresses chip clogging, even when cutting long overhangs.



Point Suppresses chip clogging

Optimizes cutting edge design to achieve smooth chip removal flow; keeps chips away from wall surfaces. Suppresses clogging from the time chip generation starts.



Breaker type is added to the inserts (1 item, 4 grades)

Lineup of holders are added. (φ32, 40, multi-flutes type total 14 item)



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THE IMPORTANT ROLE OF SYSTEM INTEGRATION IN LASER WELDING AND HARDENING APPLICATIONS

The increased adoption of advanced laser technologies by manufacturing industries has led to higher complexity of systems used in welding and surface hardening applications. Successful laser processing mostly depends on advanced integration techniques needing expert system integrators, even though the lasers have gained power and reliability.



Source: Magic Wand Media

Laser welding and hardening operations in modern industry are more than just basic beam application to workpieces. Industrial applications at present require a seamless integration of laser sources with suitable beam delivery optics as well as motion control systems. Additionally, process monitoring sensors, safety interlocks and other quality assurance mechanisms like vision is necessary. All these system components need to operate as one harmonious unit to achieve the precision, repeatability, and efficiency requirements of modern manufacturing operations.

This demands the successful integration of different technological elements beyond individual component functionality. The delivery of exceptional beam quality by high-powered fiber lasers requires seamless integration with motion control systems, thermal management as well as process monitoring systems to realize their full potential. Project success now depends heavily

on laser integration expertise, which has become the key factor influencing outcomes.

Core Integration Challenges in Laser Processing Beam Delivery and Optics Management

Optimizing beam delivery systems represents the first essential step for effective laser integration in industrial requirements. Selecting appropriate focusing optics together with beam shaping elements, protective windows, etc., form the foundation for successful welding operations in industrial environments. Beam homogenization together with precise energy distribution plays a crucial role in hardening applications.

Pradeep Patil, Managing Director, TRUMPF India, says, "System integrators need to consider thermal effects and cooling strategies for optical components, as well as suitable contamination protection measures and maintenance accessibility requirements during beam delivery system design.

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Selecting appropriate focusing optics together with beam shaping elements, protective windows, etc., form the foundation for successful welding operations in industrial environments.



“System integrators need to consider thermal effects and cooling strategies for optical components, as well as suitable contamination protection measures and maintenance accessibility requirements during beam delivery system design.”

Pradeep Patil
Managing Director
TRUMPF India Pvt Ltd

The integration challenge involves maintaining consistent beam quality during robotic applications where the laser head navigates complex three-dimensional paths and operates at different working distances and angles.”

Motion Control Synchronization

System integration expertise becomes most crucial when aligning laser output with motion control systems. Modern laser welding and hardening require synchronized operation between laser power modulation and robot travel speed/positioning accuracy. Any change in these process parameters will cause heat input inconsistencies which produce quality defects or lead to unstable process operation.

Advanced integrated solutions implement real-time feedback mechanisms that modify laser settings according to motion system characteristics including acceleration and deceleration patterns and path limitations or mechanical boundaries. A deep understanding of both laser physics and motion control concepts is essential for achieving this level of integration.

Process Monitoring and Adaptive Control

Modern laser integration depends on advanced monitoring systems which provide closed-loop process control functionality. The welding process requires seam tracking, weld depth monitoring, and weld defect detection systems. Real-time temperature monitoring and thermal profile control systems are a must for laser hardening processes to maintain consistent hardening depths. The main difficulty emerges from processing various data streams at once while executing required control actions within the critical time window of laser processing operations. System integrators need to design architectures which acquire high-speed data while performing real-time analysis and making immediate process corrections without causing system instabilities.

The Strategic Value of Specialized Integrators Technical Expertise and Application Knowledge

Successful laser integration requires professionals who combine knowledge in laser physics, mechanical engineering, control systems, software development, and manufacturing processes. Integrators use their multiple areas of expertise to foresee production challenges and develop optimized system solutions to surpass component specifications. The main advantage of experienced integrators comes from their extensive knowledge of executing similar systems deployed in various industries. An experienced team understands the impact of welding dissimilar materials on the process, the thermal management requirements for various hardening patterns, and the production environment conditions that influence system reliability.

Risk Mitigation and Project Management

Laser integration projects carry major technical risks together with substantial financial risks if not integrated in the right way. The combination of incompatible components, less experience in possible installation problems, and extended integration phases lead to increased expenses and postponed manufacturing deadlines. The single point of accountability provided by experienced integrators enables them to manage suppliers and coordinate installations while verifying system performance to meet required specifications. The risk mitigation strategy includes long-term operational aspects. System integrators plan systems that include maintenance-friendly designs and standardized components together with upgradation possibilities that defend the client's financial investment during the operational period.

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System integrators create specialized fixturing for complex geometries, develop custom software algorithms, and also design unique safety systems. This ability to customize operations sets professional integrators apart from basic equipment providers.

specific solutions that match client production environments and quality standards beyond what standard laser components offer. System integrators demonstrate exceptional ability to find performance enhancement possibilities and create individualized solutions that deliver the best investment return. They create specialized fixturing for complex geometries while also developing custom software algorithms for process optimization. System integrators also design unique safety systems according to specific operational requirements. The ability to customize operations sets professional integrators apart from basic equipment providers.

Integration Technologies Driving Innovation Industry 4.0

Integration Modern laser integration systems adopt Industry 4.0 principles by establishing connections to manufacturing execution systems that enable advanced analytics capabilities. System integrators use IoT sensors together with cloud connectivity and machine learning algorithms to continuously optimize process parameters through analysis of historical performance data. IoT component manufacturers can use predictive maintenance approaches along with quality trend monitoring and production efficiency maximization that exceeds laser system capabilities. The implementation of these capabilities demands integration expertise that combines traditional manufacturing systems with modern information technologies.

Artificial Intelligence and Machine Learning

High-level integrators are currently adding Artificial Intelligence (AI) and machine learning (ML) functionalities into laser control systems. Through these technologies, organizations can establish adaptive process control systems that adjust operational parameters automatically using real-time data and historical information. AI systems used in welding applications can predict material property variations and joint preparation differences as well as environmental changes to provide compensation. ML algorithms used in hardening applications optimize heating patterns and cooling rates to produce uniform metallurgical properties across intricate shapes.

Multi-Laser Coordination

The increase in production volumes and part

complexity makes many applications more efficient when multiple laser systems operate in coordinated fashion. The system includes simultaneous welding heads working on extensive assemblies and coordinated hardening systems that process different sections of one component. Controlling multiple laser systems needs advanced control systems to distribute resources and synchronize timing patterns while providing safety functions between system components. The high complexity of integration demands specialized knowledge that only a few organizations have mastered.


Future Trends Modular Integration

The industry is advancing towards modular integration systems which allow easier reconfiguration and upgrades when production requirements change. The integration process requires designers to establish interfaces and communication standards which allow future updates without needing full system overhaul.

Sustainability

Environmental concerns are gaining rising importance when implementing laser integration projects. The industry has started to use energy recovery systems while optimizing processes to reduce waste heat production and designing systems that use fewer consumables while producing less waste.

Future of Laser Manufacturing

Modern laser welding and hardening projects achieve success through advanced integration approaches that maximize system performance beyond individual component capabilities. The evolution of laser applications toward higher complexity and performance demands makes specialized system integrators increasingly vital for future manufacturing success. Organizations that want to implement laser-based manufacturing must understand that integration expertise functions as a strategic benefit that determines whether a project succeeds or fails. Manufacturers partnering with qualified integrators who understand both the technical and practical aspects of laser processing gain the performance, reliability, and return on investment needed to justify implementing advanced laser technologies. 

Reji Varghese is the President of RV Forms and Gears, one of India's oldest fixture building companies. He is also a guest writer for a number of national newspapers and magazines.

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AFFORDABLE AI FOR INDIAN MANUFACTURERS

Across industries – from auto components to chemicals and pharmaceuticals to machinery – manufacturers have one thing in common: they are already sitting on a goldmine of data. And it does not take a fortune to start using it.



Source: Magic Wand Media

RAHUL KHARAT
CO-FOUNDER & CTO
RESET AI



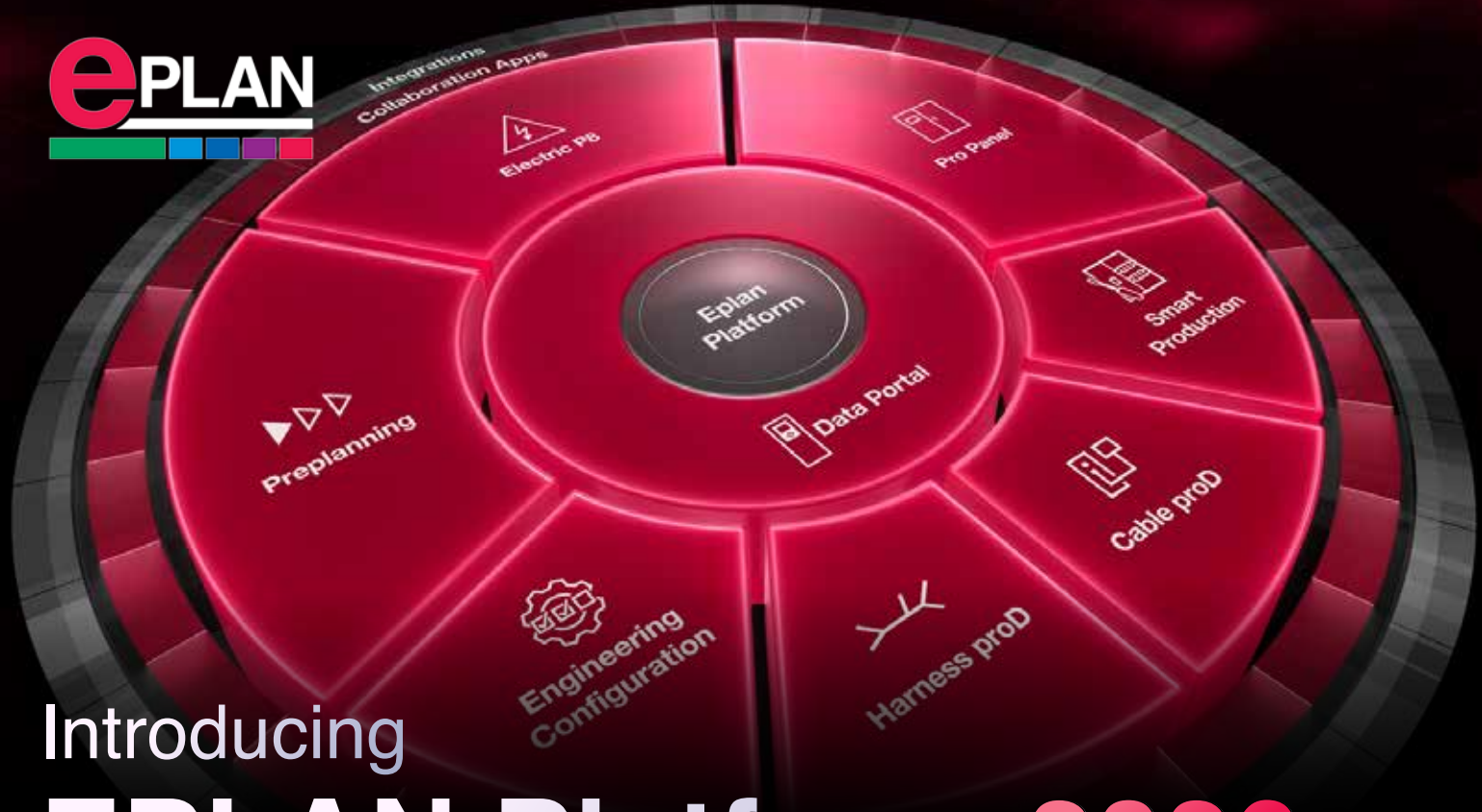
AI adoption does not have to begin with a massive cloud migration, expensive integrations, or hiring a team of data scientists. In fact, the smarter move is often the simplest one: to look inward. One's existing production logs, Excel files, maintenance reports, invoices, and SCADA exports can be the foundation for meaningful AI-led growth.

The Power of Structured and Unstructured Data

Factories already generate vast volumes of data. Structured data comes from Enterprise Resource Planning (ERP) systems (inventory levels, production schedules, financial records); Manufacturing Execution Systems (MES) (machine performance, quality control logs); and Supervisory Control and Data Acquisition (SCADA)

systems (sensor readings, historical trends).

Additionally, it is crucial to also take into account the unstructured data: maintenance technicians' handwritten notes, quality inspection images, customer feedback emails, or voice recordings from site inspections. Modern AI and Machine Learning (ML) algorithms are exceptionally good at processing this diverse data.



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Ms. Pooja Narain +91 97311 57563 pooja.narain@eplan.in

The myth suggests that companies must first collect two years of high-resolution data before adopting AI. The reality, however, is that even two months of machine logs, Excel-based downtime reports, or purchase data can provide valuable insights.

KBy applying basic ML models to this existing data, it is possible to immediately generate actionable recommendations. For instance:

- **Predictive Maintenance:** Analyzing SCADA sensor data and maintenance logs to predict equipment failure before it happens, drastically cutting downtime.
- **Quality Control:** Using images of finished goods combined with rejection rates to identify subtle patterns causing defects.
- **Demand Forecasting:** Combining ERP sales data with unstructured customer feedback to create more accurate production schedules.

The key message is clear: manufacturers already possess the raw material for AI – their own data. The first step lies in analysis, not acquisition.

Utilizing Before Accumulating

Before sinking funds into creating sophisticated data lakes, buying expensive new IoT sensors, or building complex data pipelines, a critical question must be asked: Have we already utilized the existing data to its full potential? For most small to medium-sized enterprises (SMEs) in the Indian Manufacturing sector, the answer is usually no. Many companies are still using their data primarily for reporting what has already happened, not for predicting what will happen or prescribing the best course of action. To bridge this gap, it helps to start by asking these three simple questions:

- Does the organization already have access to historical logs and operational files?
- Has it attempted to extract insights or patterns from this existing data?

- Are decisions being made based on facts or intuition?

The truth is: most manufacturing decisions – about what to procure, how to schedule production, and where losses occur – can be dramatically improved using just what’s already being captured.

The myth suggests that companies must first collect two years of high-resolution data before adopting AI. The reality, however, is that even two months of machine logs, Excel-based downtime reports, or purchase data can provide valuable insights. Even partial or imperfect data can deliver meaningful results – what matters most is direction, not perfection.

The key lies in starting small – by solving one real business problem. Companies must begin their AI journey not with a vague goal like: ‘We want to use AI somewhere’, as it often leads to wasted pilots and poor ROI. Instead, they should anchor their efforts around real, high-priority business problems such as:

- Addressing too many quality defects by using AI to find contributing factors.
- Reducing frequent breakdowns by analyzing maintenance logs for predictive patterns.
- Preventing overordering raw materials by forecasting run demand based on just past Excel sales data.

The problem should guide the solution—not the other way around. Companies must avoid force-fitting AI where it doesn’t belong. The goal is not to ‘adopt AI’ but to reduce downtime, improve margins, cut costs, or increase order win rates. AI is just a tool to get there.

Avoid Letting Integration Become a Bottleneck


Many companies delay AI

adoption, waiting for the perfect system integration, which is akin to postponing a doctor visit until one has built a hospital. Modern AI platforms (like file-first decision agents) require no integration to get started. One can:

- Upload files directly (CSV, Excel, PDF, SQL dumps)
- Run analysis on isolated data sets
- Generate insights, rootcause analysis, and forecasts in plain English.

