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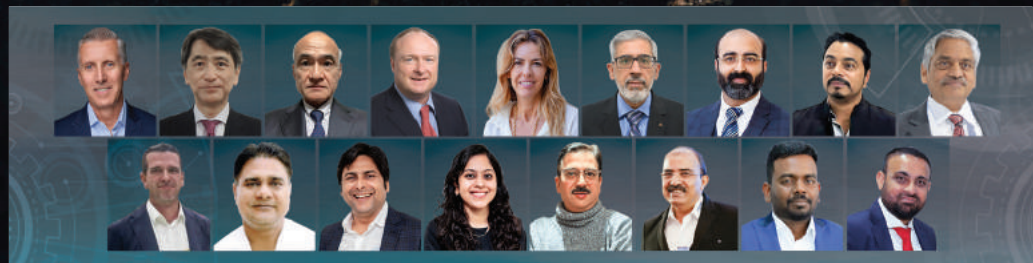
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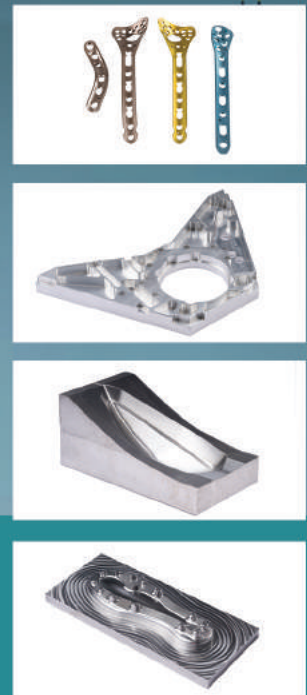
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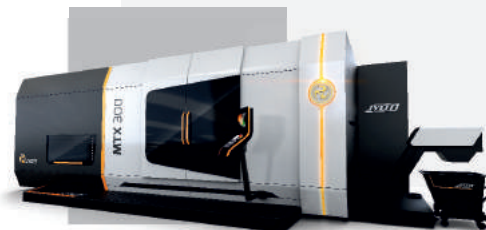
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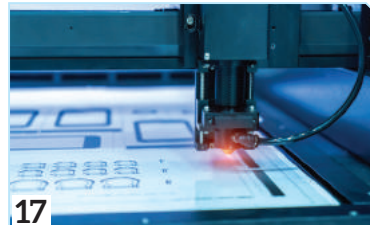
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IMTEX FORMING 2024 TO FORTIFY METAL FORMING SECTOR



Rajamane

RAJENDRA S RAJAMANE
PRESIDENT
IMTMA

India's Manufacturing sector posted a robust performance in November 2023 and Purchasing Managers' Index increased to 56 in November as against 55.5 recorded in the previous month (as per S&P Global India Manufacturing, seasonally adjusted data). The growth was attributed to the easing of price pressures and an increase in the ability of firms to secure new businesses domestically as well as overseas.

The Indian Machine Tool industry, part of the Capital Goods sector, is also poised for exponential growth. During FY 2022-23, the consumption of machine tools in the country increased by 55 percent year-on-year, reaching ₹24,536 crore.

India's Metal Forming sector, with a market size of around ₹5,300 crore (about US\$ 646 million) in FY23, has seen an upswing in business with new trends. Compared to the previous year of metal forming production, which was around ₹2,100 crore (about US\$ 256 million) in FY 23, it is expected to grow at a

compound annual growth rate of around 10 percent to 15 percent in the next 3-5 years.

The Indian Machine Tool industry, part of the Capital Goods sector, is also poised for exponential growth. During FY 2022-23, the consumption of machine tools in the country increased by 55 percent year-on-year, reaching ₹24,536 crore.

IMTMA is organizing IMTEX FORMING 2024, a focused exhibition on metal forming and manufacturing technologies, at Bangalore International Exhibition Centre (BIEC) from January 19-23, 2024. With WeldExpo, Tooltech, and Digital Manufacturing as concurrent shows and Moldex and

Fastnex as co-located shows, IMTEX FORMING 2024 would be an ideal platform that will provide an opportunity for the Machine Tool and Manufacturing industry to witness the latest technology trends as well as network.

Happy reading.



Concurrent shows



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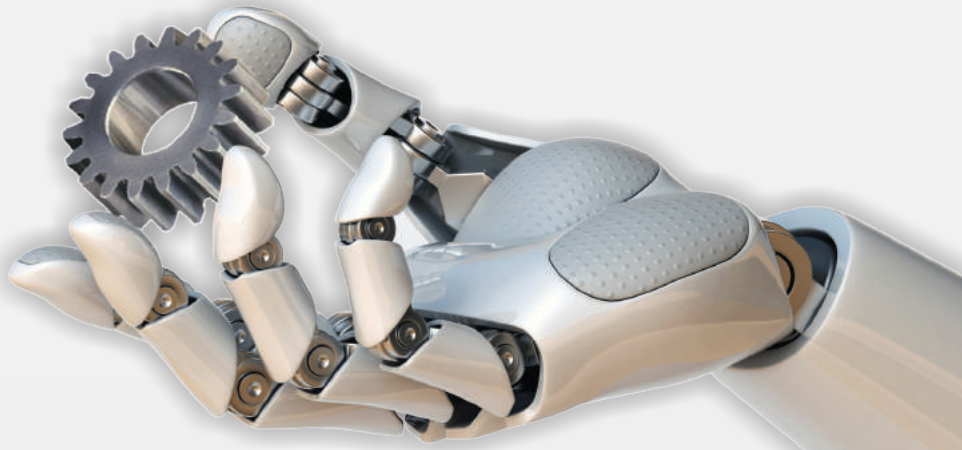
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JIBAK DASGUPTA
DIRECTOR GENERAL & CEO
INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION
BANGALORE INTERNATIONAL EXHIBITION CENTRE

Dear MMI Readers,

As we bid farewell to 2023, an eventful year for machine tools and the Manufacturing industry, the time is apt to shed old and ineffective practices and welcome what is new and promising as we step into the year 2024.

Reading becomes enjoyable when the content and presentation of a magazine are enriched through the latest and value-added information and design. Modern Manufacturing India (MMI), as a contemporary and well-circulated magazine, has been constantly endeavoring to achieve this goal for its readers through its focus on evolving concepts in manufacturing and machine tools by encompassing new technological, business-oriented, and trend-setting reports and articles over the years.

IMTMA's sole priority as a Publisher of MMI is to maintain high standards in presenting technological and business advancements and new knowledge that arise within and around the Manufacturing industry across geographies, with a special focus on the Indian market.

MMI welcomes articles on all aspects of engineering, viz., manufacturing processes, digitalization, engineering design, Industry 4.0 technologies, decarbonization, promotion of sustainability, and others, which encompasses current and future priorities for businesses.

IMTMA's sole priority as a Publisher of MMI is to maintain high standards in presenting technological and business advancements and new knowledge that arise within and around the Manufacturing industry across geographies, with a special focus on the Indian market.

In line with the MMI standards, we've weaved together some thought-provoking articles and reports on Metal Forming industry in this current edition. It also features an article on IMTEX Forming 2024 to give readers a sneak peek into how the exhibition is shaping up.

On behalf of Indian Machine Tool Manufacturers' Association (IMTMA), I wish all our MMI readers including their family members a very happy and prosperous New Year. Let this new year be a meaningful and successful one for one and all.

Wish you a happy reading.

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Soumi Mitra

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NEW YEAR DAWNS WITH TECHNOLOGICAL TRIUMPHS

In a landmark achievement in 2023, India etched its name in the history of space exploration with the successful soft landing of the Indian Space Research Organisation’s (ISRO) Chandrayaan-3, proudly emerging as the first country to land near the Moon’s south pole.

Buoyed by the success of Chandrayaan-3, ISRO embarked on yet another journey that made history by launching Aditya - L1 satellite, the country’s maiden solar mission. It aims to explore the dynamics of the solar upper atmosphere, focusing on the chromosphere and corona and comprehending its extreme heat from a halo orbit around the first Sun-Earth Lagrangian point (L1), which is located roughly 1.5 million km from the Earth. The L1 point provides a stable position for observational purposes.

Fast forward year 2024, Aditya- L1 has successfully entered its final manoeuvre to reach its destination and injected into its final orbit.

The monumental success of both lunar and solar explorations underscores India’s strong-willed determination, cutting-edge technology, and prowess of collaborative human efforts. The accomplishments highlight the power of Public-Private Partnership (PPP) model and the growing technological capabilities of Indian private players who significantly contributed to the success of these missions.

Recognizing the crucial role technological advancements of the manufacturing sector play in the economic growth of the nation, Indian manufacturing companies are making path-breaking innovations while prioritizing sustainable and green practices to limit their carbon footprint.

Against this backdrop, the IMTEX FORMING & Tooltech 2024 tradeshow, scheduled from January 19-23 at the Bangalore International Exhibition Centre, emerges as the ideal platform for live demonstrations of groundbreaking machines and technologies geared towards enhancing productivity.

The new year has commenced on a jubilant note with the nation accomplishing yet another feat in space. IMTMA, with its premier trade fair, endeavors to continue this celebratory spirit by showcasing manufacturing marvels and ensuring their exposure to big and small players alike for us to progress ahead in leaps and bounds.

“Don't wait until everything is just right. It will never be perfect. There will always be challenges, obstacles, and less-than-perfect conditions. So what? Get started now. With each step you take, you will grow stronger and stronger, more and more skilled, more and more self-confident, and more and more successful.”

- Mark Victor Hansen



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STAYING RESILIENT

Key economic indicators collectively suggest a relatively stable outlook for India's economic landscape in 2023. Read on to explore specific figures for machine tools export, import, and production.

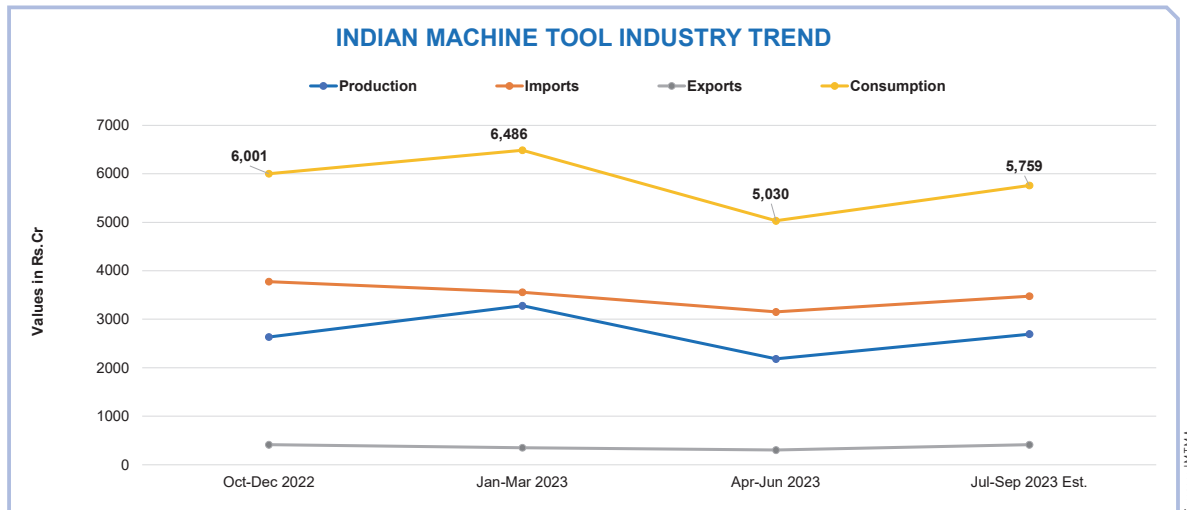


Table 1. Indian Machine Tool Industry Trend

For exports, Russia (29%), China (9%), and the USA (9%) emerged as the top three export destinations, accounting for 47 percent of total machine tool exports from April to November 2023, with a total export value of ₹1,005 crore (US \$121 M) and 4,515 units of machines exported.

In December 2023, India experienced a robust economic growth. The real GDP demonstrated a strong performance, growing by 7.6 percent in the second quarter and 7.7 percent in the first half of fiscal year 2023-24, primarily driven by a surge in investment demand. Manufacturing and services PMI maintained high levels of 56 and 56.9 in November 2023, underlining the resilience of the sectors.

On the inflation front, CPI inflation rose to 5.6 percent in November due to higher vegetable prices, while core CPI inflation eased to 4.1 percent. WPI inflation turned positive at 0.3 percent, breaking a seven-month contraction, primarily fuelled by increased vegetable prices. The Monetary Policy Committee (MPC) chose to retain the repo rate at 6.5 percent in its December 2023 review.

During April-October FY2024, Government finances exhibited positive trends, with gross tax revenues growing by 14 percent, led by direct taxes at 24.1 percent. Total expenditure during the same period increased by 11.7 percent,

with capital expenditure rising significantly by 33.7 percent. However, fiscal and revenue deficits, as proportions of their annual Budget Estimates, stood at 45 percent and 32.2 percent, respectively.

The merchandise trade deficit narrowed to US \$20.6 billion from an unprecedented high in October. Net FDI inflows surged to US \$5.9 billion in October, and the average global crude price moderated to US \$81.4/bbl. The OECD projected global growth at 2.9 percent in 2023, with India's FY24 growth forecasted at 6.3 percent. These key economic indicators collectively suggest a relatively stable outlook for India's economic landscape in 2023.

Production for the April to September quarter of 2023 (H1FY24) increased by 14 percent year-on-year, reaching ₹4,877 crore (US\$ 592 M). Orders booked during the same period witnessed an impressive growth of 15 percent, totaling ₹6,887 crore (US\$ 835 M). The industry's imports in H1FY24 saw a rise of 5 percent year-on-year, amounting to ₹6,628 crore. (US\$ 804 M). Machine tool ex-

ports during H1FY24 from India reported a flat 2 percent growth, amounting to ₹716 crore (US \$87 M) and consumption is estimated to have increased by 9 percent to reach ₹10,789 crore (US\$ 1,309 M) in H1FY24.

Total machine tool imports reported from April to November 2023 reached ₹9,362 crore (US \$1.13 B), with 30,821 units of machines imported. China (29%), Japan (20%), and Germany (9%) emerged as the top countries for imports, contributing to 58 percent of the total machine tool imports. Presses (12%), Lathes (12%), and Vertical Machining Centers (VMC) (12%) were the top machinery types imported, valued at ₹3,356 crore (US \$406 M), constituting approximately 36 percent of total machine tool imports during the period.

Lathes (17%), VMC (15%), and Horizontal Machining Centers (HMC) (10%) were the top three machinery types exported, valued at ₹428 crore (US \$52 M), constituting approximately 43 percent of total machine tool exports during April to November 2023. 

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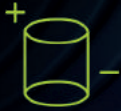
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IMTEX FORMING 2024: PROPELLING MACHINE TOOLS AND MANUFACTURING GROWTH

IMTMA's flagship exhibition on metal forming technologies IMTEX FORMING is to feature over 550 exhibitors from 18 countries as it gets underway at Bangalore International Exhibition Centre (BIEC), Bengaluru, from January 19 - 23, 2024.



Source: Magic Wand Media

The Indian Machine Tool industry, as part of the Capital Goods sector, has performed well in 2023 and is looking forward to improving its position in 2024 and beyond. Consumption of machine tools in India during FY 2022-23 increased by 55 percent, reaching about ₹24,500 crore (around US\$3 billion).

Among metal working machine tools, the country's Metal Forming sector, with a market size of around ₹5,300 crore (about

US\$646 million) in FY 2022-23, has been doing well with new trends entering the market. Compared to the previous year, metal forming production, which was around ₹2,100 crore (about US\$256 million) in FY 2022-23, is expected to grow at a compound annual growth rate of around 10 - 15 percent in the next 3-5 years.

For Indian Machine Tool Manufacturers' Association (IMTMA), traditionally, the new year starts with its flagship exhibition IM-

TEX. In 2024, it is no exception and IMTEX FORMING 2024 is back with its glory. In terms of size and scope, IMTEX FORMING 2024 has grown immensely, expanding in size by around 80 percent in comparison to its previous edition, and with many new segments to showcase for its visitors. The exhibition portfolio has expanded with Weldexpo as a concurrent show alongside Tooltech and Digital Manufacturing. Messe Stuttgart India is organizing MOLDEX India and FAST-

India's Premier International Machine Tools Show



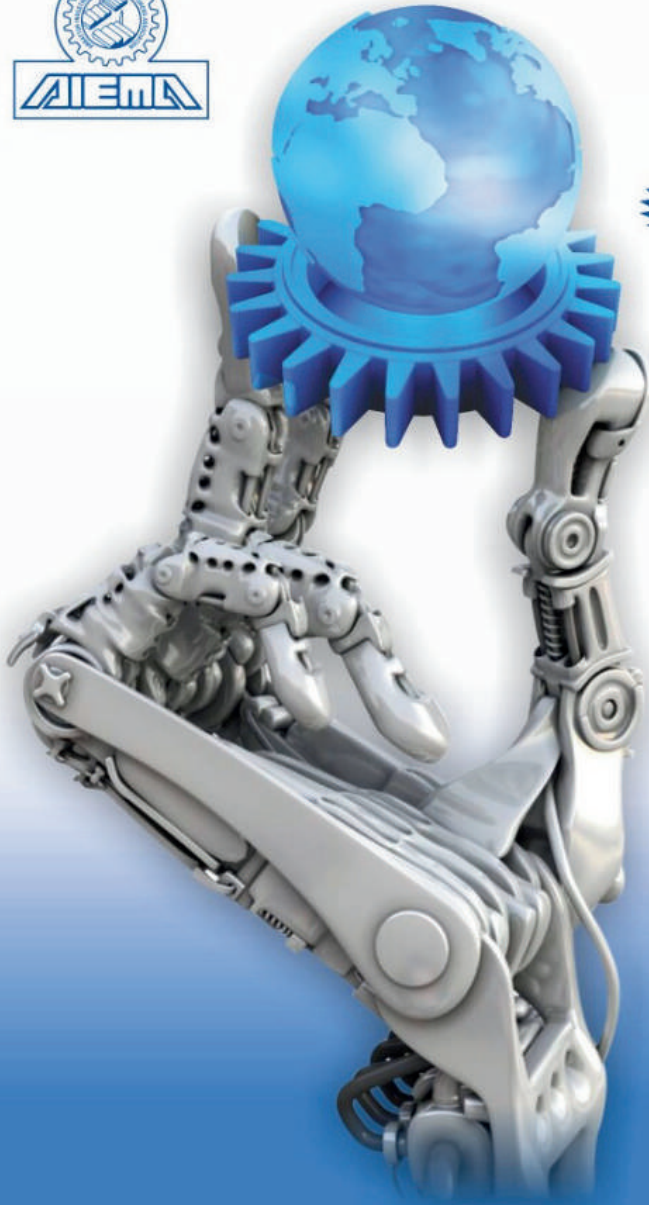
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Compared to the previous year, metal forming production, which was around ₹2,100 crore (about US\$256 million) in FY 2022-23, is expected to grow at a compound annual growth rate of around 10 - 15 percent in the next 3-5 years.

NEX as co-located shows. The Indian Institute of Welding India is organizing an International Congress from January 22-24, 2024. As a bigger and more comprehensive exhibition for the metal forming and manufacturing industries in India, IMTEX FORMING 2024 is expected to make waves.