Integration can come later only when it starts to add value. This means one’s existing workflows need not be disrupted. Teams can continue using their familiar formats and simply get better intelligence layered on top.

From Pilot to Powerhouse: Scaling Smartly

The AI journey for Indian manufacturing is not a single giant leap; it’s a series of strategic small steps. By first optimizing existing data, committing only to solving specific, high-value problems, leveraging accessible low-code tools, and, crucially, applying a skeptical, first-principles mindset to cut through the industry hype, companies can transform their operations. The real growth is not only about faster machines; it’s about smarter decisions, and the data to fuel those decisions is already captured within one’s factory walls. By embracing this frugal, problem-first approach, Indian manufacturers can quickly unlock growth, secure a competitive edge, and pave the way for a data-driven future without draining their capital reserves. AI is no longer a luxury for industrial giants – it’s an accessible, strategic tool for every ambitious Indian manufacturer. 

Accelerating INDIA'S MANUFACTURING FUTURE



Source: Magic Wand Media

DR ANURAG SRIVASTAVA
CAMRAS Program Head,
I-Hub for Robotics and
Autonomous
Systems Innovation
Foundation
Indian Institute of
Science, Bangalore

SHRI VIJAY MITTAL
Joint Secretary
Ministry of Heavy
Industries
Government of India

SHRI VIKAS DOGRA
Director
Ministry of Heavy
Industries
Government of India



To strengthen India's innovation capacity and global manufacturing competitiveness, the Ministry of Heavy Industries has launched the Center for Advanced Manufacturing for Robotics and Autonomous Systems (CAMRAS) under its Capital Goods Scheme Phase II, in collaboration with the Indian Institute of Science (IISc), Bengaluru, and ARTPARK (AI and Robotics Technology Park).

A sudden surge in imports of robotic and autonomous systems has been observed over the past five years, driven by increased spending on autonomous mobile robots (AMRs), manipulators, collaborative robots, and drones across Manufacturing, Defence, Commercial, and Government sectors. Given the evolving technologies, products, and global trade environment, it has become imperative to promote indigenization and innovation to achieve strategic independence, particularly concerning the security and safety of such products in India. The Ministry of Heavy Industries (MHI), Government of India, has been implementing various schemes to strengthen India's position in the future of manufacturing. Building on the Ministry's earlier successes with the Advanced Manufacturing Centre of Excellence (AMCoE) and Industry 4.0 CEFC programs, CAMRAS (the Center for Advanced Manufacturing for Robotics and Autonomous Systems) focuses on nurturing startups that deliver market-ready technologies (Technology Readiness Levels 7-8) in robotics, automation, and autonomous systems by 2026.

Choosing the FIA Ecosystem Model

A proven ecosystem model is essential to accelerate innovation by bringing together startups, large industries, venture capitalists, academia, and autonomous research institutes in the development of advanced manufacturing technologies. The new Fibonacci Innovation Acceleration (FIA) ecosystem model aims to deliver immediate impact while enabling the creation of differentiated products and technologies over the next decade. Its key objectives are to:

- Rapidly develop products by leveraging existing Technology Readiness Level (TRL) 3 technologies and position them among the best globally over the next five to 10 years.
- Build products and supply chains for a stronger manufacturing economy and achieve strategic independence by 2030.

The following section outlines the strategic technology gaps projected for the next five years and the preparedness required by 2030, keeping the objectives of the CAMRAS program in focus. The CAMRAS program was conceptualized in July 2022, approved as an MHI Accelerator

initiative in November 2022, and became operational in January 2023, with completion targeted for March 2026. The MHI had already designed the framework to develop this ecosystem and integrate current and existing manufacturing units into it.

Investible Technologies and Business Model Analysis

Artificial intelligence, robotics, autonomous systems, Industry 5.0 solutions, sustainable materials, energy optimization, self-managed products, advanced sensors, and assistive technologies are expected to play a central role. To strengthen the CAMRAS program model, it was essential to study the approaches and industrial policies adopted by China, the EU's Fraunhofer model, the UK, and Japan in developing large-scale manufacturing capabilities.

A key observation across these countries is the scale of investment, long-term continuity, and strategic focus on their initiatives. India faced challenges on all three fronts that led to the development of an innovation accelerator model in 2022 that provided agility and better outcomes while requiring

Building on the Ministry's earlier successes with AMCoE and Industry 4.0 CEFC programs, CAMRAS focuses on nurturing startups that deliver market-ready technologies (TRL 7-8) in robotics, automation, and autonomous systems by 2026.

HS Code	Commodity	Imports (Cr)
84795000	Industrial Robots	787
84834000	Gears & Gearing	4,683
90328910	Electronic Controllers	1,296
90230010	Teaching Aids	70
84111200	Turbo-Jets of Thrust ≥ 25kN	23,569
84119100	Propellers and Rotors	39
85340000	Printed Circuits	9,342
85044030	Battery Chargers	1,071
Total		42,030

Table 1 Import summary (2022-23) of HS Codes relevant to the CAMRAS Program objectives

www.tradestat.commerce.gov.in/eidb/commodity_wise_import

The success of the program depends on the choice of leaders. Their competencies must range from leadership, behavioral and financial management, program and project management, business management, industry relations, investment/VC relations, team management, and technology integration.

reduced investment. Through the CAMRAS program, the focus was placed on technologies and products in robotics, autonomous systems, and drones. Table 1 presents the import summary of products/components when the CAMRAS program was conceptualized in May 2022. It is evident from Table 2 that the focus was not just to create autonomous systems, but also to establish supply chain ecosystems to indigenize them. The program aimed to generate momentum and funding to scale production and achieve global competitiveness.

FIA Ecosystem Model - Case Study of the MHICAMRAS Program

The MHI had conceptualized the Accelerator program in 2022 under its phase-2 scheme of Capital Goods. Thus, the analysis at IISc and MHI converged to initiate the CAMRAS program after a thorough evaluation. The program was convened through another IISc entity focused on AI and robotics technologies named ARTPARK. The aim was to target the creation of new startups with the Project Implementing Organization (PIO) also acting as the Industry Part-

ner (IP) in these areas under the new model and drive the creation of market-ready products and technologies (TRL-7/8) to create the supply chain ecosystem by 2026.

The intention was to create these companies and a replicable model that allowed operational flexibility for speed and IP development with startups in these advanced technology areas (Table 2) and get large industry players to become their customers to scale this model within India at different places. Given the strict timelines of the CAMRAS program, the maturity of the technology at the start and its complexity, the authors identified key drivers to work on and innovate the FIA model. The objective was to ensure the success of this new CAMRAS program and its startups and create a proof for larger industries, MSMEs and ministries to use this innovation model and make India a sizeable global manufacturing hub. The identified drivers were:

- Leadership talent to initiate these projects with the objective of creating a company during the course of the program and then accelerate its growth after three years.
- An operating model to evolve

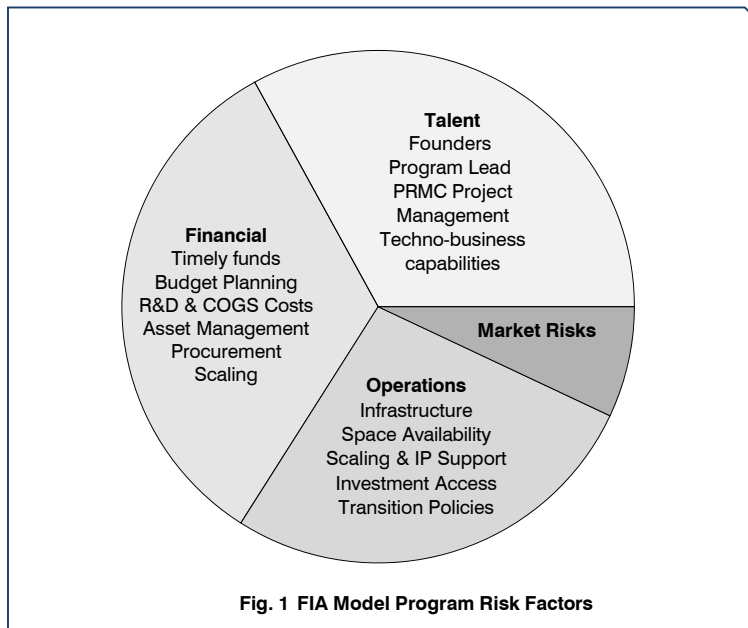
the project into a company with market-ready products.

- Detailed planning and timelines to guide the progression of technologies from TRL 3-4 to TRL 7-8 in 3 years.
- Focus on innovation and indigenization through patents and develop Indian suppliers for the newer product or components.
- Provide industry-standard infrastructure for product development, certifications, team scaling, prototyping, and manufacturing readiness to attract venture-backed or strategic investments.
- Encourage startups to secure players from the industry and defence sectors as early anchor clients.
- Ensure that startups are able to generate revenue while leveraging each other's technologies and products to build an internal supply chain for core strategic technologies.

The Ministry of Heavy Industries identified a set of metrics to evaluate accelerator performance under the Capital Goods Scheme Phase II. The CAMRAS program introduced additional metrics to achieve broader objectives—namely, establishing successful and scalable

Project Title	Target Cost	Competitor 1 Cost	Competitor 2 Cost
Robotic Actuators	\$900	\$1,000 (IGUS GmbH)	\$2,000 (Amber AIOS-Pro)
Planar Magnetic Drive System	25% less	NA (E-Circuit Motors Inc.)	NA (Infinitum Electric)
Legged Walking Robots	\$60,000	\$74,500 (Boston Dynamics)	\$150,000 (Ghost Robotics)
Distributed IMUs	\$1,200	\$4,000 (Xsense MVN)	—
Soft Robotics	\$1,500	\$4,000 (Soft Robotics Inc.)	\$2,500 (Wegard GmbH)
Advanced Intelligent Controllers	\$900	\$2,000 (VOXL)	\$1,579 (Auterion)
Flexible Structures	\$1,00,000	\$3,00,000 (Mightyfly)	\$3,00,000 (Volansi)
Autonomous Charging Systems	\$1,00	\$4,000 (SkyCharge)	\$6,999 (Heisha)

Table 2 Target products/technologies and global competitive benchmarks for CAMRAS program objectives



companies through this program. The following metrics were used to measure the CAMRAS program and the success of the FIA model:

- New companies, technologies, and products created
- Patents filed in India
- Degree of innovation and indigenization achieved in technologies, products, and components
- Revenue generated by participating companies against set targets
- Core talent developed within the program, including upskilling of professionals in emerging areas
- Number of Indian suppliers established to support the new product ecosystem
- Investments raised by the companies and their resulting valuations
- Potential for future technology development that positions India ahead of global competitors beyond 2030.

Given the budgetary support from MHI, with no VCs/industry players coming forward to invest at that stage, it was

clear that the Exponential growth model will not work for CAMRAS. Consequently, it was decided to implement the FIA model, setting the stage for startups to switch to the Exponential model at a later point.


Risks and Scale Potential of FIA Model

The outcomes demonstrate that the FIA has been successful, though certain areas still offer scope for improvement. Three key risks associated with the model are outlined below (Figure 1).

Talent - It is absolutely important to understand that the success of the program depends on the choice of leaders – Entrepreneurs in Residence (EIR), core startup teams, PIO/ministry leadership, and the overall program leader. Their competencies must range from leadership, behavioral and financial management, program and project management, business management, industry relations, investment/VC relations, team management, and technology integration. This enables culture building within startup teams. They

must develop these competencies as part of their journey. However, this is not an easy task, and various environmental operating factors impact that. This risk handling has been rated as 8.75/10 for the CAMRAS program.

Financial - Timely flow of funds, asset management, expense management, technology development, budget tracking, cost of goods sold (COGS) management, customer business scaling costs, support models and other policies have a significant impact on the success of the program. For CAMRAS, this risk handling can be rated as 9/10 for the MHI due to timely cashflow support, and the parent institution (PIO) as 7.5/10, given its dependence on other support funds with their cashflow related challenges.

Operating Policies and Freedom - Support for scaling manufacturing setups, developing common infrastructure, support for startup transitions, plans to raise investments and ensure business sustainability are all critical factors for program success. Additional considerations include space availability, allocation processes, transition mechanisms from EIRs to startup teams, and shared financial, HR, operational, and patent support systems managed by the PIO. Given the evolving nature of the PIO, its institutional dynamics, and the challenge of attracting private and industry investments within short timelines while refining its own operating model, this risk management aspect has been rated at 7/10. 

The white paper can be accessed here:
www.imtma.in/images/media_coverage/2025/MHI_Paper_LateX_v7.pdf

Timely flow of funds, asset management, expense management, technology development, budget tracking, cost of goods sold (COGS) management, customer business scaling costs, support models and other policies have a significant impact on the success of the program.

SHAPING INDIA'S HIGH-TECH FUTURE

In an engaging interview with MMI's Editor-in-Chief, Soumi Mitra, Partho Kar, Joint Managing Director, Jaykay Enterprises Ltd, reflects on the company's evolution into a cutting-edge technology player. He delves into its efforts to localize supply chains, expand through its JK-Phillips LLP partnership, and lead with a philosophy inspired by Krishna's teachings.

Jaykay Enterprises has evolved significantly over the years. How would you describe the company's current strategic direction and its alignment with India's new industrial growth narrative?

Jaykay Enterprises Ltd, formed in 1943, was formerly known as JK Synthetics Ltd. It began as a synthetic fibre, cement, and allied products company. Today, it has transformed itself into a futuristic organization operating across Defence, Aerospace, AI, Digital Services, Digital Manufacturing, and MedTech industries. It has effectively reinvented itself as a 21st-century high-technology company.

Please share your views on the role of advanced manufacturing technologies such as automation, data analytics, and AI, playing in Jaykay's operations and productivity roadmap?

We are constantly striving to integrate automation into our manufacturing plants, including 3D printers, high-end CNCs, and robotics. Our technology arm is undertaking cutting-edge innovation in AI through our proprietary platform, JIVA. We are also working with various customers to replace forged titanium parts with titanium 3D-printed components.

Could you kindly elaborate on the company's efforts to lo-



Partho Kar, Joint Managing Director, Jaykay Enterprises Ltd

Source: Jaykay Enterprises Ltd

calize supply chains or build strategic collaborations within India's industrial clusters?

We work closely with our customers to identify critical, import-dependent components and bring them into indigenized production. Some of these initiatives could be game changers for local manufacturing. We have a Centre of Excellence (CoE) in Bengaluru that continually develops new adaptations and localization of technologies and products.

Jaykay, through its joint venture JK-Phillips LLP, recently secured a major contract to supply advanced and conventional machine tools — including CNC and EDM systems — for MSME training centers across India. Could you tell us more about this initiative?

JK-Phillips LLP has been established to address the growing demand for advanced manufacturing systems in India. The MSME contract is a step in that direction. If India aspires to

SOUMI MITRA
Editor-in-Chief
Modern Manufacturing
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soumi.mitra@
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Jaykay Enterprises Ltd began as a synthetic fibre, cement, and allied products company, and has now transformed itself into a futuristic organization operating across Defence, Aerospace, AI, Digital Services, Digital Manufacturing, and MedTech industries.

become a manufacturing powerhouse, it will require a large pool of skilled talent. JK-Philips aims to play a critical role in setting up and operating these centers by making cutting-edge software and hardware accessible, along with easy-to-use training and services in advanced technologies. Our combined strengths in manufacturing and services make it a formidable force.

How do you measure the RoI of innovation, especially when outcomes are not immediately quantifiable?