Trends in focus

At IMTEX FORMING, exhibitors are to showcase a range of technologies, such as:

- Fiber laser machines that employ face recognition technology to identify the operator and load their preferred language and privileges; precision levelers for metal parts, sheets, and plates, and pick and place units; accessories for mechanical or other presses for loading flat blanks in tools;
- Servo presses, a revolutionary leap in press processing technology that further improves productivity; machine production monitoring systems for viewing collected and processed data and monitoring through a 3D model of the factory layout; and 3D printing solutions for building complex, mission-critical parts in industries;
- Die forging hammer technology, a significant improvement over conventional hammer drive systems; conveyorized belt grinding machines for precision deburring of flat punched and fine blanked parts like clutch plates; and advanced waterjet cutting and cleaning solutions;
- Reverse engineering solutions for helping manufacturers

with scanning, designing the part, and creating prototypes; plasma cutting power for optimal and reliable cutting results with easy operation and low investment and operating costs; and friction welders that come with the 'Cycle Time' challenge;

- Compact drive technology; servo robotic spot welding guns; spider/cross, an essential steering component; CNC press brakes and shears; metal scrap recycling; AM system software, a software platform to manage orders, automate laborious tasks, and scale one's operations; tube bending solutions; thermal cutting solutions; cobot welding solutions; angle cutting machines; vibration transmission control systems; friction welders to provide the fastest welds; and slitting lines for minimizing tooling change time;

IMTEX FORMING 2024 - Key Highlights and Facts

- IMTEX FORMING is Asia's leading exhibition on metal forming and manufacturing technologies.
- It will be held at the Bangalore International Exhibition Centre (BIEC) in Bengaluru from January 19 - 23, 2024.
- Tooltech 2024 will focus on machine tool accessories, forming tools, dies and molds, metrology, and CAD/CAM.
- Digital Manufacturing will feature the latest innovations in additive manufacturing and Industry 4.0.
- Weldexpo, an exhibition for welding, cutting, and joining in association with the Indian Institute of Welding will be held concurrently.
- MOLDEX India and FASTNEX, organized by Messe Stuttgart, focusing on molding, fasteners, and fixing technologies respectively, will be co-located shows.
- The exhibition will feature over 550 exhibitors from 18 countries in an exhibition space of around 45,000 sq mt, covering 5 exhibition halls.
- Germany, Japan, and Taiwan will have country pavilions.
- Around 40,000 visitors are expected to attend IMTEX FORMING 2024.
- i2 Academia Square comprises three initiatives, viz., Academia Pavilion, CONNECT, and Manufacturing Quiz Contest. Around 25 institutions including IITs are participating in Academia Pavilion.
- The IMTMA Manufacturing Technology Quiz Contest will be held as an inter-college contest on manufacturing technology for engineering students. CONNECT will augment the career of technical students in machine tool and manufacturing industries.
- The Jagruti-IMTMA Youth Programme with the aid of UDAAN members will be held to familiarize engineering students with the Machine Tool industry.
- An International Seminar on Forming Technology to highlight advancements in forming technologies and their applications will be held on January 18, 2024.
- Introductory sessions on Industry 4.0 will be held in the Productivity Institute of IMTMA Technology Centre, Bengaluru from 19 - 22, 2024.

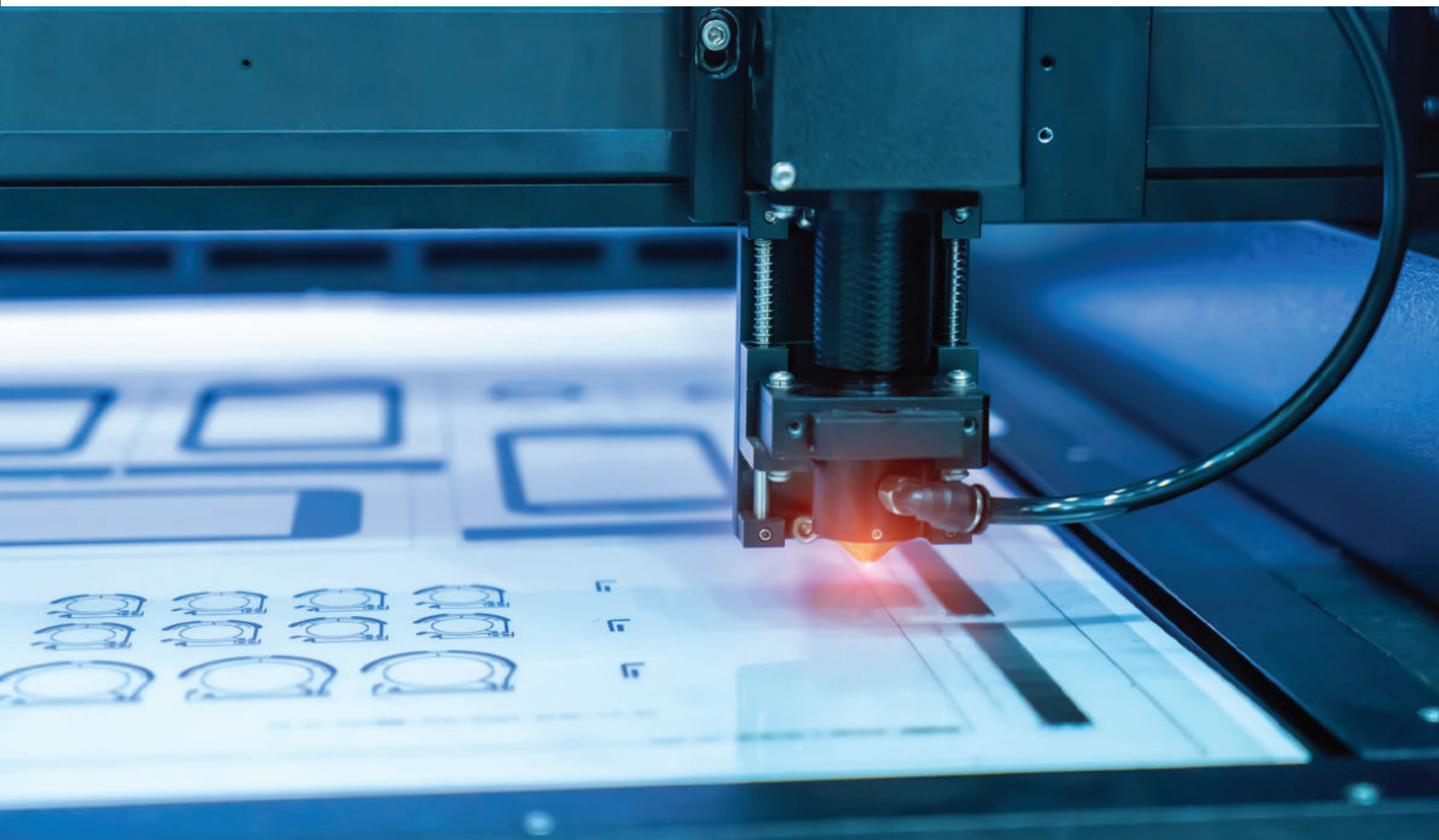
Role of metal forming

"All commercial and consumer goods manufactured by various industries rely on components that are formed in press shops, roll-forming facilities, etc. The Indian Machine Tool industry is taking steps to build knowledge and capability for building lighter and stronger components and encourage sustainable manufacturing practices," said Rajendra S Rajamane, President, IMTMA.

"The Metal Forming industry builds products and components for safer vehicles and efficient appliances. With the growing size and capability, the time is apt for Indian manufacturers to compete with the global players to make significant advancements in the industry and provide cutting-edge solutions for the world. IMTEX FORMING 2024 is the best platform to hasten this process," said Jibak Dasgupta, Director General & CEO, IMTMA. 

HARNESSING LIGHT TO MANUFACTURE MOBILE DEVICES

Laser technology plays a pivotal role in the mobile device industry, being instrumental in manufacturing key components such as sapphire camera protection, polyimide flexible film circuits, and touchscreen display glass. Here's more about it...



Source: Magic Wand Media

Smartphones, tablets, and phablets have made their way into every aspect of our lives and changed the way we work, bank, shop, learn, navigate, watch movies, or even take care of our health.

With technology advancing in leaps and bounds, any company wanting to take part in this industry requires two things: the ability to constantly bring out new features, and manufacturing processes that are ever more efficient and less expensive. These days lasers are already a key driver of innovation, for the latter in particular.

Camera protection on smartphones by using sapphire

Materials like sapphire, the second-hardest substance in the world, are ideal for use in devices that travel from hand to pocket several times a day, scraping against keys in the process. But the durability of sapphire is a double-edged sword as far as manufacturing is concerned.

Pradeep Patil, Managing Director, TRUMPF India Pvt Ltd, says, "For materials like sapphire, laser processing is pretty much the only viable option. With ultra-short pulses and using the highest

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Cutting by ultra pulsed lasers creates an intrinsic tension that causes the glass to break cleanly and exactly, to within a hundredth of a millimeter, along this fault line. The first machines able to cut glass in this way have already been built.

“For materials like sapphire, laser processing is pretty much the only viable option. With ultra-short pulses and using the highest possible pulse peak intensity, lasers can cut sapphire quickly and accurately. Light is also perhaps the only tool that has the potential to economically process the several hundred thousand units needed per day.”

Pradeep Patil
Managing Director
TRUMPF India Pvt Ltd



possible pulse peak intensity, lasers can cut sapphire quickly and accurately. Light is also perhaps the only tool that has the potential to economically process the several hundred thousand units needed per day.”

Polyimide flexible film circuits

With mobile devices being packed with more features and sub-assemblies, there is increasingly less space inside the mobile phone.

A Sateesh Kumar, Managing Director, Meera Laser Solutions Pvt Ltd, one of India's leading Laser integrators says, “One of the ways manufacturers are able to utilize space effectively is by using flexible film circuits made of polyimide, which can be shaped to space available inside the mobile device as these flexible polyimide films can be cut to the exact size and shape required. Lasers are perfect for this task, as they permit free forms, they do not suffer wear and tear, and exert no mechanical strain on the workpiece.”

Lasers for machining touch screen display glass

The touch screen is by far the most expensive component on a mobile device. The display as-

sembly alone accounts for about a quarter of total production costs, making it the best area to look for cost savings.

Patil says, “A display is made up of two glass sheets, each around 300 micrometers thick. Between them lie the transistors for controlling the pixels, the liquid crystals in the LCDs or the OLEDs, and one or two coated films for the touch screen functions. The glass used is constantly being made thinner and tougher, which makes it even harder to process. It's almost impossible to cleanly score and break this new glass. Etching is one viable alternative, but dry processes using lasers are always going to be easier and less troublesome. Ultra-short pulse lasers cut the glass in a cold process that does not cause thermal or mechanical stresses in the workpiece. As a bonus, the lasers produce smooth edges that have no micro-fissures and require no reworking.”

Ultra-short pulsed lasers for material modification inside the screen glass

A new technology that we could see emerging in the near future is ultra-short pulsed lasers to modify extremely narrow areas inside the



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A Sateesh Kumar
Managing Director
Meera Laser Solutions Pvt Ltd

glass along the 'cutting' line. Cutting by ultra pulsed lasers creates an intrinsic tension that causes the glass to break cleanly and exactly, to within a hundredth of a millimeter, along this fault line. The first machines able to cut glass in this way have already been built.


Patil says, "Not only does this new cutting technique give manufacturers the opportunity to dispense with expensive intermediate steps in today's industrial display screen manufacturing processes. It also allows the process to be reorganized. Because the laser cuts hardened glass quickly and without touch-up work, the future could see processing steps such as hardening, coating, and structuring being carried out at a greater scale on large panels. Lasers could then cut the large panel into smaller sections at the very end of the process."

Using lasers for flexible screens with OLED

Lasers are also the way forward for the screens

of the future. Flexible OLED screens are a dream come true for product designers and production engineers.

Sateesh says, "Flexible displays would make roll-to-roll manufacturing techniques a real possibility. They would simply be wound off and on, passing through various printing and coating machines as part of continuous processes before being cut into displays of all sizes by a laser beam in a final step."

Lasers are also currently being used for a host of applications for the mobile devices industry like marking QR codes and serial numbers on components, logos on smartphone cases, battery welding, etc. With mobile phone and mobile network technology exploding exponentially it is not going to be possible to make the devices of the future using technology from the past. The power of light is driving the production of mobile devices into the future. 

Tech Talks is a column by industry veteran and journalist Reji Varghese that talks about the latest advancements in Machine Tools, provides snippets from history, interesting facts, etc. about the Machine Tool industry.



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Heading Towards TECHNOLOGICAL PROGRESS & GROWTH

As India progresses toward becoming a global manufacturing powerhouse, IMTEX FORMING 2024 & Tooltech 2024 stands as a crucial platform for industry players, offering a glimpse into the future of manufacturing technology and fostering collaborations for sustained growth. Read on to learn the anticipation and contributions of domestic and international participants, highlighting their expectations and observations on India's manufacturing growth.



Source: Magic Wand Media

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Chief Copy Editor
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Robust demand, increasing investments, policy support, and competitive advantage are all factors that are expected to propel Manufacturing sector output in the next fiscal. As per data from the Government of India, manufacturing exports registered the highest-ever annual exports of US \$447 billion with around 6 percent growth during FY23, surpassing the US \$422 billion recorded in FY22. It is encouraging to see India's Manufacturing sector opening itself to new geographies and segments supported by growth in priority sectors. The various PLI schemes and initiatives like Digital India and Make in India are giving thrust to the electronics system and Manufacturing sector. All these positive developments are expected to yield results in 2024 and beyond and help the country's sustained economic growth.

IMTEX FORMING crucial at this juncture

With all these developments that put us as a nation in a highly coveted position, it is important to have a platform that can help showcase our strengths in manufacturing and leverage the other favorable factors for the sector to grow and contribute to our holistic progress. Indian Machine Tool Manufacturers' Association (IMTMA), through its upcoming IMTEX FORMING show, endeavors for such advancement. Rajendra S Rajamane, President, IMTMA, highlights the show's significance, "IMTEX FORMING attracts the entire metal forming machine tool fraternity from India and other parts of the world to offer various solutions to the huge domestic market in India and help them advance in their manufacturing activities." "Near net shape manufacturing is gaining prominence. Electric vehicles are increasingly being



"IMTEX FORMING attracts the entire metal forming machine tool fraternity from India and other parts of the world to offer various solutions to the huge domestic market in India and help them advance in their manufacturing activities."

RAJENDRA S RAJAMANE
President
IMTMA

considered as a viable alternative, and metal forming and welding manufacturers are seeing a better growth curve. Also, the incremental spending on the manufacture of new railway coaches is providing new avenues for sheet metal business. Furthermore, laser-cutting machines are gaining popularity across industry segments with laser-based solutions increasing by over 50 percent in comparison to its previous editions," he points out.

Jibak Dasgupta, Director General & CEO, IMTMA & Bangalore International Exhibition Centre, elaborates on the significance the trade fair holds for the partakers. "IMTEX FORMING 2024 promises to be bigger and better. It has grown by around 80 percent in size compared to its previous edition. It has many new segments to showcase for its visitors." The exhibition portfolio has enlarged with the entry of Wel-



"MSMEs have a significant presence in India's manufacturing industry landscape, and IMTMA has always supported Indian manufacturing and machine tool MSMEs by providing them an opportunity at the IMTEX platform and other exhibitions nationally and internationally."

JIBAK DASGUPTA
Director General & CEO, IMTMA
Bangalore International Exhibition Centre (BIEC)

dexpo as a concurrent show, alongside Tooltech and Digital Manufacturing. Messe Stuttgart is organizing Moldex India and Fastnex as co-located shows. The Indian Institute of Welding is organizing an international congress during the exhibition days. Technology enthusiasts will have a lot to uncover with exhibitors unveiling the latest fiber laser machines, precision levelers, pick and place units, servo presses, machine production monitoring systems, 3D printing solutions, etc. Also, die-forging hammer technology, waterjet cutting technology, compact drive technology, reverse engineering solutions, friction welders, CNC press brakes and shears, metal scrap recycling, thermal cutting solutions, fiber laser cutting, and numerous other technologies will be on offer for machine tool user industries to adopt in their production process.

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IMTEX FORMING 2024 promises to be bigger and better. It has grown by around 80 percent in size compared to its previous edition. It has many new segments to show-case for its visitors.



“The potential in a market with almost 1.4 billion people certainly attracts investors looking to expand into the Indian market, as well as to leverage opportunities with unique Indian manufacturing technology companies to expand business growth in other global markets.”

DOUG WOODS
President
AMT - The Association for Manufacturing Technology

Industry representatives can connect with academia at the i2 Academia Pavilion to glance at the technologies developed by students at the institutional level, also engineering students can seek career growth opportunities by participating in the CONNECT program and Quiz contest.

International participation
IMTEX FORMING has carved a niche for itself in the manufacturing arena. The trade fair holds significant potential, drawing interest from various countries and international trade associations, leading to their substantial participation. Japan Forming Machinery Association (JFMA), which is an industrial association for press-forming machinery, and Japan Machine Tool Builders' Association (JMTBA), which is an association of metal cutting machine tool builders from Japan have been regular participants in



“India has long been an important and large market for the German Machine Tool industry. IMTEX FORMING is an excellent platform for intensifying cooperation with the Indian industry and with our Indian customers, for selling machines and entering into cooperations.”

KLAUS-PETER KUHNMÜNCH
Manager General Affairs
German Machine Tool Builders' Association (VDW)

IMTEX exhibitions. Seven JFMA member companies and 8 local subsidiaries of JFMA member companies are exhibiting at the upcoming IMTEX FORMING. “India has the world’s largest population and a large proportion of young people. The market is expected to grow in the Automotive and other Consumer Products industries, and JFMA members are paying significant attention to India,” notes Shigeo Morimoto, Group Manager, Japan Forming Machinery Association. IMTMA has always participated in MF-TOKYO organized by JFMA in Japan. “We expect a great deal of promotion of each other’s industrial exhibitions. We also expect to promote the exchange of industrial machinery and production technology and the mutual understanding of the latest technological trends, which are important for the industrial circles of both countries,” he adds.

JMTBA, in this edition of IMTEX FORMING, is looking forward to fruitful encounters, shares Kazuo Yuhara, President, JMTBA. He acknowledges the fact that India is poised to develop as a manufacturing hub for the world. Indian Government’s ‘Make in India’ manufacturing promotion policy has significantly boosted this development, he adds. “High-quality capital investment is expected, including high-precision, high-productivity machine tools. At this year’s IMTEX, many types of equipment and machinery that can contribute to the growth of the Indian Manufacturing industry are being exhibited, and, we believe this will greatly contribute to uncovering latent demand for equipment,” he remarks. Several JMTBA member companies are also exhibiting at IMTEX FORMING. German Machine Tool Builders’ Association (VDW) has also been associated with IMTEX FORMING from the very beginning. According to Klaus-Peter KuhnMünch, Manager General Affairs, VDW, “The division of IMTEX into metal cutting and metal forming was a good decision by IMTMA. After all, it is in line with the global trend towards establishing more and more different trade fairs within the production technology sector and thus addressing even more targeted, qualified trade visitors. The expo has established itself as India’s leading trade fair for forming technology/sheet metal working.” “India has long been an important and large market for the German Machine Tool industry. IMTEX FORMING is an excellent platform for intensifying cooperation with the Indian industry and with our Indian customers, for selling machines and entering into cooperations. Against this background, VDW and Ger-

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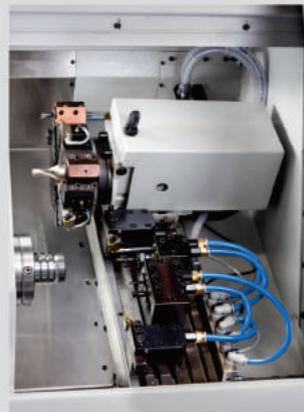


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IMTEX FORMING has received support from the Ministry of Micro, Small, and Medium Industries (MSME) under the Procurement and Market Support (PMS) Scheme encouraging their participation in the exhibition.