Defence and Aerospace are long-term programs. Success lies in partnering with DRDO and other organizations at the development stage and then benefiting from successful field trials. The measure of success ultimately depends on one's contribution in terms of quality, capability, and consistency. Technology and innovation are continuous processes, and we

“The next wave of growth will come from Defence, Aerospace, EVs, data centers, and small nuclear power plants, among others — technologies that are sustainable and deliver precision, efficiency, and cost advantages.”

Partho Kar
Joint Managing Director
Jaykay Enterprises Ltd


believe they require investment and a progressive mindset to deliver long-term value.

What lessons have shaped your leadership philosophy the most through your tenure at Jaykay, and how do you balance strategic patience with the urgency that today's competitive market demands?

Technology requires patience,

perseverance, and continuous application. Leadership must remain steadfast in its commitment to people, processes, and cost. As the Mahabharata teaches, the focus must be like Arjuna's — unwavering and precise. I am guided by Krishna's advice: “Perform your duties without attachment to the results.” I firmly believe that good work ultimately succeeds, and this philosophy helps me balance strategic patience with the urgency of a competitive market.

Which industry sectors do you think define the next growth wave in India's manufacturing story and how do you foresee global trade dynamics influencing Indian manufacturers' competitiveness?

The next wave of growth will come from Defence, Aerospace, EVs, data centers, and small nuclear power plants, among others — technologies that are sustainable and deliver precision, efficiency, and cost advantages. 



Source: Jaykay Enterprises Ltd

High Precision Spindles Total Solutions



Belt-Drive Spindle - Milling



Direct-Drive Spindle



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Motorized Spindle - Milling (40000 rpm)



Motorized Spindle - Milling



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Motorized Spindle - Turning

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FOR A CLEAN CUT

Endress+Hauser successfully resolved a persistent swarf challenge with HORN's new Supermini featuring sintered chip-breaking geometry. Earlier tools produced long, tangled chips that disrupted automated production, required frequent stoppages, and risked tool damage—especially when machining tough materials like stainless steels and Hastelloy.



The new Supermini with sintered geometry solved the chip breaking problems.

Source: HORN/INCEA

Our machining problems were solved after the first component," says Hakan Oda, referring to the new Horn Supermini with sintered geometry. Oda and his colleagues are responsible for tooling in the machining department at Endress+Hauser. The metrology company was among the users selected to test the new Supermini in field trials. These tests marked the first milestones in HORN's progress. "We could hardly wait for the market launch, as the tools have brought us many advantages," adds Oda.

For the tests, HORN provided the Endress+Hauser team with six Superminis featuring sintered chip-breaking geometry. Customers are chosen for field trials based on specific preconditions. "We know our users and their machining problems. The choice quickly fell to Endress+Hauser," says Stefan Minder, Application Engineer, HORN. At Endress+Hauser, the team primarily machines materials such as 1.4404 (X2CrNiMo17-12-2), 1.4435 (X2CrNiMo18-14-3) and Hastelloy (2.4819, NiMo16Cr15W).

Chipping Problems

The materials to be machined have numerous advantages for use in metrology. They include, for example, corrosion and acid resistance. For economical machining, however, the materials require a great deal of expertise on the part of the user. This applies in particular to the series production of large quantities. When turning smaller diameters, long, tangled chips wrap around the tool like a bird's nest. This significantly limits process reliability and, in the worst case, leads to tool breakage.

NIKHIL NAYAK
Managing Director
NN Combined
Engineering Agencies
Pvt Ltd



At Endress+Hauser, a stop had to be programmed after every fifth part in the automated production of M-forks to manually free the tangled swarf from the tool. The swarf also impaired in-process measurement and the gripping actions of the robot in the machining cell.

A Supermini without chip breaking geometry was previously used. "The problem of long swarf can only be solved with chip breaking geometry. Regardless of the quality of the tool, this problem always exists," says Minder.

The Endress+Hauser team was already impressed after the first trial with the new Supermini with sintered geometry. "Our problems were literally solved at the push of a button. The swarf from internal turning was no longer tangled, but short, curled chips," says Oda.

The team kept the cutting parameters the same as with the previous tool. Minder and the Endress+Hauser team tested the tools on various machines and components for a total of four weeks. The tool showed its potential in all processes. "We would have liked to order more tools straight away, but we had to wait for the official market launch," Oda notes.

Long Development Time

"We have been working intensively on the development of the new Superminis for over four years," said Matthias Rommel, CEO, HORN, at the press conference held to launch the new tool in June 2024. Chip breaking geometry can help to avoid long tangled chips. It guides and shapes the chip and causes it to snap off. Previously, specially lasered or ground chip breaker geometries were used for this purpose. However, this increased insert cost. With the new type 105 Supermini, HORN has succeeded in de-

veloping a universal boring tool with sintered chip breaking geometry. The tool offers high process reliability due to effective chip control. The cutting geometry extends far into the corner radius of the insert. This ensures chip control even at low infeed settings. The geometry can be used universally for different material groups and is suitable for internal, face, copy and reverse turning.

In addition to the geometry, HORN has also optimized the carbide blanks of the inserts to have greater rigidity and an even more stable cutting edge. The coolant supply has also been revised. The new insert is compatible with numerous type 105 clamps. HORN offers the inserts in three lengths (15.0 mm (0.079 in.), 20.0 mm (0.157 in.) and 25.0 mm (0.394 in.)) and in carbide grade IG35 as standard. The corner radius is 0.2 mm (0.008 in.). Tool diameter is from 6 mm (0.236 in.). The wide range of applications of the inserts is also reflected in their cost-effectiveness. The cost of the new Superminis is similar to that of the standard insert without geometry.

Appropriate Tool Holders

Users can choose the appropriate solution for their machining from a wide range of differ-

ent types of tool holder. These include round shank holders, square shank holders, interface tool holders and adjustable holders to suit machines from different manufacturers. HORN offers four different solutions for clamping the inserts: Classic screw clamping via a ball pressure screw, clamping via a face clamping element, and clamping via a lifting element. For confined spaces, HORN also has in its program a slim holder system with clamping via a union nut.

Endress+Hauser uses a tool holder with a polygonal shaft and face clamping element for the fully automated production of M forks. These play an important role in measuring equipment. They are used for measuring the level of a liquid. The forks resemble a tuning fork. During operation, they vibrate at a certain frequency. When the fill level in a tank rises and the forks are immersed in the liquid, the frequency of the vibrations changes due to the density of the medium. The sensor thus registers when the fill level has been reached.

Leading Worldwide

Endress+Hauser is a leading worldwide supplier of measuring instruments, services and solutions for industrial process

The Endress+Hauser team was impressed after the first trial with the HORN's new Supermini with sintered geometry. The problems were solved at the push of a button. The swarf from internal turning was no longer tangled, but short, curled chips.



Source: HORN/ANCEA

The M fork is used in level indicators.

The HORN Supermini tool system can be adapted for numerous machining operations including boring, profile turning, internal grooving, threading, chamfering, face grooving, drilling, and slot broaching.



Bird's nests of swarf restricted automated production and led to regular machine stoppages.

engineering. The company offers process solutions for flow, level, pressure and temperature measurement, for analytical measurements, as well as for data recording and digital communication, thereby optimizing processes in terms of economy, safety and environmental impact. Endress+Hauser's customers operate in a wide range of industries such as Chemicals, Energy & Power Plants, Raw Materials, Metals & Mining, Food, Life Sciences, Oil & Gas, And Water/Wastewater. Endress+Hauser and HORN have been working together for de-

acades. "The new tool has shown us once again why we rely on tools from HORN in our production. In addition to the high level of process reliability, we were able to reduce non-productive

times and also increase the service life of the tools," says Oda.

HORN Supermini

The Supermini tool system can be adapted for numerous machining operations including boring, profile turning, internal grooving, threading, chamfering, face grooving, drilling, and slot broaching. The solid carbide inserts are used for boring internal diameters from 0.2 mm (0.008 in.) to around 10 mm (0.394 in.). HORN developed the carbide blanks of the tool in a teardrop shape. This enables precise and large contact surfaces in the tool holder, which results in greater rigidity of the overall system. Furthermore, the teardrop shape prevents the insert from twisting, which leads to a consistently precise positioning of the center height of the tool.

For long tool overhangs, the design reduces deflection and minimizes vibration during the turning process. Depending on the application and the diameter to be machined, HORN offers inserts in three different sizes (types 105, 109, and 110) and various blank types. All variants allow for internal coolant supply directly to the cutting zone. The HORN tool portfolio contains around 2,500 standard Supermini variants. In addition, HORN solves users' tasks with countless customized solutions.

HORN in India

Precision tooling solutions from Paul Horn GmbH are available in India through NN Combined Engineering Agencies Pvt Ltd (NCEA), which provides complete manufacturing solutions—including logistics and supply-chain support—for a wide range of industries. 



A successful collaboration: Stefan Minder and Hakan Oda.

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FLIPPING THE SCRIPT ON SATELLITE INTELLIGENCE

For decades, satellites have orbited the earth as passive ‘eyes in the sky’, capturing images and relaying vast amounts of raw data back to the ground. Much of this data, however, has remained in archives, rendering traditional satellite operations as costly and inefficient. In an era where decisions rely on data, SkyServe is transforming how satellites serve humanity.



Source: SkyServe

Founded by experts in artificial intelligence (AI), aerospace, and systems engineering, SkyServe, a Bengaluru-based startup, is introducing onboard AI processing, known as Edge AI suite, for Earth observation satellites — a radical departure from the conventional model of satellites.

As Vinay Simha, Co-Founder & Chief Executive Officer, SkyServe, explains, “Optical satellites generate a massive amount of data, yet not all captured data is useful. Downlinking it all is costly and inefficient. We asked ourselves: Why not make satellites intelligent agents instead of passive sense, store, and forward systems?”

Flipping the Satellite Data Pipeline

To thoroughly understand the

company’s innovation, the function of a conventional satellite must be broken down. “Satellites have long functioned as orbiting cameras, streaming down vast amounts of raw imagery, much of it never analyzed,” he outlines. The result: clogged networks, high transmission costs, and delays in turning images into actionable insights.

The company’s EdgeAI suite flips this model. By embedding AI into the satellite itself, raw data is processed in orbit, and only meaningful intelligence is downlinked. Offering a further explanation, Simha shares, “That means critical information reaches the right people faster, each orbit can cover more areas of interest, and bandwidth costs drop dramatically.” In critical moments where every minute counts—from alerting

authorities to wildfires to tracking dark ships or safeguarding infrastructure—this time advantage can be the difference between prevention and disaster.

Turning Hurdles into Breakthroughs

The journey from concept to deployment was fraught with hurdles. Taking an idea from the whiteboard to the harsh realities of space began with the first principles: “We mapped the traditional Earth observation workflow and identified current friction points.”

The company’s next step was to double down on aspects where it could build smart solutions within the extremely resource-constrained environment of space—without impacting satellite operations.

NITYASREE
KUMARASWAMY
Correspondent
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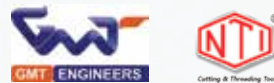
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The EdgeAI suite is platform-agnostic, already proven across more than 60 satellites. Its compatibility makes it one of the few technologies ready for seamless adoption by global satellite operators.



“Success for SkyServe is about becoming the intelligence layer for satellites worldwide. As new constellations launch and data volumes surge, our mission is to ensure every satellite can analyze and deliver insights directly from orbit.”

Vinay Simha
Co-Founder & CEO
SkyServe

“One of the biggest hurdles was making our Edge AI suite highly resourceful in a compute-constrained environment,” he points out. Compressing advanced AI models into systems capable of withstanding space conditions—radiation, thermal extremes, and limited power—was the breakthrough that set the foundation for the company’s credibility.

Arms of Support

For a space-tech startup, partnerships are as important as the technology itself. “Partnering with satellite operators was a turning point. It allowed us to deploy our



Source: SkyServe

Upscaled Processor

software directly onboard their missions,” he highlights.

Early on, the company focused on building platform-agnostic compatibility and thus, proved its value across diverse applications. Each successful deployment of the system, showcasing its ability to reduce downlink loads and filter irrelevant data in orbit, boosted confidence, leading to wider adoption.

As of recent times, the company’s EdgeAI software is compatible with over 60 satellite platforms, signaling growing trust in its technology within the global satellite community.

Uniting with the Nation’s Strongest

The company’s growth story has been a consistent upward trajectory as a result of the policy environment in India becoming supportive of private innovation. According to the CEO, “India’s space ecosystem has changed dramatically in the past few years.”

“The Indian National Space Promotion and Authorization Centre (IN-SPACe) has opened structured pathways for startups, and the Indian Space Research Organisation (ISRO) has been a huge supporter in collaborating with private players,” he observed. This openness has enabled the company to collaborate and offer solutions quickly.

Furthermore, he emphasizes, “India wants to be a hub for space innovation.” For a startup in a highly competitive sector, such institutional support has proved to be invaluable.

Building a Layer of Intelligence for Space

As new constellations launch and data volumes surge, the company’s mission is to ensure every satellite can analyze and deliver insights directly from orbit.


Simha further articulated this vision: “Over the next five years, we see SkyServe evolving into



“SkyServe was born from a critical realization: Optical satellites generate a massive amount of data, yet not all captured data is useful. Downlinking all the data is a costly affair and an inefficient process.”

Vishesh Vatsal
Co-Founder & CTO
SkyServe

an application in the App Store for Earth Observation, where anyone can query a location and instantly access real-time insights, whether for wildfire response, maritime monitoring, or disaster management.”

Through the company’s virtual layer, users will not only receive ready-to-use intelligence but also deploy their own GeoAI models, artificial intelligence models designed to work with geospatial data, on demand. “That’s the future we’re building: SkyServe as the critical infrastructure powering space-driven decision-making,” he concludes. 



Source: SkyServe

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WHERE METAL MEETS MIND

The 20th edition of SCHWEISSEN & SCHNEIDEN took place from September 15-19, 2025, at Messe Essen, Germany. Organized by Messe Essen GmbH in cooperation with the German Welding Society (DVS), the trade fair is one of the world's leading quadrennial fairs for welding, joining, cutting, and surfacing technologies.



Source: Magic Wand Media

SCHWEISSEN & SCHNEIDEN 2025 welcomed over 37,000 visitors from 100 countries, representing major industries such as Automotive, Shipbuilding, Energy, Construction, and Defence. The event recorded 94 percent visitor satisfaction, with 93 percent willing to recommend it to others. Netherlands, France, Italy, Belgium, Poland, Brazil, Spain, Japan, the United Kingdom, Northern Ireland, and Austria were identified as the top international visitor nations. Notably, four out of five visitors

held decision-making authority, highlighting the profession SCHWEISSEN & SCHNEIDEN ESSEN 2025 al quality of the audience.

Exhibitors and Business Impact

More than 800 exhibitors from 44 countries presented cutting-edge technologies spanning the manufacturing spectrum. Regarding the quality of the audience, exhibitors described visitors as professionals teeming with thoughtful inquiries. With strong investment intentions, exhibitors reported that around one-third of visitors

placed orders during the event, averaging EUR 8,40,000. Oliver P Kuhrt, Chief Executive Officer, Messe Essen GmbH, expressed, "SCHWEISSEN & SCHNEIDEN 2025 has impressively demonstrated that Essen is the central meeting point for global joining, cutting, and surfacing technologies." He added, "Nowhere else do so many decision-makers, experts, and young talent come together to experience innovations live and to deepen business relationships across continents. This is precisely what makes this trade fair unique."