“India has the world’s largest population and a large proportion of young people. The market is expected to grow in the automotive and other consumer products industries, and JFMA members are paying significant attention to India.”

SHIGEO MORIMOTO
Group Manager
Japan Forming Machinery
Association (JFMA)

man exhibitors are looking forward to IMTEX FORMING 2024 and to the professional dialogue with both, existing and new customers,” he adds.

Doug Woods, President, AMT – The Association for Manufacturing Technology remarks that there is a strong desire to be at events like IMTEX FORMING to evaluate the latest advances in manufacturing production solutions, as well as to network and meet with industry leaders and peers to share ideas, learn about new techniques, and look for opportunities to partner or collaborate.

“Certainly, the sheer size of the Indian market and growth in related manufacturing technologies has created a lot of buzz in the marketplace and with interested investors looking to invest in the Indian market more directly. The potential in a market with almost 1.4 billion people certainly attracts investors looking to expand



“India is poised to develop as a manufacturing hub for the world. Indian Government’s ‘Make in India’ manufacturing promotion policy has significantly boosted this development. High-quality capital investment is expected, including high-precision, high-productivity machine tools.”

KAZUO YUHARA
President
Japan Machine Tool Builders’
Association (JMTBA)

into the Indian market, as well as to leverage opportunities with unique Indian manufacturing technology companies to expand business growth in other global markets,” he adds.

MSMEs deploying advanced technologies

Gradually, the Indian manufacturing landscape is changing with the deployment of technologies such as artificial intelligence, robotics, IoT, automation, etc, opines Rajamane. “There’s still a challenge to find the right resources with the requisite skill sets for MSMEs to deploy these in their manufacturing setups. Cost-effective solutions are necessary to put them in place. Indian industries, specifically MSMEs, can move to the next level of growth when these technologies are developed indigenously in India on a large scale, and with the Government’s push for these to develop domestically the overall industrial land-



“IMTEX FORMING & Tooltech 2024 is an excellent opportunity for Italian machine tool builders interested in increasing their activity in one of the most vibrant markets on the global stage. We hope to meet a lot of local users keen on ‘Made in Italy’ in the machine tool sector, as in previous editions.”

BARBARA COLOMBO
President
UCIMU-SISTEMI PER PRODURRE

scape would change in the next decade,” he observes.

MSMEs have a significant presence in India’s manufacturing industry landscape, and IMTMA has always supported Indian manufacturing and machine tool MSMEs by providing them an opportunity at the IMTEX platform and other exhibitions nationally and internationally. “Over time this has helped onward growth for MSMEs as many of them got acquainted with the domestic and international markets. The buyer-seller meets held during IMTEX serve as an ideal medium for the MSMEs to establish links with international buyers. IMTEX FORMING has received support from the Ministry of Micro, Small, and Medium Industries (MSME) under the Procurement and Market Support (PMS) Scheme encouraging their participation in the exhibition,” states Dasgupta. 

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MANUFACTURING MARVELS AT IMTEX FORMING

As the curtains rise on IMTEX FORMING 2024, exhibitors are buzzing with anticipation and enthusiasm to showcase their latest innovations. The event serves as a dynamic stage for industry leaders to present cutting-edge solutions, unveiling a spectrum of advancements that promise to redefine the landscape of manufacturing technology.



Source: Magic Wand Media

AMADA (India) Pvt Ltd

Hall & Stand: 5/B105



NIRAJ SETH
President
Amada (India) Pvt Ltd

“The exhibition helps us to reach new customers whom we have not contacted before. The platform also helps us showcase our new technologies and advancements to a large section of the industry in a short time which will improve our business prospects.”

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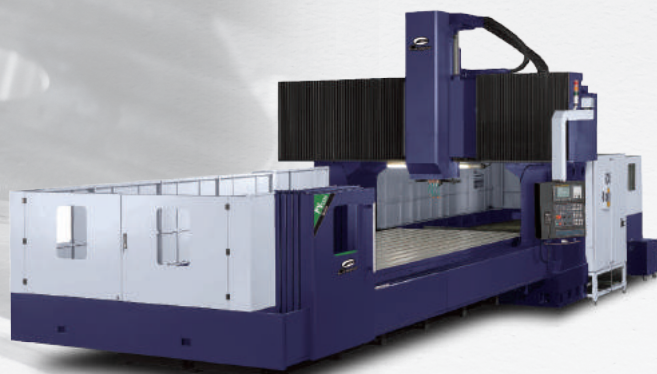
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AMPCO METAL India Pvt Ltd

Hall & Stand: 3A/126



TUSHAR PAWAR
National Head
AMPCO METAL India

“IMTEX FORMING is one of the most notable exhibitions in India. It's our platform to connect with everyone who matters including potential customers, industry leaders, and fellow innovators. One-stop shop to showcase our solutions and engage with the entire ecosystem. We are proud to be inventors of high-performance copper alloys. These alloys open possibilities for engineers working with challenging materials like stainless steel, titanium, Inconel, etc. At IMTEX FORMING, we get to demonstrate these solutions firsthand and find opportunities to partner with companies on new, challenging, and exciting applications.”

Batliboi Ltd

Hall & Stand: 4/A152



KABIR BHOGILAL
Executive Director
Batliboi Ltd

“IMTEX FORMING serves as a platform for us to showcase the technological advancements embedded in the machines we supply. It allows us to underscore the benefits of these advancements, particularly in terms of enhancing final output accuracy and productivity for the benefit of our customers. Moreover, the event enables us to emphasize to our customers the user-friendly nature of the machines and their ease of maintenance. We have proudly represented our principals in the Indian market for over two decades, providing efficient after-sales services supported by readily available spares.”

Chennai Metco Pvt Ltd

Hall & Stand: 3A/C116



C RENGANATHAN
Managing Director
Chennai Metco Pvt Ltd

“For companies like ours, IMTEX FORMING is a crucial driver of growth. This event provides a valuable platform for engaging with our existing customers, showcasing additional offerings, and fostering further sales. Additionally, it serves as an opportunity to connect with potential new customers who may not be currently in touch with us, allowing us to introduce our products for their upcoming projects.”

Davi Promau Srl

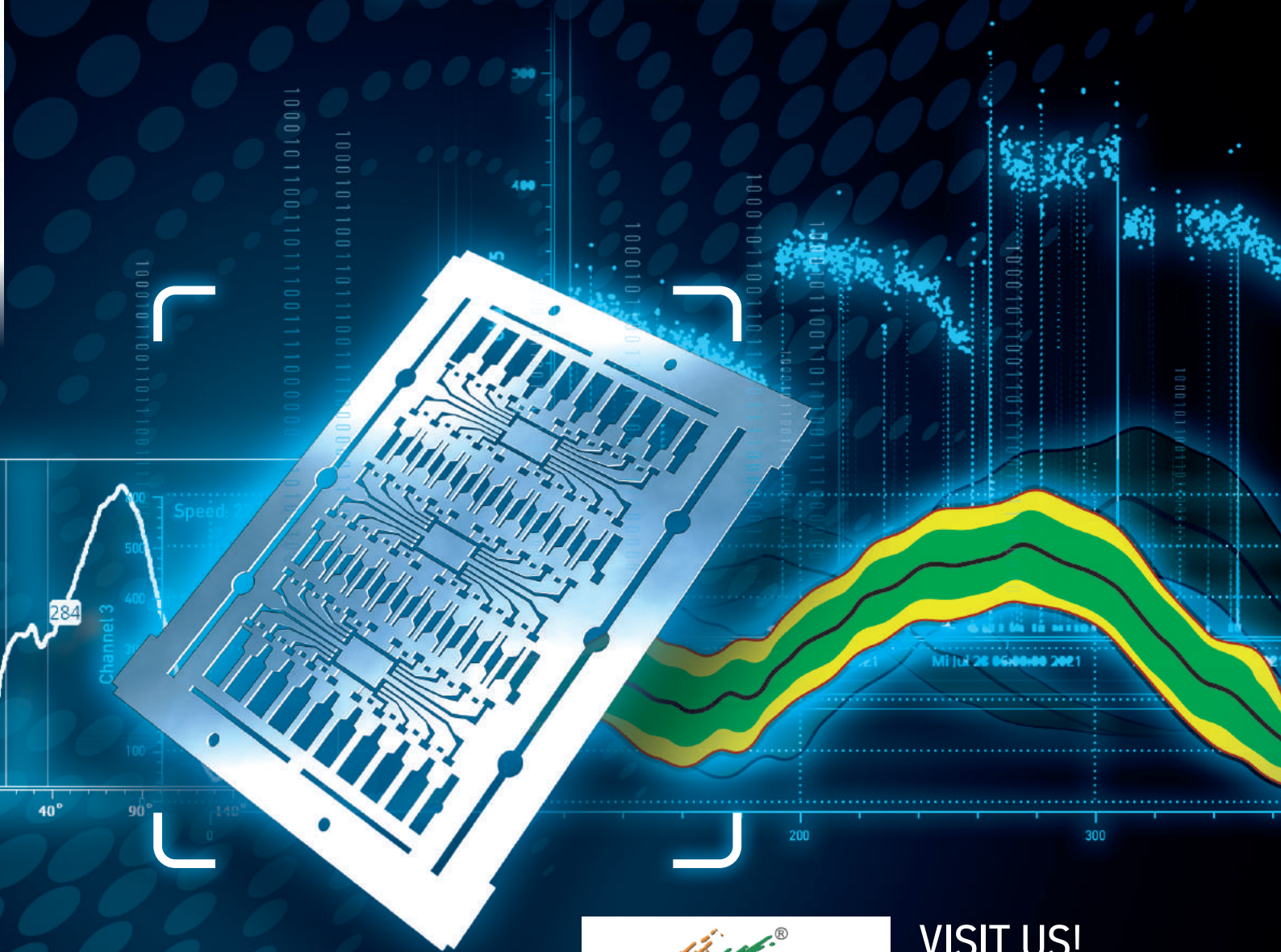
Hall & Stand: 4/A152



MARCO GUIDI
Area Manager India
Davi Promau Srl

“We are expecting to generate leads, especially in the mid and small-machine-size market, which is the most difficult to reach through our marketing campaign and local scouting. India has tons of small and mid who can afford to buy a Davi machine but not all of them are aware of us. For us, IMTEX will be a very important exhibition for lead generations and also to meet with our consolidated customers.”