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



Focus on Innovation, Sustainability, and Digitalization

Dr Roland Boecking, General Manager, German Welding Society - DVS, made a note of the event's role in shaping the industry: "SCHWEISSEN & SCHNEIDEN 2025 came at exactly the right time to give new impetus to the industry. Experts from across the globe used the event as a platform for innovation." With the event's youth competitions, the organizers succeeded in inspiring young professionals from several nations to engage with joining technologies. The trade fair also set clear thematic priorities. "Whether digitalization, sustainability or the shortage of skilled workers, as the most important international industry gathering, the fair delivered solutions to current challenges and showcased technologies for the future," Boecking added.

Smart Tech for a Skilled Tomorrow

Intending to cultivate skilled professionals, the event showcased collaborative and fully automated robots, AI-supported processes, connected and sustainable production, and initiatives. Solutions for reducing carbon dioxide emissions and improving oc-

cupational safety, such as smart extraction systems, were a field widely explored. Digitalization and automation were cross-cutting themes influencing nearly all product areas. The Future Hub provided a haven for international expertise, panel discussions, and presentations on automation and artificial intelligence to be intensively discussed. The DVS Congress, held during the fair, connected application with practice, covering topics such as shipbuilding, additive manufacturing, manual laser beam welding, and quality assurance.

IF Digital Award Recognizes Industry Innovations

The event introduced the IF Digital Award, organized with the IndustryFusion Foundation (IFF) and DVS. Visitors voted through the SCHWEISSEN & SCHNEIDEN app. For the world's most compact aircooled laser cleaning system, novoflow GmbH received the bronze award. Silver went to Fronius International GmbH for a simulator for complex welding processes, and SWANTEC Software and Engineering ApS, a Danish company, earned gold for an industrial software for welding simulation and optimization.

Young Talent in Focus


The DVS national competition 'Jugend schweißt' recognized top young welders, both from Thuringia, a historic region and state of east-central Germany. Alexander Graf won first place in manual metal arc (MMA) welding, and Lukas Hammerschmidt secured gold in gas welding.

Tim Roppes took the title from Saarland, a state in southwestern Germany, for gas metal arc welding (GMAW). Tim von Trzebiatowsky from the Hamburg/Schleswig-Holstein team achieved the highest score in gas tungsten arc (TIG) welding, while Westphalia, a region of North Rhine-Westphalia, claimed the team trophy.

The International Welding Competition featured participants from twelve countries, including an all-female team making its debut from India. Gold medals were awarded to Diego Huegenell Lopes from Switzerland for MMA welding, Vedad Habibovic from Bosnia and Herzegovina for GMAW welding, Philip Lokow from Germany for gas welding, and Simon Schudel from Switzerland for TIG welding. Switzerland also received a gold medal in the team competition.

The DVS Youngsters' Day provided apprentices and students with the opportunity to explore careers in joining technologies and connect with potential employers.

The Torch Passes to 2029

After a successful end to this year's edition, a significant 65 percent of exhibitors have already booked for the next edition. The next edition of SCHWEISSEN & SCHNEIDEN is scheduled for September 17- 21, 2029, at Messe Essen, with 94 percent of visitors intending to attend the world-leading trade fair. 

The latest edition of SCHWEISSEN & SCHNEIDEN attracted over 37,000 visitors from 100 countries and 800 exhibitors representing 44 nations. With 94% visitor satisfaction and strong business outcomes, 65% of exhibitors have already confirmed participation for the 2029 edition.



Source: Magic Wand Media

INDIA MAKES ITS MARK AT EMO HANNOVER 2025

As the global platform of EMO Hannover convened distinguished manufacturing players from around the world to discuss the future of manufacturing, India's prominent presence stood out unmistakably. Through industry leadership, active participation, and cutting-edge innovations that reflect a maturing manufacturing ecosystem, India made a strong and memorable impression.



Source: Magic Wand Media

The 50th edition of EMO Hannover served as a lens for global players to witness India's expanding capabilities and potential. With automation, AI, and advanced production taking center stage, the show became a useful mirror to understand where India stands and what the world expects from it. Over five days, the world's leading trade fair for production technology, once again justified its stature. With more than 80,000 trade visitors and over

1,600 exhibitors from 45 countries, the event showcased the direction in which global manufacturing is headed. Automation and artificial intelligence were the focal point of the show that reflected the industry's search for solutions to combat rising costs and skilled-labor shortages while boosting productivity. Robotics also took center stage, with nearly 140 robot manufacturers demonstrating the growing integration of robots into machine tool environments. This

global transition toward smarter, more efficient manufacturing aptly aligned with India's push for greater precision, higher productivity, and self-reliance, especially in sectors like Aerospace, Defence, Electric Vehicles, and Advanced Machining. "There is a profusion of smart and impressive technical solutions. This EMO has convincingly demonstrated that," said Carl Martin Welcker, General Commissioner, EMO 2025. "For them to be effective, the booster

POONAM PEDNEKAR
Chief Copy Editor
Magic Wand Media Inc
poonam.pednekar@
magicwandmedia.in



engine of investment now really needs to fire. Many projects are in the pipeline after three years of investment restraint, but the uncertainty in the political sphere continues to put the brakes on investment,” he added.

India Shines at EMO Hannover 2025

Organized by Indian Machine Tool Manufacturers' Association (IMTMA), VDMA India (Indian branch of the German Engineering Federation), and VDW (German Machine Tool Builders' Association), the 'India Opportunities' session, held at EMO Hannover 2025, highlighted the potential of the Indian market in terms of manufacturing and the avenues of stronger Indo-German cooperation.

The packed session, in the presence of Indian industry leaders, including Mohini Kelkar, President, IMTMA; Vikram Salunkhe, Vice-President, IMTMA; Jibak Dasgupta, Director General & CEO, IMTMA and Bangalore International Exhibition Centre; and Rajesh Nath, Managing Director, VDMA India, made it evident that India has progressed from being a participant at EMO to an important part of the conversation on the future of manufacturing.

Kelkar deliberated on the pertinent topic of 'Machine Tool Sector Driving India's Manufac-



Source: Magic Wand Media

turing Growth'. “Ranking 4th in global machine tool consumption and 9th in production, India's US\$ 1.7 trillion infrastructure pipeline, along with its green-energy and EV ambitions, is creating unprecedented opportunities for advanced machine tools and manufacturing technologies,” she pointed out.

Devesh Tripathi, Sr AVP, Invest India, in his insightful presentation, spoke at length about India offering stable, long-term growth and opportunities.

The session also featured an insightful Panel Discussion, moderated by Nath, with eminent industry leaders deliberating on policies, skills, and strategies shaping India's industrial future. He initiated the session with a question: “Where would India

stand among other emerging economies?” To this, Ravi Raghavan, Past President, IMTMA and Managing Director, Bharat Fritz Werner Ltd (BFW), responded, “India is a tough market. You need to give some time in the initial stage, and those who rush in too aggressively often miss the real growth curve.”

Government policy was another focal point. Ranganathan Balaji, President & COO, SONA BLW Precision Forgings Ltd, pointed to the Product-Linked Incentive PLI scheme as a catalyst.

Speaking of skill sets, Kelkar highlighted the crucial role of IMTMA in making engineers employable and industry-worthy through its finishing school. Roland Merz, Senior Vice President (Sales), CHIRON Group SE, stressed the importance of “location for business, suitability of products, and networks” when entering India.

Similarly, on India expansion, Paul Koessl, Head of Business Development, United Machining Solutions, emphasized to “make a Capex decision not based on loans and price, but on the total cost of ownership (TCO) over the lifetime,” in addition to customer queries and localizing equipment in India. Nath emphasized that India's growth story is powered not just by strong numbers but by

With automation, AI, and advanced production taking center stage, the show became a useful mirror to understand where India stands and what the world expects from it.



Source: Magic Wand Media

India's own growth outlook is in perfect alignment with what EMO Hannover 2025 signalled, which is moving toward intelligent, connected, and collaborative manufacturing.



Source: Magic Wand Media

fundamentals—a stable, forward-looking government, clear policy frameworks, and a skilled workforce ready to support global manufacturing.

The Indo-German collaboration was stressed, with leaders on both sides highlighting it as a true gamechanger. “There is a market for it; India is a well-developed market, and we look forward to more investments coming from the Germans and European countries,” he stated. “As VDMA, we look forward to welcoming more members to India and supporting our members—let’s be part of India’s growth story.”

Giving an overview of the strong participation at the session, Dasgupta noted that it was highly successful and drew an overwhelming response. “It was a great session and a full house,” he remarked, highlighting the diverse mix of stakeholders from India, Germany, and across Europe who gathered to explore India’s growing role in global manufacturing.

An interesting light-hearted ‘Rapid-fire Round’ on Indo-German collaboration was surely the cynosure of the show.

IMTMA Leaders on EMO 2025

Sharing how EMO Hannover once again demonstrated why it remains the most comprehensive

platform for the global manufacturing community, Kelkar noted, “EMO stands out because it brings the entire manufacturing ecosystem, including machine tools, additive manufacturing, digital production, software, automation, robotics and services, under one roof.” She stressed that the show does not isolate technologies but presents them as interconnected components of a progressive production chain.

She noted that the 50th edition upheld its legacy of showcasing future-ready innovation: “AI, automation, and digitalization were central themes throughout the show, and the Startup Area was particularly exciting—it clearly reflected where new ideas are emerging.”

Salunke echoed this sentiment, highlighting that the emphasis this year was firmly on intelligent, efficiency-led manufac-

turing. “Even though the scale felt slightly smaller than before, the technological intensity was far higher,” he remarked. According to him, the quality of exhibits—especially AI-enabled systems, automation-led productivity solutions, and efficiency-focused technologies—compensated for the reduced footprint of mid-sized exhibitors.

Together, they underlined a shared belief that India’s own growth outlook is in perfect alignment with what EMO Hannover 2025 signalled, which is moving toward intelligent, connected, and collaborative manufacturing.

India Extends a Global Invitation to IMTEX 2027

During the ‘India Opportunities’ session at EMO Hannover 2025, IMTMA extended a formal invitation to the global industry for its flagship event IMTEX 2027, scheduled from January 21-27 at the Bangalore International Exhibition Centre (BIEC), Bangalore.

The IMTMA President highlighted India’s rapid rise as a manufacturing powerhouse. She emphasised the surge in precision manufacturing, the growing adoption of AI- and IoT-enabled machines, and India’s expanding capabilities in Aerospace, Defence, Biomedical, Semiconductor, and Electronics Manufacturing. “With the Indian Economy scaling new heights, new opportunities are being created in India



Source: Magic Wand Media

for the world," she remarked. Kelkar warmly invited the international community to participate in IMTEX 2027, calling it South and Southeast Asia's largest manufacturing technology showcase. "You are most welcome to visit, exhibit, and grow this exhibition further," she said. Reinforcing this message, Dasgupta, underscored India's growing importance for global manufacturers and investors, adding that interest in IMTEX 2027 was already strong.

"We recently announced the IMTEX 2027 dates to the participants here," he shared. "There were a lot of queries—underscoring the demand for IMTEX 2027." IMTEX, hailed as South and Southeast Asia's largest manufacturing technology exhibition, is set to bring together the latest in metalworking, metal cutting, machining, and digital solutions shaping the future.

Market Outlook at EMO Hannover 2025

EMO Hannover 2025 also served as a collaborative platform where leading machine tool associations—CECIMO (Europe), IMTMA (India), AMT (United States), and JMTBA (Japan)—came together to highlight the sector's critical role in shaping the future of manufacturing. The session highlighted how, despite geopolitical uncertainties and economic challenges, the global machine tool industry continues to demonstrate resilience, innovation, and adaptability.



Source: Magic Wand Media

"Despite regional differences, we share common goals: creating a better business environment, expanding global markets, tackling skills shortages, and driving innovation through green and digital technologies," highlighted François Duval, President, CECIMO.


Marcus Burton, Chairman, Economic Committee, CECIMO, presented key insights on the machine tool market that could not have been produced without strong cooperation among the national associations.

With regard to the Japanese Machine Tools sector, Kazuo Yuhara, President, Japan Machine Tool Builders' Association (JMTBA), pointed out shifting demand patterns, "Domestic demand decreased by 7.4 percent compared to the previous years and overseas demand increased by 3.4 percent."

Representing the United States, Douglas Woods, President, The Association for Manufacturing Technology (AMT), highlighted

a rebound driven by Aerospace, Defence, reshoring-led manufacturing, and strong foreign investment, leading to an estimated 12 percent rise in domestic consumption in 2024 over 2023.

Dasgupta narrated India's accelerating growth story by sharing that India's real GDP grew 6.5 percent in FY 2024-25, reaching US\$ 4.19 trillion in current prices, and is projected to sustain this pace through 2029. He described the remarkable growth of the Indian machine tool industry with a total consumption of US\$ 3.7 billion in FY 2024-25. "The Automotive and Auto Component sector is currently the leading consumer, accounting for nearly 50 percent of the demand."

This global outlook segment added depth to India's message at EMO—positioning the country not only as an emerging manufacturing hub but also as an active participant in shaping the future of the Machine Tool industry. 

EMO Hannover 2025 also served as a collaborative platform where leading machine tool associations—CECIMO, IMTMA, AMT, and JMTBA—came together to highlight the sector's critical role in shaping the future of manufacturing.



Source: Magic Wand Media



DECODING DIGITIZATION

ACE Designers, a part of India's largest machine tool conglomerate, AceMicromatic Group, made a notable impression at the recently concluded EMO Hannover 2025. With a sense of pride and clarity about the future, the company brought a distinct Indian presence to the event.



Source: Magic Wand Media

With a strong focus on digitization, Ace Designers Ltd presented its next-generation lineup, including its advanced multi-axis machines, at EMO Hannover 2025.

One of the core themes of EMO Hannover 2025 was digitization, which continues to influence every stage of manufacturing at Ace Designers Ltd and is viewed as essential for future growth by company Managing Director, TK Ramesh.

He notes that manufacturers often think of metal cutting and part output while discussing modern productivity. This kind of digitization has its focus on the speed of the machine, the number of parts it produces, and how productive both the machine and operator are.

Predictive Maintenance Gains Momentum

A second form of digitization, he says, is based on machine reliability. He explains that machines run for different hours and at different temperatures, and digital tools can help predict issues before failure occurs. "Digitization can play a crucial role in predicting before the machine fails. It can indicate when oil or lubrication needs to be changed. Such planning prevents breakdowns that could take two or three days to fix," he adds.

CNC Programming Enabling Complex Shapes

A third stage of digitization appears in CNC technology. The Managing Director notes that earlier the production depended heavily on a person's skill, but programming now enables complex shapes to be produced efficiently. He describes this shift as "computer programming or digitized programming becoming central to machining".

Factory-Level Data Supporting Smarter Decisions

According to Ramesh, digitization becomes even more powerful when applied to an entire factory. It helps track the number of parts produced in a cell, people working during a specific period, and how efficiently materials are being used. He adds that with layered data, digitization can help predict future requirements.

Manufacturers can use the available information to estimate material needs and determine the number of machines a company will need or whether the cycle time can be reduced without adding new machines.

A Changing Landscape at EMO 2025

Reflecting on EMO Hannover 2025, he observes a noticeable shift from earlier editions. Much of the momentum, he notes, came from outside Europe, with several new projects emerging from outside the region—even as strong interest continued from traditional markets such as Germany and Italy. The experience gained from past editions, he adds, helped the company arrive significantly better prepared this year.

At the show, the company presented its next-generation lineup, including advanced multi-axis machines. Ramesh points out that the organization's readiness to introduce automation solutions to the European market was significantly stronger in this edition of the show.

India's Stronger Global Footprint

He highlights the sharp rise in participation from Indian machine tool companies at EMO Hannover 2025. The event offered opportunities to reconnect with long-standing customers while engaging with prospective Indian clients exploring global technologies. He points to the surge in non-European attendees, adding that India remains "the only place where manufacturing is truly growing"—a momentum that strengthens the country's position in the global industrial landscape. Speaking of partnerships, he shares that companies in India and Europe recognize shared benefits in technology, cost, and market opportunities. These efforts, he adds, will likely lead to tangible results. 

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



GLOBAL EYES ON NEXT-GEN TECHNOLOGY

AceMicromatic International commanded the crowd with its manufacturing solutions at EMO Hannover 2025. Visitors were drawn to the sprawling showcase and to the story behind it—the people, innovation, and ingenuity driving the company forward.



Source: Magic Wand Media

Ace-Micromatic International showcased advanced turn-mill centers, 3D metal printing, and Industry 4.0-ready solutions at EMO Hannover 2025. The company's booth engaged visitors from across the globe and highlighted innovations that enhance efficiency and meet diverse industrial needs.

CR Raguramachandran, Chief Executive Officer, AceMicromatic International, reflected on the experience, noting that while participation in any exhibition brings product and brand visibility, EMO Hannover 2025 stood apart for several reasons. “Firstly, the event offered unparalleled opportunities for product and brand visibility, ensuring that exhibitors could showcase their product innovations effectively to a global audience,” he explained. The second factor, he noted, was the event’s ability to facilitate deeper and more targeted interactions. It allowed the team to strengthen relationships with existing clients while forging connections with potential customers and distributors. Lastly, the exhibition created a platform for the industry to collectively explore


and define the next wave of transformations in manufacturing.

Smart Solutions for Every Industry

AceMicromatic International’s booth featured a wide range of products engineered to meet the evolving needs of various market segments. Breaking down the innovations, he said, “Our products were designed to seamlessly integrate with Industry 4.0 solutions, as well as robotic and gantry systems.” Among the key highlights were the J10M turn-mill center, a machine introduced on a global scale, and the LT2MSY, a versatile turn-mill center with Y-axis and sub-spindle capabilities. These machines facilitate turning of complex parts in a single setup, thereby significantly improving operational efficiency.

Additionally, the company debuted its 3D metal printing equipment, signifying its entry into additive manufacturing into European market. “Visitors expressed considerable interest in all the showcased products, with the J10M and the 540V graphite machining solution being the primary highlights of the event,” he shared.

Global Engagement and Industry Impact

The exhibition drew a diverse international audience, including visitors from the United States, China, South America, and a notable increase in attendees from Eastern Europe. Professionals from Automotive Manufacturing, Aerospace Engineering, and other high-tech sectors explored the company’s offerings, highlighting the international appeal and relevance of the event. 

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



A FORMULA FOR GLOBAL IMPACT

Blaser Swisslube Solutions Pvt Ltd arrived at the EMO Hannover 2025 with the same spirit that has carried the company through decades of innovation—curiosity, enthusiasm, and a genuine passion for problem-solving.

EMO Hannover 2025 stood out as a festival of international innovation and cross-industry collaboration, a sentiment echoed by Punit Gupta, Managing Director - India, Blaser Swisslube Solutions Pvt Ltd.

“EMO has always been a hub for technology and innovation worldwide. This year, it was fulfilling to see how well the exhibition was organized. Navigation was easy, information was readily available, and the energy across the halls was inspiring,” he said.

Gupta also highlighted the engaging side events, including the EMO Innovation Stage and informal booth gatherings, which added a lighter, social dimension to business interactions. “The five-day duration kept the enthusiasm alive throughout—a welcome change in EMO 2025,” he said.

Curiosity, Commerce, and Crossroads

Speaking on the diverse visitor portfolio, he added that the exhibition attracted a wide international audience, particularly from Europe and Asia. “I was happy to talk to people from the Aerospace, Automotive, Oil & Gas, and General Engineering segments,” he shared.

“Visitors represented diverse profiles—from corporate leaders to entrepreneurs. Some were active buyers, while many were seeking to learn and understand the latest technologies and trends,” he explained.

Gupta shared that Indian visitors made a strong showing at the event, reflecting the growing global interest in advance-



Source: Magic Wand Media

ments in manufacturing. He observed, “The charm of the event and Europe was clearly visible with an increased number of Indian visitors. I was happy to meet several Indian visitors, both at our booth and across the exhibition.”

A Productivity Formula That Adds Up

At its booth, the company presented the theme ‘1+1=3’, a nod to the synergy between high-performance coolants and smart automation solutions. “On one side, we were talking about high-performance coolants. On the other side was a smart automation solution for handling and maintaining coolants in machin-




Source: Magic Wand Media

ing,” he explained. He elaborated, “Our customers can gain an extra edge of productivity with a combination of these two elements.”

“We showcased how combining these elements gives customers a productivity edge. Visitors were intrigued by the interactive smoothie-making bike, which offered a playful perspective on health and the chemistry behind coolants,” he further added.

A Launchpad for New Alliances

Apart from a dynamic showcase, the company gained opportunities for future collaborations. “It was an intense time at EMO 2025 for me and our colleagues at Blaser Swisslube. Several conversations led to new possibilities in business as well as partnerships,” he said.

“I am convinced that it will be opening new doors for us and we will be able to help customers and partners to boost their productivity with our Liquid Tool approach,” he concluded. 

Blaser Swisslube showcased its innovative coolants and smart automation solutions at the golden edition of EMO Hannover 2025. Engaging a global audience, including a growing number of Indian visitors, the company highlighted productivity-enhancing solutions.

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



MACHINES THAT DRAW THE WORLD IN

Chennai Metco Pvt Ltd brought its expertise to the global stage at the golden edition of EMO Hannover 2025. For the company, this milestone edition offered visibility, conversations, curiosity, and an opportunity to see how its innovations resonated with a worldwide audience.



Source: Magic Wand Media

Chennai Metco Pvt Ltd showcased two cutting machines at the golden edition of EMO Hannover 2025 that drew significant interest from global visitors, including increased enquiries from smaller European countries.

Reflecting on the overall experience, Renganathan Chellamraja, Chief Executive Officer & Managing Director, Chennai Metco Pvt Ltd, described the event as “a grand manufacturing show” and a platform of scale and relevance.

Strong Interest from European Markets

The company displayed two machines that successfully drew continuous interest from visitors. Renganathan shared, “Both the machines received a highly positive response from the visitors.” He added that the automatic carbide rod cutting machine became a point of discussion among professionals exploring efficient cutting and tooling processes.

Speaking on the visitor turnout, the CEO noted that the visitors coming from across the world was a sign of the event’s reach

and relevance. The company was especially pleased with the interest from smaller European countries. “There was an increased number of enquiries from smaller European countries like Finland, Lithuania, and Slovakia,” he shared.

Exploring New Collaborative Opportunities

EMO Hannover 2025 also opened doors to possible strategic partnerships. He revealed, “One large international company has shown interest in working with us in partnership.” Looking ahead, he expressed optimism, adding, “We intend to follow it through and sincerely hope a fruitful new relationship will emerge.”



Source: Magic Wand Media

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



THE TOWN OF TECHNOLOGY TRIUMPHS AT HANNOVER

Jyoti CNC Automation Ltd arrived at EMO Hannover 2025 with a sense of purpose and an unmistakable passion for innovation. The company's presence stood out for its machines and the consuming energy around its pavilion.



Source: Magic Wand Media

Jyoti CNC Automation Ltd showcased advanced machining solutions along with innovation, automation, and sustainability, recording strong engagement, international interest, and emerging partnerships.

The palpable energy and intent were factors that set EMO Hannover 2025 apart. Describing this shift, PG Jadeja, Chairman & Managing Director, Jyoti CNC Automation Ltd, said, "EMO 2025 showed a clear change from being big to being more meaningful," noting that the show's value wasn't driven by sheer numbers.

"This year's event highlighted new ideas, automation, sustainability, and digital manufacturing," he added. The conversations were far deeper and more technical and "brought together important decision-makers and those looking for technology from major industries."

EMO 2025, he remarked, created an atmosphere where interactions truly mattered. "The overall vibe encouraged networking with a purpose and finding solutions, making EMO 2025 more focused and results-oriented than ever before."

Showcasing a 'Town of Technology'

The company's booth buzzed with energy under the theme 'Town of Technology', showcasing exciting new ideas and engineering skills. "Our MTX 300 multi-tasking machine and KX 100 5-Axis machining center caught the eye of Aerospace experts because of their accuracy and performance," shared the Chairman. The Tachyon series also made a strong impression in the EMS field for its flexibility, while the GU Five Series "became a favorite for those looking for effective 5-axis machining options."

Rise in Quality Engagement from Indian Visitors

Indian visitors brought a renewed seriousness and technical understanding to the booth. "Indian visitors showed a greater understanding of advanced automation and CNC solutions," he shared. He also noted stronger interest from certain sectors. "We received more focused questions from in-

dustries such as Aerospace, Precision Engineering, and Tool Manufacturing," he said. The discussions, he said, made it clear that 'India is prioritizing technology upgrades, higher productivity, and greater global competitiveness.'

Strong International Footfall

The booth garnered considerable attention from the Aerospace, Electronics Manufacturing Services (EMS), and Engineering industries. Europe accounted for a substantial portion of this interest. He noted, "A large number of visitors came from Germany, Italy, and France, making up a major part of our European audience." The company also received strong interest from countries in the Middle East and Southeast Asia. "Overall, the diverse group of visitors reflects that we are increasingly getting recognized for our skills and reliability in precision machining."

New Partnerships on the Horizon

EMO 2025 presented the company an opportunity to make new connections around the world. "We had many meaningful discussions with potential partners and dealers from Europe and Asia on expanding our market reach and service network," he revealed. "These conversations are now progressing towards formal dealership and distribution agreements," he said. "The positive feedback we received reinforces our strategy to strengthen our global footprint by building strong local partnerships." 

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



QUALITY THAT UNLOCKS NEW HORIZONS

EMO Hannover 2025 wasn't just another exhibition—it was a defining moment for S&T Machinery Pvt Ltd (STM). With new markets opening, new partnerships forming, and newfound confidence, STM left the Hannover Exhibition Grounds in Germany with momentum and a clear path toward global growth.



Source: S&T Machinery Pvt Ltd

At EMO Hannover 2025, S&T Machinery Pvt Ltd received dealership and partnership inquiries from nearly 18 countries and formalized distributorship agreements with seven countries during the event itself.

For STM, the event was a week filled with conversations, curiosity, and moments that showed how far Indian engineering has come. “Participating in such a prestigious exhibition not only enhanced our global visibility but also strengthened STM CNC’s brand image as a reliable and high-quality manufacturer on the international stage,” shared D Shanmugasundaram, Managing Director, S&T Machinery Pvt Ltd (STM).

When asked what made this edition of EMO different, “The exceptional quality and diversity of the visitors,” he said. “Visitors from Europe, the Middle East, and Asia brought a rich mix of perspectives, questions, and opportunities. This led to meaningful global conversations at the company’s booth and opened up new business possibilities.”

Making Precision the Main Attraction

If there was one area of the booth that never looked empty, it was the

display featuring the company’s Vertical Machining Centres (VMCs) and Surface Grinders. Shanmugasundaram shared that many attendees openly appreciated the engineering behind the machines.

“People liked the precision, the rigidity, the performance,” he said, adding that the machines combine advanced Taiwanese engineering with solid Indian manufacturing. Their design and build quality struck the right chord with both industrial users and distributors.

“The response reaffirmed that our strategy of offering high-quality, high-value machines at competitive prices is well-aligned with current global market expectations,” he said.

Indian Visitors Show Strong Confidence

While the company met visitors from across the world, the rise in Indian engagement was particularly noteworthy. “Many were top-level decision-makers from leading industrial and corporate organizations,” he said, noting that the interactions were focused and substantial.

Compared to previous editions, the team observed a marked rise in serious inquiries from Indian customers. Several discussions have already progressed toward confirmed orders — a shift he believes reflects growing trust in the company’s capabilities. “It shows the confidence Indian customers have in our quality and global competitiveness,” he added.

International Interest Across Key Sectors

The company also recorded strong interest from international distributors and resellers keen to represent the brand in their markets. Many wanted to have an insight into the company’s technology, service support, and production standards in detail.

“We saw maximum interest from the Automotive Component, Aerospace, Mold & Die, and Precision Engineering industries,” he shared. Visitors from Europe, the Middle East, and Southeast Asia formed a significant share of the company’s international audience, giving the brand valuable exposure to both mature and emerging markets.

Partnerships That Open New Doors

The Managing Director called the show “an excellent platform for forging new business relationships,” noting that these collaborations mark an important step in expanding STM CNC’s global reach. The new partnerships ensure that the company’s machines and services will be available to new customers worldwide through trusted local channels. 

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



TURNING THE TABLES ON PRECISION

UCAM Pvt Ltd, a Bengaluru-based company known for its high-performance CNC rotary tables, index tables, and pallet changing solutions, made a strong impression at EMO Hannover 2025.

The 2025 edition of EMO stood out for its scale and technological direction. “This edition demonstrated a stronger integration of digitalization, automation, and sustainability,” remarked Varun Dev, Chief Executive Officer, UCAM Pvt Ltd. This shift, he noted, aligned well with the company’s focus on showcasing how precision engineering is evolving with smart manufacturing. According to him, the show reflected the industry’s push toward improved efficiency, reliability, and smarter process control—areas where UCAM continues to lead through constant innovation and deep technical expertise.

UCAM showcased its high-performance rotary tables at EMO Hannover 2025. The event highlighted the company’s focus on smart manufacturing and innovation.

NITYASREE KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



Compact, Capable, and Clearly in Demand

UCAM Pvt Ltd showcased a wide range of solutions, including its CNC Rotary Tables and CNC Tilting Rotary Tables, piquing visitors’ interest. These products stood out for their high torque, zero backlash, and repeatability. Dev shared that the tilting rotary tables received particular appreciation for their compact design and flexibility, which enable efficient multi-axis machining. “What resonated most was how these solutions translate directly into real productivity and accuracy improvements on the shop floor—precisely the performance impact UCAM aims to deliver to machine tool builders and manufacturers worldwide,” he emphasized.

Rising Engagement from Indian Manufacturers

One of the major highlights for



Source: Magic Wand Media

the company at the event was the notable rise in Indian visitors. Dev observed a significant increase not only in turnout but also in technical depth. “The discussions were more focused, technically sound, and project-driven,” he remarked. According to him, this reflects India’s growing maturity in advanced manufacturing. “As an Indian company operating globally, UCAM takes pride in representing this new wave of capability—where precision and innovation are driving real transformation across the country’s industrial landscape,” he added.


Strong International Interest Across Key Sectors

The company’s booth also attracted significant attention from international visitors, particularly from the Automotive, General Engineering, and Precision Component industries. These sectors require

high accuracy and dependable machining solutions.

Germany, China, and Turkey emerged as the strongest contributors to the company’s visitor base. “What impressed us most was the quality of technical conversations, with many visitors recognizing UCAM as a company that defines new benchmarks in precision and performance rather than merely following existing standards,” he noted.

Strategic Partnerships on the Horizon

The CEO confirmed that several strategic discussions were initiated at the show, aligning with the company’s long-term roadmap to strengthen its presence worldwide. “We focused on strengthening our presence in key regions and expanding collaborations with technology and distribution partners,” he shared. 



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TAIWAN SHOWCASES AI-DRIVEN MACHINE TOOL SOLUTIONS

At EMO Hannover 2025, Taiwan stood out for its dynamic showcase of next-generation machine tool technologies powered by artificial intelligence. From data-driven precision to energy-efficient production, Taiwan's display confirmed it as a hub for intelligent, value-oriented manufacturing solutions.