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MARPOSS

ISGEC Heavy Engineering Ltd

Hall & Stand: 2A/B101



YOGESH SAXENA
Chief Executive – Machine Building
ISGEC Heavy Engineering Ltd

“IMTEX is the largest platform for both machine tools manufacturers and machine tools buyers in the sub-continental region. We are sure that during the current IMTEX FORMING show, we will be able to showcase and share the latest technological developments we have done after we participated in the last IMTEX. India, being an important and growing automotive market, is the center stage for various global OEMs that are looking forward to investing and expanding in the Indian market.”

Laser Technologies Pvt Ltd

Hall & Stand: 5/B102



RAKESH AGARWAL & PANKTI AGARWAL
Director
Laser Technologies Pvt Ltd

“Participation in IMTEX FORMING can contribute extensively to our business growth on multiple fronts. It's a powerhouse for networking, allowing us to forge strong connections with industry leaders and potential collaborators while showcasing our products to a targeted audience, thereby enhancing brand presence and establishing a robust foothold in the Indian industrial laser market. The event serves as a platform to demonstrate our latest laser solutions, attracting potential clients and competitors, generating interest, and fostering engagement. It's a valuable source of market insights and customer feedback, enabling us to refine our offerings and stay informed about market trends and preferences.”

Meiban Engineering Technologies Pvt Ltd

Hall & Stand: 4/B103



RISHI KAPOOR
Associate Vice President
Meiban Engineering Technologies Pvt Ltd

“IMTEX is one of the most important exhibitions for us. Hence, we ensure to participate in it every time. The expo has proven to be an ideal medium for us to showcase our new technologies to the maximum number of visitors all in one place. It has never failed the customer who comes to the trade fair with the expectation of witnessing new solutions and technologies that can enhance their productivity. The trade fair provides us with the best possible platform to meet our users and our prospective buyers and helps us penetrate new areas, geographically and industry-wise, which are untapped so far.”

Messer Cutting Systems India Pvt Ltd

Hall & Stand: 5/A110



MANI NARAYANAN
Managing Director
Messer Cutting Systems India Pvt Ltd

“Participating in IMTEX is instrumental to our business growth as it provides an unparalleled platform to showcase our cutting-edge technologies and innovations. The exposure gained at this premier industry event allows Messer Cutting Systems India to connect with a diverse audience of industry professionals, potential clients, and collaborators. Through engaging with visitors, we can demonstrate the capabilities of our advanced solutions.”



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RadCAM Technologies Pvt Ltd

Hall & Stand: 4/A107



SIDDHU JOLAD
Managing Director & Business Head
RadCAM Technologies Pvt Ltd

“ Meeting and connecting with prospects who aspire to grow is a key factor for the company to participate in the event. Participating in shows like IMTEX FORMING also helps to strengthen our relationships with existing customers. We believe that face-to-face communication is highly effective. Speaking directly to target customers who are actively looking to upgrade their setup helps mutual growth. Hence, we constantly keep bringing new product offerings for each IMTEX.”

Salvagnini Machinery India Pvt Ltd

Hall & Stand: 5/B101



PUNEET SHARMA
Director
Salvagnini Machinery India Pvt Ltd

“ Participating in IMTEX FORMING, which occurs every alternate year, is a strategic imperative for our business growth. This premier exhibition brings the finest technologies from around the world to India, creating a platform that is unparalleled in its ability to elevate our industry standing and foster innovation. Participating in IMTEX is not merely a showcase opportunity; it is a strategic investment in our growth. The exposure, networking, and insights gained from this esteemed exhibition contribute significantly to our business expansion, ensuring that we remain agile, innovative, and competitive in the dynamic market scenario.”

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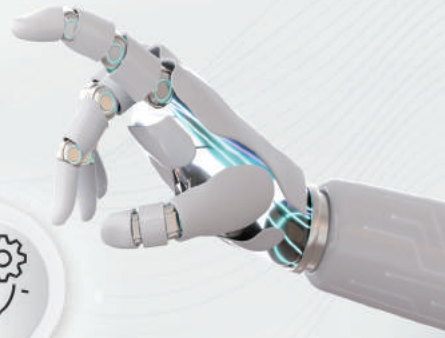


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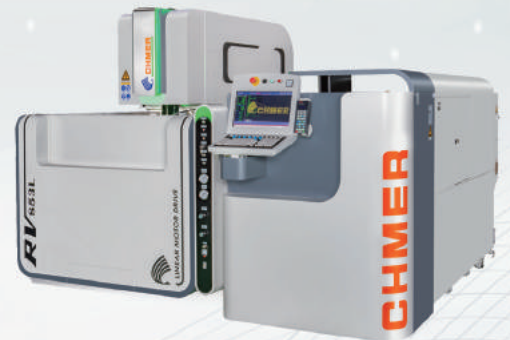
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DIVERSE ARRAY OF TECHNOLOGIES AT IMTEX FORMING

IMTEX FORMING, IMTMA's prominent trade show on machine tools, is set to showcase a diverse range of cutting-edge technologies and innovations. The event promises to be a platform where industry leaders and innovators converge to exhibit the latest advancements in machine tools.

MACHINE MONITORING SOLUTIONS

MARPOSS' MACHINE MONITORING SOLUTIONS FOR FORMING APPLICATIONS

Marposs has announced the availability of its data management software – C-THRU4.0 – designed to collect and process data from metal forming equipment such as stamping presses and coldforming machines equipped with Marposs Brankamp devices or T1 terminals. It enables a direct connection between a production-level process monitoring system or T1 terminal and production control with an overarching ERP system to deliver the machine, operating, order, maintenance, quality, and process data in real time to all departments of the company. The data collected can be used to reduce set-up and downtimes, optimize cycle times, increase machine utilization, and document and evaluate process data, all leading to enhanced productivity and profitability. The direct interconnection with process monitoring provides production planning with well-founded and detailed information that is not available to conventional production control systems. This interconnection supports automatization of workflows, automated report generation, identification of stop reasons, minimization of set-up times, and optimal planning of intervals for orders or maintenance. Production costs and quality are always transparent and traceable through the statistical recording and evaluation of performance indicators.

“Prior to this software we had to review data manually,” said Dinesh Shokeen, Product Specialist, Marposs Brankamp. “With C-THRU4.0, the machine monitoring information is available in real-time through the company network, providing a transparent connection between machine, process, and production.”

To initiate C-THRU4.0, data collected from the monitoring processes is coordinated with the customer's cost and resource information to provide a dashboard that meets the customer's needs. Any changes coming in from the customer side can be fed back to the forming machine. This interconnectivity and data flow support the move toward the Industrial Internet of Things (IIoT) and Industry 4.0.

Marposs offers a wide selection of real-time, in-process monitoring solutions that optimize standard, as well as very complex, production processes of metal forming machine tools.



PRECISION SAWS

HIGH-SPEED PRECISION SAW

Thin sectioning of specialized materials poses a challenge in material laboratories, particularly when minimizing surface disturbance is crucial. This is especially true for cutting high-hardness and fragile materials. For checking thin coating on the surface, careful wafering to study the section is a very important process. As the precision increases, there is a rising demand for sectioning with micron accuracy. There is also a new emerging need to make multiple cuts of different section thicknesses with micron accuracy.

Chennai Metco, in collaboration with IIT Madras, has developed a product to address these challenges, with over 50 units sold globally. The machine features a specialized high-precision spindle with variable speeds up to 5000 rpm, Z and Y axis automation with precision ball screws, and optional X axis automation. It includes an inbuilt coolant tank for regular coolants or neat oil, PLC-controlled automation with a touchpad HMI, and intuitive software for user-friendly operation.

The equipment incorporates an Intellified mechanism to automatically adjust the feed based on cutting resistance, and laser light aids in positioning the workpiece for precise alignment. Chennai Metco offers various work holding devices to accommodate different geometries and delicate components. This world-class equipment is an indispensable facility for research and quality control of specialized materials and surface-engineered components, meeting European safety norms with total enclosure.