Source: TAIIPA

With a highly impressive range of innovations from its 121 exhibitors, Taiwan created a strong impact at the recently concluded EMO Hannover show, held at the Hannover Exhibition Grounds, Germany, from September 22-26, 2025. Under the theme 'AI Shaping the Future', Taiwan showcased how artificial intelligence is transforming manufacturing with greater precision, efficiency, and sustainability.

At the Taiwan AI Empowered Machine Tool Industry Executive Dialogue, the country's comprehensive ecosystem—spanning electronics, ICT, semiconductors, and machinery—was highlighted by its industry leaders for its role

in accelerating AI adoption in machine tools.

Key highlights included:


- **Cosen Precision:** AI-powered sawing system enhancing efficiency and stability for aerospace applications.
- **She Hong:** AI-driven thermal compensation improving mold machining accuracy by up to 60%.
- **HOSEA Precision:** AIoT platform enabling SMEs to upgrade with predictive diagnostics and energy-efficient operations.

Industry associations TAMI and TMBA stressed Taiwan's shift from 'price competition' to 'value competition', underscoring ongo-

ing efforts to promote digital transformation and foster AI knowledge-sharing.

From aerospace to automotive, from complete machines to components, Taiwan's AI-driven Machine Tool industry continues to rapidly advance, playing a pivotal role in the global transformation of manufacturing.

Looking ahead, Taiwan will showcase its latest innovations at TMTS 2026 in Taichung (*AI Empowerment, Smart & Sustainable Manufacturing*) and TIMTOS 2027 in Taipei (*AI Deeply Integrated into Smart Manufacturing*).

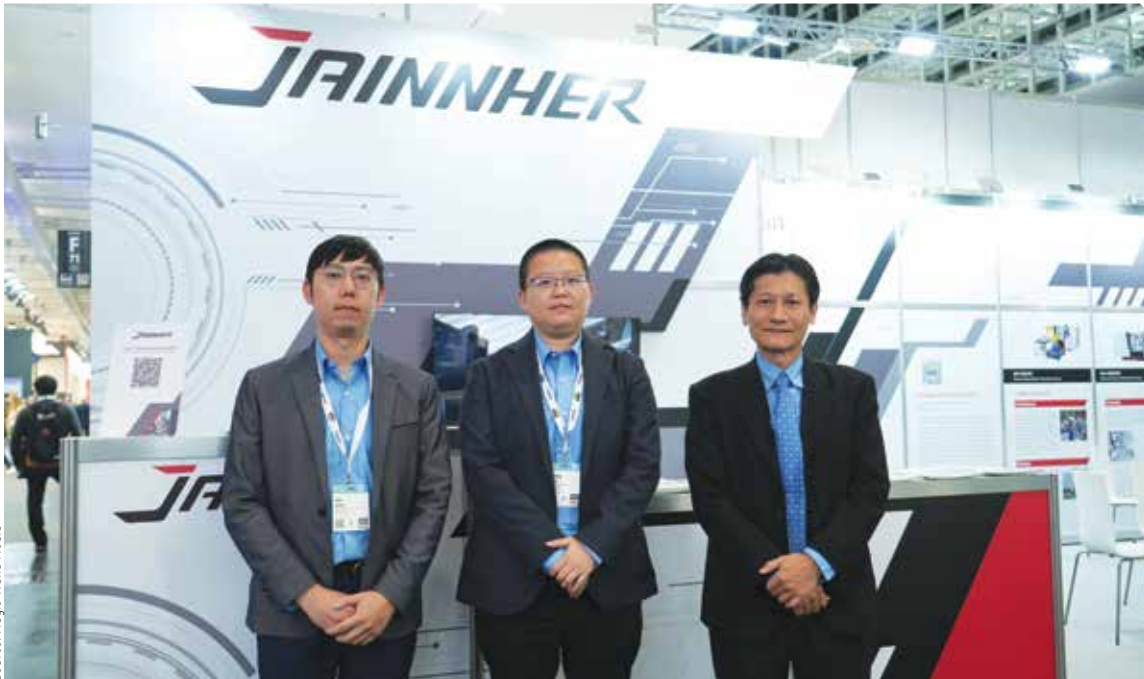
Here's a closer look at some of the companies that showcased the country's technological prowess on the global stage at EMO 2025. 

NITYASREE
KUMARASWAMY
Correspondent
Magic Wand Media
nityasree@
magicwandmedia.in



WHERE SIMPLICITY MEETS SMART ENGINEERING

Amid the hum of machines and the vibrant energy of one of the world's leading machine tool exhibitions of trade visitors, Jainnher Machine Co., Ltd highlighted its expertise through technology and by strengthening the partnerships and connections at EMO Hannover 2025 show.



Source: Magic Wand Media

Jainnher Machine showcased its cylindrical grinding machine, emphasizing technology, global partnerships, and customer support. Innovations included self-customizing software, HMIs, energy-efficient motors, and wheel crash control safety.

Jainnher Machine Co., Ltd has been quietly tweaking the world of precision grinding for over 40 years, and at the golden edition of EMO Hannover 2025, the company stepped into the global spotlight once again.

The company drew attention to its sought after product, a cylindrical grinding machine, a model William Lee, Export Department/Sales Manager, Jainnher Machine, described as 'a very simple machine, that is not a CNC, but on display at the request of several of our dealers'.

However, simplicity did not mean a lack of purpose. Lee explained, "Our main goal is to put our brand out there and reconnect with our

global partners. After 43 years, we're still here and going strong."

Engineering Meets Intuition

Highlighting technological innovation, he revealed an advanced software that collects operational data and automatically selects optimal programs for future cycles. "The software can customize itself to achieve the best function for the next grinding cycle," Lee explained. Building on its innovative capabilities, the company is pioneering developments for increased automation, energy efficiency, and user-friendly interfaces. "We're also working with the Semiconductor industry, offering large centerless grinding machines," he noted.

"Our HMI makes CNC operation easier—no coding required— while wheel crash control improves safety. Energy-efficient motors are part of our ongoing push to make machines smarter and greener," he added.

Guiding Growth in India

Regarding the Indian market, Lee highlighted the company's strategy. "The Indian market is growing and has significant potential," he said, acknowledging the challenges posed by price sensitivity. The company offers end-to-end support, from machine selection and loading or unloading assistance to monitoring solutions. "We help customers choose the right machine for their project and support them throughout the process," he concluded. 

AXES, ACCURACY, AND AMBITION

Heake Machinery Co., Ltd, at EMO Hannover 2025, demonstrated its growing technological capabilities and global aspirations. Founded about 12 years ago, the company showcased its latest T-base Vertical Machining Center and a five-axis traveling column machining center, both designed to deliver precision, rigidity, and high-speed performance.

Heake Machinery brought forth its T-base Vertical Machining Center and five-axis traveling column machining center, and highlighted eco-friendly practices, customer-driven design upgrades, and collaboration opportunities in India.



Source: Magic Wand Media

The company's booth attracted considerable attention from visitors and agents interested in its new design concepts. "Many European customers and agents are highly interested because this kind of design fits the European market," said Tracy Yang, Sales Manager, Heake Machinery Co., Ltd. Although the new five-axis traveling column machining center could not be physically displayed at the show, the Taiwanese company presented a video demonstration. The model had earlier been shown at TIMTOS 2025 in Taipei, where it received positive feedback

Eco-Friendly, Advanced Machinery

Yang noted that the company is adopting eco-friendly practices in a gradual and practical manner. "We are taking it step by step, like integrating oil mist collectors and effective recycling for the coolant

after machining," she shared. These initiatives align with EMO's focus on energy efficiency and circular economy practices.


Yang also shared that many of the company's machines have evolved from customized projects before becoming part of their standard product line. "All our machines, like the Vertical Machine Center and the Traveling Column Machine Center, are based on the three-axis design, but this year all the machines you see are five-axis



Source: Magic Wand Media

simultaneous operation," she explained. "We upgraded from the three-axis to five-axis, and we are confident about our product because it was requested based on customer requirements."

Learning and Growing Together

Regarding the Indian manufacturing market, she observed, "We get invitations from Indian companies; they want to work with us, maybe invest together and have a production line in India." She pointed out that partnerships are based on trust and mutual capability. "If we meet the right partner, we would want to work together and learn from each other," the sales manager stated, reflecting a collaborative approach to long-term growth. Circling back to EMO Hannover, she emphasized the value in connecting with customers and agents. "EMO allows us to maintain our relationships and show our agents that we are still here and doing well," she said, adding that the event presented an ideal opportunity to exhibit the company's progress and capabilities on a global platform. 



Source: Magic Wand Media

MACHINES THAT THINK AHEAD

MYLAS Machinery Co., Ltd, known for its high-precision multi-axis turning centers, showcased its latest machines, designed to incorporate efficiency, smart technology, and sustainability in one.



Source: Magic Wand Media

Since 1985, MYLAS Machinery Co., Ltd has sold more than 6,500 machines through more than 30 global distributors, continuously offering high-precision, value-driven solutions to its global customer-base. At EMO Hannover 2025, the company enthralled attendees with its flagship multi-axis turning centers. “Our key product is a multi-axis turning center. It integrates multiple functions into a single machine, which helps customers save on labor and reduce costs,” said Stanley Lin, Sales Department Manager, MYLAS Machinery. He noted that European manufacturers, for whom labor costs and cycle times are critical, have given highly positive feedback on the solution. The company’s TUI series was demonstrated for its technological strengths. “This multi-axis, multi-spindle machine offers advanced superimposed cutting functions, combining multiple

processes in one unit. It is ideal for customers seeking labor and cost efficiency,” Lin said.

Cutting Costs, Not Corners

Turning to India’s market potential, he explained, “We focus on mid- to high-end machines, designed to provide value beyond price. This allows us to avoid excessive competition while offering specialized solutions. We have been dedicated to producing these machines for over ten



Source: Magic Wand Media

years in Taiwan and believe we can bring similar benefits to Indian customers.” In line with the Industry 4.0 trend, the company has integrated smart technology into its systems. “We developed smart machine functions two years ago, installing sensors that monitor machine status and enable predictive maintenance. Customers can detect potential issues early, integrate data with IoT platforms, and even track energy consumption and carbon footprints,” he shared.

A New Era of Multi-Axis Machines

On future plans, the company aims to expand automation and continue developing multi-axis machines. “Automation addresses labor challenges and represents the future of manufacturing. Next year, we aim to introduce new automation solutions alongside our existing models,” he added. Sharing his thoughts on the event, he concluded, “The quality of buyers was exceptional. Their professional approach made this year’s EMO a great experience for us.”



Source: Magic Wand Media

MYLAS Machinery Co., Ltd showcased its high-precision, multi-axis turning centers along with the TUI series that integrates multiple functions, reducing labor and costs.

TURNING COMPLEXITY INTO CONSISTENT QUALITY

Precision, innovation, and a vision for the future—the hallmarks of PALMARY Machinery Co., Ltd—were demonstrated firsthand at the 50th edition of EMO Hannover 2025.



Source: Magic Wand Media

PALMARY Machinery considers India as a potential localized production base to shorten delivery cycles and support the government's 'Made in India' initiative, while retaining Taiwan as its R&D and manufacturing hub.

Stepping into the company's booth, visitors were drawn to its three innovative grinding machines: the cylindrical grinder, the centerless grinder, and the internal grinder. The machines on display were designed specifically for precision-driven applications, particularly in aerospace and high-performance components. "These machines are not just general-purpose tools. They are widely used in aerospace applications, including gears, pistons, special shafts, and components where precision is critical," said Daphne Chiu, Area Sales Manager, PALMARY Machinery Co., Ltd. She added that the company's presence at EMO was aimed at highlighting how the company's smart grinding solutions allow customers to achieve exceptional accuracy, even in complex applications, while ensuring production that is dependable.

From Insight to Action: The Digital Edge

A highlight of the Taiwanese company's approach to smart manufacturing was its integration of Industry 4.0 capabilities. "Every PALMARY grinder now comes with an open CNC as a standard," Chiu highlighted. "This allows customers to integrate automation, monitor data in real time, and perform remote trouble shooting and predictive maintenance. We also embed our grinding knowhow into the system so operators can find the right settings faster and maintain stable production," she explained. Among the showcased machines, the CNC surface grinder stood out as a flagship model. "It delivers micro-level accuracy, exceptional rigidity, and effortlessly transforms customer requirements into a production-ready platform," she noted.

On that note, the company has narrowed its focus on further digitalization, empowering operators to achieve faster setup, enhanced efficiency, and consistent production quality.

Made in India, Powered by PALMARY

Chiu pointed to India as a rapidly growing market for precision grinding solutions. "India is now the most promising market for precision grinding. To expand in this market, PALMARY has partnered with Philips Machine Tools India Pvt Ltd, which has a strong customer base and service network. This helps us connect with local customers quickly," she explained. Looking ahead, the company is contemplating a dual-based strategy—preserving Taiwan as its hub for manufacturing, as well as research and development, while taking India into consideration as a potential localized production base to shorten delivery cycles and support the government's 'Made in India' initiative. 



Source: Magic Wand Media

INSIDE THE MIND OF MODERN MACHINING

At EMO Hannover 2025, Victor Taichung Machinery Works Co., Ltd showcased not just its advanced capabilities in multitasking turning centers and high-precision machining solutions, but also its philosophy of converging precision, reliability, and human ingenuity.



Source: Magix Wand Media

At this edition of the event, Victor Taichung Machinery Works Co., Ltd presented a multitasking machine capable of both turning and milling. “While this technology is established globally, it remains challenging for many factories in Taiwan,” shared Wayne Hsueh, company’s Director of Machine Tools Overseas Sales & Services. He further added that the machine was developed a decade ago and was further refined in the past four to five years for commercial success. “For Europe, these were effectively new model introductions. The machines combine advanced components with tailored software to deliver high performance.”


Reliability in Every Revolution

Regarding smart factory integration, he noted that the company applies Enterprise Resource Planning

(ERP), Manufacturing Execution System (MES), and IoT monitoring primarily within its own production processes. “We track each step in machining and assembly to ensure quality. For us, the critical focus is precision in component machining, rather than assembly automation,” he explained. Hsueh further emphasized the company’s focus on ensuring reliability. “We select the best components, test

them thoroughly, and ensure machines perform consistently over time. While some prioritize novelty, our reputation is built on trust and longterm durability,” he noted.

Listening, Learning, and Leading

On the potential of the Indian market, he highlighted a customer-centric strategy. “Our approach is simple: we work closely with our customers. When their business thrives, we benefit. Often, we develop new models in response to customer requirements. We also study leading manufacturers to integrate best practices, making our machines reliable yet cost-effective,” he said. Looking ahead, automation remains an important trend. “Automation for material loading and unloading is increasingly necessary. While we provide integration support, the robots and software are managed by specialized partners. Our focus continues to be on producing high-quality machine tools that meet evolving customer needs,” Hsueh concluded. 

With a sharp focus on reliability, smart factory integration, and customer-focused strategies, Victor Taichung Machinery Works leverages ERP, MES, and automation to deliver durable, high-performance machines



Source: Magix Wand Media

INDIA AND ITALY STRENGTHEN AEROSPACE TIES

Indian Machine Tool Manufacturers' Association (IMTMA) and UCIMU-SISTEMI PER PRODURRE, the Italian machine tools, robots, and automation systems manufacturers' association, successfully organized an international seminar on the future of aerospace manufacturing on October 15, 2025, at Taj Yeshwantpur, Bengaluru. The one-day event brought together industry leaders from both countries to leverage opportunities in aerospace manufacturing for mutual cooperation and growth.