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ALL ELECTRIC BALL SCREW PRESS BRAKES

MURATEC AC SERVO PRESS BRAKE BB4013

Muratec BB series AC Servo Press Brake realizes high productivity and high precision due to AC Servo Motor Technology. RAM Shaft drive enables high-speed movement at 100 mm/sec and a stable repeat-stop accuracy by adopting a ball screw drive mechanism by AC Servo motor and ball screw drive. This drive mechanism is superior in environmental performance as it is oil-less and comprises a reducer that reduces noise. The consistent repeat stop accuracy (repeatability) makes BB Series machines highly accurate. The machine comes in 2 different models: BB4013 and BB6020. The CNC is easy to see and easy to use due to the large size of the operation panel (22" wide display). It is equipped with a new UI, enhanced operator support function, and a newly developed MOS (Muratec Operating System). The operator support function has been enhanced, including an announcement and an indicator to notify the machine status. The newly developed Advanced Ram Acceleration Control (ARAC) technology has enhanced RAM's operational response, leading to a reduction in cycle time.

In addition to all these above functions, BB4013 comes with a high-rigidity offset frame which permits the back gauge to be used up to the full machine length, enabling step bend.

FIBER LASER CUTTING MACHINES

LASER TECHNOLOGIES' HIGH-POWER FIBER LASER CUTTING MACHINES

High-power fiber laser cutting machines offer several benefits over traditional laser cutting machines, including:

- **Faster cutting speeds:** High-power lasers can cut through thicker materials at faster speeds than traditional lasers. This can lead to significant productivity gains, especially for manufacturers who need to produce large quantities of parts.
- **Improved accuracy and precision:** High-power lasers can produce more accurate and precise cuts than traditional lasers. This is due to the fact that high-power lasers have a smaller beam diameter, which results in less heat-affected zone (HAZ). The HAZ is the area of material that is heated and weakened by the laser beam. A smaller HAZ means that the material is less likely to warp or distort during the cutting process, resulting in more accurate and precise parts.
- **Improved surface finish:** High-power lasers can produce a better surface finish than traditional lasers. This is because high power lasers can cut through materials with less heat, which results in less dross (the molten material that is expelled from the cut). Less dross means that the surface finish of the part is smoother and more consistent.
- **Reduced operating costs:** High-power laser cutting machines can help to reduce operating costs in a number of ways. First, they can cut through thicker materials at faster speeds, which can lead to reduced labor costs. Second, they can produce more accurate and precise parts, which can reduce the need for post-processing. Third, they can produce a better surface finish, which can reduce the need for painting or other finishing treatments.

Overall, high power fiber laser cutting machines offer several benefits that can help manufacturers to improve productivity, accuracy, and surface finish while reducing operating costs.

Here are some additional benefits of high-power fiber laser cutting machines:

- **Increased flexibility:** High-power lasers can cut a wider range of materials than traditional lasers. This includes metals, plastics, and composites.
- **Reduced environmental impact:** High-power lasers use less energy than traditional lasers. This can help to reduce the environmental impact of manufacturing operations.
- **Improved safety:** High-power lasers are less likely to cause eye injuries than traditional lasers. This is because they emit less infrared radiation.

Laser Technologies Pvt Ltd
www.lasertechnologies.co.in
Hall & Stall: 5/B-102



ADJUSTABLE MODE BEAM LASERS

IPG PHOTONICS' YLS-AMB

IPG Photonics' YLS-AMB Adjustable Mode Beam Lasers improve productivity in cutting, welding, and additive manufacturing by independent programmable adjustment of the beam mode to any combination of a small-spot high-intensity bright core or a larger ring-shaped beam. In welding, AMB lasers eliminate spatter, cracking, and porosity at the highest welding speeds unattainable by other methods.

YLS-AMB lasers deliver the highest total power with the widest range of beam mode parameters on the market, including single mode core and high peak power option, and are fitted with either direct output or integrated beam couplers and beam switches.

Benefits of AMB Lasers

Virtually eliminate spatter: Spatter-free welding minimizes contamination by molten metal

High-welding speed: AMB reduces spatter by 90 percent or more while increasing welding speed

Superior weld quality: Reduced spatter is an indication of high-quality welding.



Key features include direct output with a fixed process fiber, automatic switching between different optimal BPPs, the option for high peak power, easy process optimization and automation, a range of compact industrial cabinets, a cost-effective solution for complex tasks, wall plug efficiency up to 45 percent, and the highest total output power available in the market.

Direct output YLS-AMB lasers are fitted with fixed output processing fiber. Direct output YLS-AMB lasers provide on-the-fly beam mode adjustment without external free-space optics such as optical switches, zoom process heads and other peripherals.

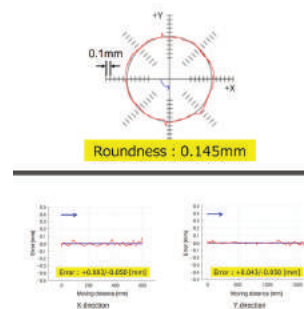
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<https://www.ipgphotonics.com/en/products/lasers/high-power-cw-fiber-lasers/1-micron/yls-amb>
 Hall & Stall: 4/B-110

ROBOTS

FANUC'S M-800IA/60

FANUC M-800iA/60 robot boasts a transformative power and features the groundbreaking iRCalibration Signature technology, tailored for sectors demanding unparalleled precision such as laser cutting, aerospace, dispensing, and material removal industries.

This cutting-edge solution seamlessly combines exceptional precision with production speed, owing to its highly rigid and robust construction. M-800iA/60 claims to excel in motion performance, especially in narrow corners, making it the prime choice for sectors where high-accuracy applications, such as 3D laser cutting, are imperative.



FANUC India Pvt Ltd
www.fanucindia.com
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PANEL BENDING SOLUTIONS

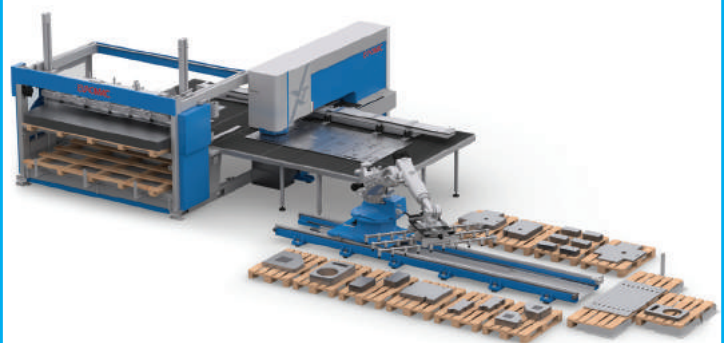
SALVAGNINI P2 PANEL BENDER

The Salvagnini P2 natively combines productivity, with its automatic bending and handling cycles, and flexibility, with its universal bending tools without machine downtime or manual re-tooling, allowing batch-one or kit productions.

The integrated adaptive technologies (advanced sensors, bending formula, MAC3.0) make the system intelligent and able to automatically adapt to changes in the material and the external environment, eliminating waste and corrections, and extending the range of products that can be made.

The technical solutions adopted (Direct Drive and pneumatic and electric actuators) allow the Salvagnini panel benders to respect both people and the environment without reducing their productivity. Salvagnini offers a range of panel bender models to suit different production needs. Additional features include energy monitoring, auxiliary bending tools, sequential cutting capabilities, and automated handling. The user-friendly interface and software simplify programming and enhance operational efficiency. The proprietary LINKS, STREAM, and OPS software establish communication between the system and the company departments involved in the production flow.

By integrating with a robot, the P2 enables the autonomous production of kits, batches, and single parts. Overall, the Salvagnini P2 panel bender offers advanced capabilities, customization options, and improved efficiency for sheet metal bending operations.



RadCAM Technologies Pvt Ltd
www.Radcamtechnologies.com
 Hall & Stall: 4/A-107

PUNCHING MACHINES

EUROMAC PUNCHING MACHINES

Euromac Punching Machines are dynamic and flexible and are ideal for superior manufacturing. They are versatile and high-performance solutions while being economical and user-friendly. In the company's patented hybrid technology, the hydraulic ram is controlled by a feedback control servomotor for greater power delivery at an increased accuracy and precision in repeatability.

Machines are equipped with flexible turret configurations so that one is not restricted to manufacturers' standard turret station sizes. Tool configurations with up to 102 tools capacity with rotation of up to 48 tools are possible.

Euromac XT Machines are equipped with 6 B stations with retractable dies, which makes them ideal for scratch-free sheet processing during forming operations. Their patented multi-tool technology can accommodate multiple A, B, or C station tools inside a single station, making them compact and reducing the tool changing time. The average power consumption is the industry's best 4.5 KW which brings down the running cost to a bare minimum. The Euromac Direct Drive system for tool rotation eliminates transmission components, featuring more precision, strength, and less wear. A robust casted C-frame is used in building the machinery. The open design of the frame makes it possible to process the sheet sizes twice the size of its throat depth. Machines have high processing speeds of up to 1,080 hits/min in nibbling and 2,000 hits/min in marking. Die clearances down to 0.10 mm allow one to punch extremely thin materials (0.6) including all auto indexed tool. A clamp opening capacity of 11 mm allows one to punch/process high-thickness soft metal like bus bars etc.

LASER CUTTING MACHINES

LCM 3015 FROM SINAR SHEETMETAL SOLUTIONS

Cutting-edge laser cutting machine LCM 3015 from Sinar Sheetmetal Solutions Pvt Ltd is designed for precision and speed. This series of laser cutting machines is designed using Fanuc/Eckelmann controller. This machine has a table size of 3100 x 1550 mm and comes with dual servo motors and an auto-focus cutting head.

Featuring a reliable fiber laser source, high-quality gearbox, and trusted LM rails, the company's machine ensures friction-free movement for detailed and consistent results. The fabricated bed provides rigidity, allowing rapid traverse and acceleration.

Efficiency is at the core, thanks to the Precitec laser head with auto focal positioning and most reliable Fanuc motors and CNCs, combined with an in-house built, user-friendly interface (HMI). The auto pallet changer ensures quick table changes in under 13 seconds.