Source: Magic Wand Media

The single-day event themed 'The Future of Aerospace Manufacturing - India and Italy Present Opportunities Offered by Advancements in Manufacturing' attracted an elite audience of aerospace leaders, machine tool manufacturers, research institutes, and policymakers from both nations. Together, they shared ideas and discussed ways to enhance manufacturing capabilities and speed up Indo-Italian cooperation in the Aerospace and Defence industry.

Bolstering Bilateral Ties

Setting the tone for the event, Guru Prasath, Senior Director, IMTMA, welcomed the delegates. Following this, Giandomenico Milano, Hon'ble Consul General of Italy in Bengaluru, in his spe-

cial address, termed India-Italy relations 'a match made in heaven' and highlighted the recent India-Italy comprehensive Joint Strategic Action Plan for the years 2025-2029, which stresses enhancing bilateral cooperation amidst multiple sectors.

"The relationship between Italy and India is on a strong growth trajectory, with both countries demonstrating a high degree of complementarity in their respective industries," he noted, stressing the shared focus on innovation, investment, and capability building. "Seminars like this are crucial, as they help elevate our partnership to the next level."

Teaming Up for Atmanirbhar Bharat

Adding to the momentum, Rajendra S Rajamane, Past Presi-

dent, IMTMA, emphasized the importance of cooperation and mutual learning in determining the future of Aerospace industry manufacturing. "One of the greatest things we need to look at is 'Atmanirbhar Bharat' which gives the opportunity to manufacture equipment not just for India but for the world," he asserted, encouraging cross-border dialogue between India and Italy. "The globalization and integration reflected in this 'learning session' shows how India is now being recognized as a global manufacturing hub."

In alignment, Sayeed Ahmed, Chairman, The Indo-Italian Chamber of Commerce and Industry (IICCI) Southern Council and CEO, Biesse Manufacturing Pvt Ltd, offered a pragmatic yet broader perspective on bilateral engagement.

SOVAN TUDU
Assistant Editor
Magic Wand Media
sovan.tudu@
magicwandmedia.in





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IMTMA-UCIMU International Seminar fortified the growing Indo-Italian partnership, especially in aerospace manufacturing, with industry titans emphasizing collaboration, innovation, and knowledge exchange for furthering 'Atmanirbhar Bharat' and global competitiveness



Source: Magic Wand Media

"This event on aerospace and advanced manufacturing promoting the partnership between IMTMA and Italian industries marks a great step forward," stated Ahmed. "The Defence and Aerospace sector will be the key towards the growth story of India as well as 'Atmanirbhar Bharat.'"

"India is increasingly viewed as a competency center where Global Capability Centers (GCCs) have been thriving, and in the coming days, Italy will find how best it can partner with India, even to support its economic growth," he added.

Precision, Collaboration, Progress

Ramesh PS, Former COO, Dynamatic OldLand Aerospace, brought over four decades of hands-on experience to his address titled 'Precision Manufacturing for Aerospace - Strategy and Challenges'. "We have the manpower, capability, and ambition," he noted. Calling for a 'revolution, not evolution', he urged Indian manufacturers to look beyond the automotive comfort zone and focus on aerospace opportunities. "The future is collaborative, digital, and determined by precision," he noted, emphasizing that Industry 4.0, model-based definitions, and deterministic assemblies will define the next frontier of Indian aerospace manufacturing.

TK Ramesh, Managing Director, Ace Designers Ltd, described the seminar as "a learning session bringing together component manufacturers, industrial veterans, and machine tool builders, who are trying to jointly talk about their collective experiences and learn from one another." He added, "We're steadily working our way up toward becoming Tier 1 aerospace suppliers, and are confident of delivering robust productivity solutions for structural parts very soon. This points to the ongoing efforts in machining structural and engine components."

Italy's Edge, India's Energy

On behalf of the Italian association, Claudia Tovagliari, Marketing Department, UCIMU, shared insights on why Bengaluru was selected as the venue for the event. "Bengaluru is the aerospace hub of India," she noted. "We had engaging discussions and shared case studies on various applications. Our goal is to support the internationalization of our companies and build meaningful connections with Indian partners for new projects—both in Aerospace and other end-user sectors."

Showcasing Industrial Ingenuity

The event lineup featured keynote presentations, insightful

panel discussions, and UCIMU member showcases by eight Italian machine tool manufacturers—Breton SpA, CEMB SpA, CMS SpA, Ficep SpA, Innse Bernardi SpA, Jobs SpA, PAMA SpA, and Tacchi Giacomo E Figli SpA. The presentations highlighted how Italian expertise continues to push the boundaries of innovation, right from high-precision machining of aluminum and carbon fiber to high-end forging and adaptive clamping.

The panel discussion featured experts from Wipro Aerospace, Wipro 3D, Collins Aerospace, and Aviation Sector Skills Council. Dr Nagahanumaiah, Director, Central Manufacturing Technology Institute, deliberated on the 'Role of research institutes in meeting the requirements of Indian and global Aerospace industry'.

A Shared Takeoff

The IMTMA-UCIMU international seminar ended on a positive and purposeful note - a realization that the future of the aerospace manufacturing business would be one of shared learning, intelligent manufacturing, and long-term partnerships. From envisioning policy to shop-floor innovation, the Indo-Italian discourse in the southern Indian state of Karnataka reaffirms that collaboration is the road to global competitiveness. 



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EASTERN INDUSTRY ON THE RISE

Organized by Indian Machine Tool Manufacturers' Association (IMTMA) and Confederation of Indian Industry (CII) as a strategic partner, the third edition of Machine Tool Connect (MTX Connect) in the industrial city of Jamshedpur delivered on its aim to connect innovation with industrial progress, recording an impressive turnout of over 700 visitors.



Source: Magic Wand Media

Themed 'Where Technology Meets Opportunity in Eastern India', MTX Connect Jamshedpur 2025, organized by Indian Machine Tool Manufacturers' Association (IMTMA) and strategic partner Confederation of Indian Industry (CII), attracted over 700 visitors.

Jamshedpur turned into a vibrant hub of innovation and collaboration as MTX Connect Jamshedpur 2025 drew its curtains on a high note. Held from November 3-4, the event under the theme 'Where Technology Meets Opportunity in Eastern India' saw an energetic turnout of industry visitors.

From Jamshedpur and its surrounding areas, the attendees represented varied industries such as Automobile & Auto Components, Steel, Construction Machinery, Welding, and General Engineering. MTX Connect was a meeting ground for ideas, partnerships, and possibilities, as decision-makers, entrepreneurs, and engineers explored the latest manufacturing solutions. Dignitaries including Tapas Sahu, Former Chairman, CII Jharkhand and CEO & Managing Director, Highco Engineers Pvt

Ltd; Diloo Parikh, Vice Chairman, CII Jharkhand and Director, Vaidehi Motors Pvt Ltd; Devang Gandhi, Vice President, Adityapur Small Industries Association; and Harsh Bankrewal, Vice President, Singhbhum Chamber of Commerce & Industry, graced the occasion.

In Their Own Words

Sharing his thoughts, Sahu pointed out that with over 1,400 industries in Jamshedpur, events such as MTX Connect is significant for the growth of the Eastern region and helps them connect with top manufacturers and stay updated with the latest technologies. Parikh emphasized how national exhibitors could significantly benefit the industries in and around Jharkhand, adding considerable value through technological advancements. Both Gandhi and Bankrewal stressed the need for

such exhibitions in the Eastern region that aim to empower small manufacturing units by bringing the technology to their doorsteps and creating a better manufacturing services ecosystem.

Building on the Buzz

MTX Connect Jamshedpur 2025 wrapped up with strong industry buzz reflecting Eastern India's manufacturing momentum gathering pace. Reflecting on the success of the event, Jibak Dasgupta, Director General & CEO, IMTMA, said, "The Eastern region has a strong industrial base and offers a significant growth potential, especially in advanced manufacturing. MTX Connect Jamshedpur opens new avenues for the Machine Tool industry companies to establish their business in the region—a major focus area for IMTMA."

Source: IMTMA

Organiser



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Source: Magic Wand Media

RIDING THE PRODUCTIVITY WAVE

Organized by the Indian Machine Tool Manufacturers' Association (IMTMA), the 19th edition of National Productivity Summit (NPS) took place in Ahmedabad from November 13-14, 2025, igniting momentum that was equal parts celebration and call to action.

Establishing a dynamic beginning, Mohini Kelkar, President, IMTMA, traced NPS' inspiring journey and how its relevance has changed over the years. She reminded participants that the Summit was built on the idea of learning and sharing. "The Summit encourages innovation, unleashes potential, and embraces new technologies and techniques," she said, adding that the overwhelming over 100

case study submissions this year reflect a deepening commitment to excellence. For her, NPS 2025 is timely, especially when India is refining its manufacturing competitiveness in the world.

This narrative was reinforced by TK Ramesh, Managing Director, Ace Designers Ltd, who presented a strategic viewpoint. He underlined that productivity is no longer a narrow operational theme but rather an integral

part of global competitiveness. "Productivity is at the heart of everything we do," he said, urging industry leaders to embrace the use of world-class technology, data-driven decision-making, and robust processes. "If productivity is the engine of growth," he stressed, "then ideas are the fuel that drives it."

Adding a practical entrepreneurial perspective, the Guest of Honor, Rajendra Shah, Chair-

SOVAN TUDU
Assistant Editor
Magic Wand Media
sovan.tudu@
magicwandmedia.in



man, Harsha Engineers International Ltd, encouraged attendees to embrace possibility and bold thinking, transforming India's future. "What seems impossible," he explained, "actually reads, 'I'm possible.'" Reflecting on zero-defect ambitions and early automation breakthroughs, he urged the manufacturing community to see every "challenge as an opportunity."

Toward a Developed Nation

The Chief Guest, Mamta Verma, IAS, Principal Secretary, Industries & Mines, Government of Gujarat, in her address, brought into the spotlight the state's industrial ambition. Calling manufacturing the "backbone of India's economy," she urged industries to strengthen their quality, affordability, and cus-

tomers focus to remain globally competitive. Verma also invited participants to explore Gujarat's emerging opportunities and join hands in creating an ecosystem "where innovation, entrepreneurship, and governance come together to shape a truly developed nation."


Jibak Dasgupta, Director General & CEO, IMTMA, emphasized what truly drives productivity in manufacturing—labor, capital, raw materials, infrastructure, and technology. "We need to improve on all these inputs," he said, pointing to both technology and management interventions such as process optimization, technology fusion, and supply chain efficiency. He also stressed that the best outcomes emerge "when industry and Government work together" and drew attention to IMTMA's

ongoing commitment to the region's industrial ecosystem.

Taking a broader national view, the keynote speaker, Rajiv Gandhi, Former Executive Board Member, Maruti Suzuki India Ltd & CEO, International Automobile Center of Excellence (iACE), called for accelerated adoption of smart and self-reliant technologies as only 5 percent of Indian companies have implemented Industry 4.0 in a meaningful way. "We need to transform Indian manufacturing to make it the engine powering India into a prosperous nation," he said, challenging the sector to build 'Atmanirbharta' in machine tools, highlighting AI's growing influence right from predictive maintenance to automated quality checks.

Excellence on the Upward Drift

Providing a seasoned industry lens, R Srinivasan, Past President, IMTMA, underlined that economic strength and a robust industrial base go hand in hand and competitiveness remains the hinge through consistent efforts in product design and quality. "If we are to become truly 'Atmanirbhar', then we must continue this effort," he said.

Adding the jury's standpoint, Dr N Ravichandran, Chief Jury for NPS 2025, noted a "stark change" in the quality, depth, and clarity of this year's case study submissions. For him, productivity is not a single lever but a blend— "a balance of technology, peopology (people), and methodology," and organizations must adapt this mix to its scale and context. Capturing the spirit of the Productivity Championship Awards and the purpose of NPS, he remarked, "If your product is excellent, customers will queue before your company." 

Themed 'Showcasing Excellence in Manufacturing', NPS 2025 in Ahmedabad drew strong participation from India's manufacturing ecosystem, featuring over 100 case studies.

NPS2025 AWARD WINNERS

The AceMicromatic Group-sponsored Productivity Championship Awards at NPS 2025 proved to be a beacon of excellence for the Indian Manufacturing industry. The honors were selected through a rigorous selection procedure, receiving entries from across the country and shortlisting 12 finalists for presentations at the Summit.

Non-Automotive Category

First Prize: ELGI Equipments Ltd, Coimbatore
Second Prize: Titan Company Ltd, Hosur

Automotive Category

First Prize: ZF Commercial Vehicle Control Systems, Chennai
Second Prize: Kiswok Industries Pvt Ltd, Howrah
Third Prize: Toyota Kirloskar Auto Parts, Ramanagara

SME Productivity Championship Award

First Prize: Korrocoat Polymers Pvt Ltd, Pune
Runner-Up: Mekhos Technology Services Pvt Ltd, Bengaluru
Jury Recommendation - Excellence in Technology Adoption: Tata Electronics, Hosur

Vox Populi Category

Kirloskar Toyota Textile Machinery Pvt Ltd, Bengaluru

Certificates of Merit

Ashok Leyland, Pantnagar Plant
Laxmi Drucken Komponenten Pvt Ltd, Solapur
Aquapump Industries, Coimbatore

GLOBAL METAL FORMING INDUSTRY CONVERGES AT IMTEX FORMING 2026 – ASIA'S LARGEST EXHIBITION ON FORMING TECHNOLOGIES

Organized by Indian Machine Tool Manufacturers' Association (IMTMA), the upcoming edition of Asia's prominent exhibition on metal forming and manufacturing technologies, IMTEX FORMING, is scheduled for January 21 – 25, 2026, at Bangalore International Exhibition Centre (BIEC), Bengaluru.



Source: Magic Wand Media

IMTEX FORMING 2026 is to feature over 600 exhibitors from 20 countries.

Recognized as Asia's largest exhibition in its category, IMTEX FORMING promises to be a dynamic platform for industry leaders, innovators, and enthusiasts to explore the latest advancements shaping the future of manufacturing.

A Comprehensive, Cohesive Display

Drawing participation from around 600 exhibitors across 20 countries, including India, IMTEX FORMING 2026 will feature a range of concurrent events designed to cater to diverse industry needs:

- **Tooltech** – focusing on machine tool accessories, meEVENT PREVIEW - IM-

TEX FORMING 2026 technology solutions, CAD/CAM tools, tooling systems, and the latest trends in the tooling industry.

- **Digital Manufacturing** – showcasing real-time solutions in additive manufacturing and Industry 4.0.
- **Weldexpo**, in association with the Indian Institute of Welding (IIW-India) – featuring the latest welding technologies.
- **International Seminar on Forming Technology**, ninth edition, on January 22-23, 2026, to explore new trends, equipment, processes, and technologies in metal forming and related fields.
- **Moldex India and Fastenex India**, organized by Messe

Stuttgart, focusing on molding, fasteners, and fixing technologies respectively, will be co-located alongside IMTEX FORMING 2026.

Additionally, the attendees can also look forward to parallel events that aim to foster knowledge exchange and industry-academia collaboration: **i2 Academia Square**, for example, will provide research institutions a platform to present their R&D initiatives to industry stakeholders. The **Jagru-ti-IMTMA Youth Programme** will raise awareness about the latest advancements in manufacturing among young professionals. Showcasing all aspects

of innovation in metal forming across an area of 46,000 sq mt in four halls, the exhibition is slated to host visitors from various sectors, including Automotive and Auto Components, Aerospace and Defence, Medical Equipment, Power, Railway, Construction Equipment, General and Heavy Engineering, Capital Goods, Electrical and Electronics, White and Brown Goods, and many others.


Measuring Success

“Although Metal Forming currently accounts for 29 percent of the Indian machine tool market, the segment is expected to grow measurably in the coming years. In FY25, the con-

sumption of metal forming machine tools was INR 9,139 crore, while production was valued at INR 2,696 crore. Overall metal forming machine tool exports increased by approximately 6 percent year-on-year. Among exports, presses led the list, followed by press brakes, bending machines, and shearing machines,” shared Mohini Kelkar, President, IMTMA.

“Laser and laser-based applications are finding increasing acceptance across industry sectors and we have seen a steady increase in participation by laser-based manufacturers at IMTEX FORMING. Exhibitors will display fibre laser machines, precision levellers, pick-and-

place units, servo presses, machine production monitoring systems, welding and 3D printing solutions. IMTEX FORMING 2026 will accelerate the manufacturing of homegrown products and their competitiveness” added Jibak Dasgupta, Director General & CEO, IMTMA.

The exhibition has always lived up to its promise of serving as a unique platform to accelerate the adoption of digital transformation and high-productivity solutions across the Manufacturing sector. The forthcoming edition will yet again succeed in enabling businesses to stay competitive in a rapidly transforming industrial landscape. 

Showing all aspects of innovation in metal forming across an area of 46,000 sq mt in four halls, the exhibition is slated to host visitors from a range of manufacturing sectors.



Indian Machine Tool
Manufacturers' Association

The report provides deep insights into:

- Current landscape and future potential of the Indian machine tool industry
- Direct insights from C-suite leaders, plant heads, and end-users
- Key challenges and strategies for market growth
- Production, consumption, import-export trends, and projections across sectors like automotive, aerospace, and general engineering
- Comparative case studies from China, South Korea, and Taiwan

For more information & Purchase of report, please write to: rakesh@imtma.in

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FIBER LASERS

HD-F 3015 FIBER LASER CUTTING MACHINE FROM DURMA

Built on 70 years of innovation and engineering excellence, Durmazlar continues to empower manufacturers worldwide with high-tech, easy-to-use, fast, and environmentally friendly machines.

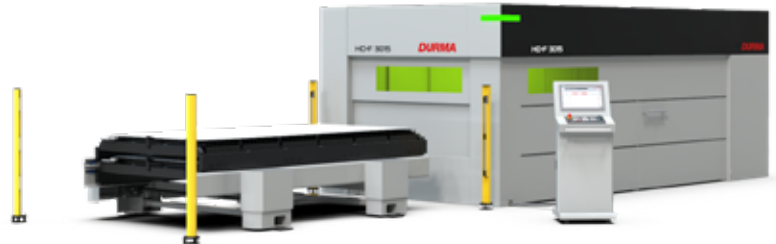
Through the DURMA brand, Durmazlar delivers its advanced technologies to global markets, combining innovation, reliability, and performance in every product.

The Durma HD-F 3015 Fiber Laser offers exceptional cutting performance with low operating costs, minimal energy consumption, and high-performance components.

Designed for both thin and thick sheets, it ensures superior cutting quality, precision, and efficiency with its rigid modular frame, compact design, and advanced filtration system.

The intelligent cutting head with automatic focus adjustment delivers optimal results across different materials, while the lens protection system reduces maintenance needs.

Automatic nozzle change and centering, angled cutting up to 45°, and D-Mix gas technology (available only for 10 kW and above models) take efficiency to the next level. Integrated scrap conveyors ensure continuous production, while Durma Cloud and D-Mobile enable remote monitoring, maintenance alerts, and seamless data transfer.



METAL FORMING SOLUTIONS

CHANGING THE GAME WITH TRANSFER PRESS TECHNOLOGY

Transfer press technology is an advanced metal forming solution used in the Manufacturing industry to produce complex, high-precision components from sheet metal. Unlike traditional stamping or progressive dies, transfer presses combine the advantages of both mechanical movement and automated part handling in a single, highly synchronized system.

In a transfer press, a single metal blank is moved station-by-station across multiple forming operations—such as drawing, bending, trimming, and punching—within one press stroke cycle. The transfer mechanism moves the part between dies precisely and efficiently, allowing manufacturers to form intricate parts with high repeatability, speed, and safety.

Isgec Heavy Engineering Ltd has pioneered the design and manufacture of a 3000-tonne transfer press entirely in India, marking a significant milestone in the country's industrial capability. This achievement is unique because it combines advanced engineering, indigenous innovation, and world-class manufacturing practices to produce a press that rivals expensive imported machines.



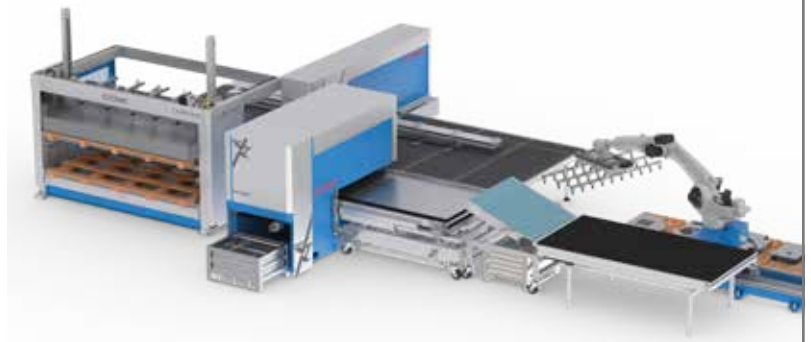
PUNCHING AND SHEARING COMBI MACHINES

EUROMAC'S EDGE IN SHEARING SOLUTIONS

Cutting is one of the most expensive machining processes, both in terms of time and energy consumption. Mechanical punch presses perform repeated punches until the cut is complete, while laser punch presses require longer cycle times and higher energy to complete the operation. These limitations highlight the need for a more suitable tool for shearing.

Euromac has addressed this challenge through the development of advanced shearing machines designed to combine speed, precision, and material efficiency. The machines achieve complete cuts within seconds while maintaining a very high level of precision.

Euromac shearing machines offer several advantages. They help reduce processing time, lower energy consumption, and minimize material waste. The resulting cut quality is high, free from micro-joints, and conducive to further forming or assembly operations. Studies indicate that the shearing systems can save between 15 and 20 percent of material compared to alternative cutting solutions.



FIBER LASER CUTTING MACHINES

G SERIES FROM STM LASER

STM Laser, the manufacturing brand of the S&T Group, embodies the group's 30 years of engineering excellence in the machine tool industry. The G Series Fiber Laser Cutting Machine reflects STM's commitment to innovation, precision, and reliability – purpose-built to meet the evolving needs of modern fabrication and sheet metal industries.

Designed and manufactured in India, the G Series is a symbol of S&T's 'Make in India, Crafted with Global Precision' philosophy. With bed travel lengths ranging from 3.0 to 6.5 m, travel widths from 1.5 to 2.5 m, and laser power options from 1.5 kW to 12 kW, it delivers high-speed, burr-free cutting performance across diverse materials and thicknesses.

Every STM Laser machine is backed by S&T's nationwide service network of over 18 branches, ensuring prompt installation, training, and after-sales support.

From concept to cutting, STM Laser empowers Indian manufacturing with world-class laser technology engineered for productivity, consistency, and long-term reliability.



LASER CUTTING MACHINES

LASER AUTOMATION MADE EFFORTLESS WITH SLTL'S VECTOR

Imagine a manufacturing floor where machines run 24/7 with minimal supervision - where precision, speed, and intelligence come together seamlessly. The Vector by SLTL Group turns that vision into reality. A next-generation, fully automated fiber laser cutting system, Vector is built for Industry 4.0, offering up to 30 kW power, 3G acceleration, and micron-level precision for non-stop, intelligent production.

Equipped with SLTL's e-Tron technology, Vector optimizes power, gas, and motion in real time to ensure flawless cuts, even on thick or reflective materials. Smart automation features like auto-focus control, rapid gas switching, dynamic fume extraction, and adaptive nesting software boost productivity while cutting cycle times and material waste.

With Zero-Setup Automation, dual-pallet exchange, and compact intelligent workflow, Vector eliminates idle time and reduces labor dependency, maximizing floor efficiency. Safety is built in, with light-curtain protection, anti-collision systems, and an intuitive HMI for effortless operation.

More than a laser cutting machine, Vector is a self-driven manufacturing system, designed to help one stop cutting metal and start cutting costs. It's where automation meets innovation, creating the future of fabrication today.



PRECISION TOOLING SOLUTIONS

PRECISION TOOLING TO POWER MODERN MANUFACTURING

AMPCO METAL is a global manufacturer of engineered copper-based alloys and high-precision tooling solutions serving the Automotive, Aerospace, Process Engineering, and Machinery sectors. For more than a century, the company has partnered with industries worldwide to enhance equipment performance, extend tool life, and strengthen high-quality manufacturing outcomes.

Its tube bending tooling portfolio reflects this commitment. AMPCO METAL provides complete end-to-end solutions for rotary draw bending, including feasibility studies, tool design, machining, and customer-end validation. Depending on application requirements, the company supplies bend dies, clamp dies, pressure dies, collets, and a full range of consumables such as ball mandrels and wiper dies. These components are manufactured using AMPCO® aluminum bronzes, known for their excellent wear resistance, anti-galling characteristics, and stable performance across demanding bend configurations.

The tooling ensures precise, repeatable bending while minimizing defects and reducing downtime. Gripping solutions are engineered to prevent slippage and marking, while mandrels and wipers support clean, consistent finishes on stainless steel, titanium, and aluminized steel tubes. With in-house machining capabilities and rigorous inspection processes, AMPCO METAL delivers consistent quality and reliable performance for end users across India's key industrial segments.



BLENDING PRECISION WITH PRODUCTION

The 20th edition of Indian Ceramics Asia (ICA) 2026—India's only trade fair for the ceramics industry—will be held from January 28–30, 2026, at the Helipad Exhibition Centre, Gandhinagar, Gujarat. Organized by Messe München India Pvt Ltd and Unifair Exhibition Service Co Ltd, the event aims to strengthen the industry's transition toward precision, automation, and sustainable production.



Source: Magic Wand Media

The Indian Manufacturing sector is being reshaped by two non-negotiable mandates: precision and sustainability. While high-profile industries like Automotive and Aerospace continue being in the limelight, the Indian Ceramics industry is quietly escalating its demand for advanced, accurate machinery. India, the world's second-largest producer and exporter of ceramics, is driving a new phase of global growth in the sector. The industry is shedding its traditional image and is rapidly embracing high-speed production technologies, advanced material science, and stringent energy-efficiency standards.

The focus is shifting from capacity expansion to capability enhancement and meeting demands of tighter tolerances, lower energy consumption, higher throughput, and enhanced quality. This change presents significant opportunities for machine tool manufacturers, automation specialists, and robotics solution providers catering to the evolving needs of modern ceramic production.

Bringing the Entire Ecosystem Together

Indian Ceramics Asia (ICA) 2026 is strategically built around this industrial shift. As India's only

trade show dedicated to the Ceramics industry, it has transformed into the single most important business, technology and supply-chain hub for the Indian Ceramic and Brick industry. Crucially, it is a live marketplace connecting advanced manufacturing supply chain, specifically machine tool providers, with thousands of serious buyers.

Now entering its landmark 20th edition, Indian Ceramics Asia brings the entire ceramic and brick manufacturing ecosystem—technology suppliers, raw material providers, logistics specialists, buyers, process owners and production heads—under one roof,



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Indian Ceramics Asia brings the entire ceramic and brick manufacturing ecosystem—technology suppliers, raw material providers, logistics specialists, buyers, process owners and production heads—under one roof, enabling serious industry players to connect with each other.

enabling serious industry players to connect with each other and explore growth opportunities. The event, which will span 18,500 sq mt of exhibition space, is estimated to host over 300 brands and over 10,000 trade visitors.

Industry Keen to Embrace Automation

Organized in Gandhinagar, Gujarat, ICA is the only premier platform that brings together ceramics manufacturers from the powerhouse Morbi hub as well as from across India. Morbi's inclination toward adopting new technologies and automation underscores the industry's readiness to embrace full-scale automation and invest in advanced manufacturing solutions.

At the same time, the overall ceramics machinery market is poised for growth as the industry looks to upgrade keeping precision, speed and sustainability in mind. ICA is the proven platform to introduce high-quality precision tools and advanced handling systems directly to this high-demand sector.

More than half the floor at the event is dedicated to production technology. In 2025, 40 percent of the exhibitors at Indian Ceramics Asia represented machinery, plant and equipment for fine and refractory ceramics and another 20 percent focused on machinery for coarse ceramics. Positioned as a machinery-focused event, Indian Ceramics Asia aims to enable exhibitors to expand their business reach and connect with key industry segments by:

Targeting the Western region (and beyond): The high concentration of ceramic manufacturing in Western India ensures long-term partnerships, fueling the growing demand for Indian-made equipment and reinforcing its importance for business growth.

Offering a Dual Benefit for South Indian Suppliers: For suppliers of machinery, tools, and accessories from South India, ICA offers a unique dual opportunity to engage with end-users—such as tile and sanitaryware manufacturers—and also OEM exhibitors, making them potential direct customers for parts and accessories.

Bringing Allied Industries Under One Roof: In addition to the core ceramic segments, the show attracts manufacturers from allied industries such as Glass, Paint, and Textile, as visitors to seek material handling, process optimization and efficiency enhancement solutions.

Key Highlights of Indian Ceramics Asia 2026 Global Innovation Showcase

This segment will feature cutting-edge solutions from international leaders in ceramics and manufacturing technology. Exhibitors from Germany, Italy, Spain, France, China, India, and other countries will present a comprehensive display of equipment and systems that combine European precision with Asian cost efficiency.

Live Demo Zone - Machinery in Action

The Live Demo Zone will provide an opportunity for exhibitors to demonstrate their machinery in real-time. Visitors will be able to observe operational efficiencies such as reduced energy consumption, shorter cycle times, and lower production costs, gaining a practical understanding of the latest technological advancements.

Insider Intelligence Conference

The conference will bring together experts and stakeholders to discuss key trends shaping the ceramics and ad-

vanced manufacturing industries. Sessions will focus on alternative fuels, energy conservation, automation, and innovations in product design and production efficiency.

Indian Ceramics Supply-Chain Pavilion

The pavilion will highlight end-to-end solutions for automated conveying, palletizing, and warehousing and also address the high-value engineering problem of breakage rate and logistics.

Career Connect – Future Talent Pipeline

The program aims to create a trained user base, supporting the industry's long-term growth and innovation capacity.

Successful Last Edition

A major differentiator for Indian Ceramics Asia is its quality of visitors. The 2025 edition welcomed 8,010 serious trade visitors from 32 countries, comprising the entire gamut of ceramic manufacturers, technical and advanced ceramics users, refractory makers, manufacturers of bricks and insulators, mine owners and sourcing heads from companies looking for solutions to reduce process downtime. Alongside them were R&D professionals, application engineers, consultants, and technical institutes.

The 2026 edition, with a series of value-additions for its attendees, promises to scale its past successes. The growing industry will surely benefit immensely from enhanced business networking opportunities, cutting-edge technology showcases, and deeper knowledge sharing, further bolstering India's position as a global hub for ceramic manufacturing and innovation. 

2nd Edition
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> Networking opportunities with industry experts,
policymakers, and academia

Distinguished Panelists from: Auto Components Manufacturers / Automotive OEMs / Manufacturers of
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