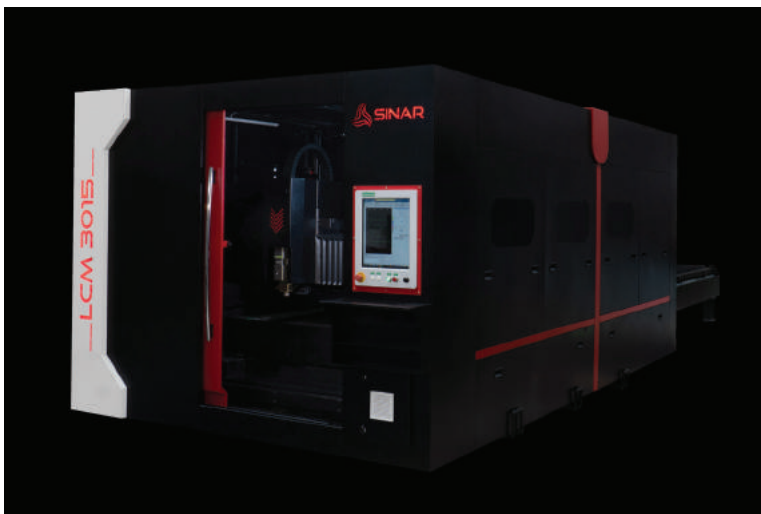
Perfect for makerspaces, fabrication shops, and manufacturers, this laser cutting machine can be connected and serviced from anywhere.

Sinar Sheetmetal Solutions Pvt Ltd, founded in 2019, has rapidly become a premier Indian company revolutionizing the Sheet Metal Manufacturing sector. Committed to innovation and customer satisfaction, it offers reliable, efficient, precise, and cost-effective cutting-edge machine tools.

The company's state-of-the-art facility delivers unparalleled products for diverse industries. Its range includes laser-cutting machines, bending machines, welding machines, robotic automation, and special purpose

machines, catering to the Automotive, Aerospace, Construction, Electronics, and Furniture Sectors.

Strategic partnerships with leading international companies provide access to the latest innovations, enabling us to offer competitive solutions at affordable prices. Sinar, with Micromatic Machine Tools, India's leading machine tools customer service and marketing solutions provider, delivers customers comprehensive and competitive solutions.



Sinar Sheetmetal Solutions Pvt Ltd
www.sinarsolution.com / www.acemicromatic.net
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LASER CUTTING HEADS

PROCUTTER 2.0 FROM PRECITEC

The ProCutter 2.0 laser cutting head is now compatible with 60 kW laser power, offering cutting capacity on even thicker materials.

The ProCutter 2.0 60 kW is equipped with advanced technologies to ensure performance. Featuring a parameterizable focusing system for automatic adjustment of the focal distance according to the thickness of the material to be cut, it guarantees precise, high-quality cutting, even on materials of varying thickness. Rework is reduced to a minimum.

The cutting head operates reliably and robustly at up to 60 kW laser power owing to its sophisticated cooling concept and optical path. If full laser power is not required, cutting speed can be increased by up to 25 percent compared with the predecessor product, thanks to the optimized design.

Precitec GmbH & Co. KG
www.precitec.com
 Hall & Stall: 4/C-104



HELPING CUSTOMERS EVOLVE

Established in 2003, Kennametal India Ltd, a subsidiary of Kennametal Inc., USA, has been making waves in the realm of tooling and wear-resistant solutions that empower industry players to enhance productivity and performance. With a rich history and unwavering commitment to serving its customers through its well-researched products, the Indian arm continues to redefine industry standards and shape the future of manufacturing.



Source: Kennametal India Ltd

Kennametal India Ltd, a subsidiary of Kennametal Inc., USA, is an industrial technology leader in tooling and wear-resistant solutions, serving over 9,500 customers in more than 100 countries across the Aerospace and Defence, Earthworks, Energy, General Engineering, and Transportation sectors.

The company's journey in India commenced in 1964 when WIDIA India Pvt Ltd was incorporated in Bengaluru with a strength of 30 employees and one shaping plant. Kennametal acquired WIDIA in 2003 and established Kennametal India Ltd. With over 80 years as an industrial technology leader, Kenna-

metal Inc. delivers productivity to customers through materials science, tooling, and wear-resistant solutions. Through its innovation strategy, the company improves customers' competitiveness through advanced technology to master the toughest of materials application demands. "Our competitive edge is fueled by world-class innovation capabilities delivered through about 500 global scientists and engineers, three global R&D centers – one being in India – and 22 engineering hubs, yielding over 1,800 patents and around 20 new product launches every year. These solutions find a plethora of applications that are helping customers im-

prove productivity and performance and delivering on Kennametal's vision of 'transforming how everyday life is built,'" shares Vijaykrishnan Venkatesan, Managing Director, Kennametal India Ltd.

Core business focus

Today, Kennametal India continues to be headquartered in Bengaluru with a state-of-the-art manufacturing facility and a strong sales and service footprint. Its product portfolio is broadly divided into Hard Metals and Machining Solutions Group segments.

The company's Hard Metals segment is dedicated to delivering world-class metalworking

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solutions and services through its two trusted brands: Kennametal and WIDIA. “Through these brands, we offer a complete portfolio of precision-engineered products and custom solution services. With an array of milling, turning, hole-making, threading, and tooling systems products, backed by a skilled network of authorized distributor partners and spares support, our customers can find everything they need from one single source,” he informs.

The segment also includes world-leading wear solutions, engineered components, and earth-cutting and construction tools that deliver productivity, reliability, and extended life to a wide range of industries in the harshest environments. “We help customers solve their biggest wear problems, avoid costly downtime, prevent catastrophic failures, and achieve significant savings,” adds Venkatesan.

Machining Solutions manufactures the WIDMA brand of special purpose machines (SPM), vertical turning lathes, deep hole drilling machines, tool and cutter grinding machines, fixtures, and tooling solutions for machining requirements, ranging from micro tools to large structural parts for the locomotive and general engineering industries.

This robust portfolio of Hard Metals and WIDMA metal-cutting CNC machines caters to its customers’ needs across industries, from Transportation to Aerospace and Defense, to Earthworks and Energy.

Solving machining challenges

Aerospace and Defense customers today demand advanced tooling solutions that ensure maximum metal removal rates, higher cutting speeds, and maximum flexibility while delivering excellent tool life. Address-



Source: Kennametal India Ltd

“With a focus on our strategic initiatives, we are poised to benefit from the recent industry trends. We have invested in enhancing our manufacturing prowess through modernization that will help us ride the wave in a growing market, besides delivering products to Kennametal regions across the globe.”

Vijaykrishnan Venkatesan
Managing Director
Kennametal India Ltd

ing this demand, Kennametal India stands out by providing top-performing aerospace tools tailored for machining CFRP, titanium, aluminum, hard alloys, and other materials. The company works closely with these customers to comprehend and resolve their specific machining challenges.

The HARVI Ultra 8X helical milling cutter is an ideal example of this commitment. HARVI Ultra 8X is designed to provide the highest level of productivity at the lowest possible cost per edge – removing up to 20 cubic inches of titanium per minute with a tool life of one hour or more. The flutes and the coolant nozzles assure maximum chip flow, thus removing a high quantity of material without chips getting jammed. The double-sided inserts facilitate lower cost per edge with the ability to increase speeds and feeds beyond what was previously possible.

“Innovation lies at the core of everything we do,” asserts Ven-

katesan, adding that it’s what drives the company to create solutions like KenGOLDTM, a next-generation multi-layer CVD coating that sets a new standard in wear resistance and productivity in steel turning.

Also worth mentioning in the field of metalworking tools and wear-resistant solutions is WIDMA’s VT850, Kennametal India’s first standard ‘plug and play’ Vertical Turning Lathe.

Ensuring facilities, sustainable initiatives

Kennametal India has a state-of-the-art manufacturing facility in Bengaluru, spread over a campus of 29 acre. “Our manufacturing setup is divided into nine production units that develop products, both for the domestic and international markets. It complies with necessary environmental norms and globally benchmarked Environmental, Social, and Governance (ESG) standards,” shares Venkatesan.

Revealing further, he says that Kennametal has made a significant investment to modernize its facilities globally, including opening an inserts manufacturing facility last year. “This facility deploys advanced technology and equipment that has enhanced value to our customers through improved quality, product performance, innovation, and delivery,” he adds.

Along with prioritizing modern and cutting-edge facilities, Kennametal is also deeply committed to sustainability and has integrated initiatives that align with environmentally conscious practices.

“When it comes to our products, sustainability is integral to our product lifecycle, and one of the areas where we have significantly progressed over the years is recycling. For example, globally in FY23, Kennametal’s end-of-life sintered carbide products

WIDMA’s VT850, Kennametal India’s first standard ‘plug and play’ Vertical Turning Lathe is built to machine large components. Its proprietary Conformal Clad™ Wear Resistant Coatings increase productivity by up to five times in the most demanding industrial process.

Kennametal's Knowledge Center (KKC) in India regularly organizes training sessions for customers covering a plethora of topics related to metalworking, such as the latest manufacturing, tooling developments and strategies; tool selection; machining parameters for different applications, etc.

and hard scrap carbide, on average, consist of 90 percent tungsten carbide, which is infinitely recyclable," he informs.

The company's sustainable practices stem from a robust ESG framework that is integral to every aspect of doing business. Kennametal Inc. released its third ESG Report for fiscal 2023. This report outlines its continued progress throughout the year in advancing its ESG strategies and Kennametal's commitment to accountability and transparency. Further, Kennametal India Ltd published its first Business Responsibility and Sustainability Reporting (BRSR) as a part of its Annual Report for FY23, highlighting its performance on the parameters that are most critical to its stakeholders.

Supporting skill development

With regard to Kennametal India's support skill development

and training in the metalworking industry, Venkatesan shares that Kennametal's Knowledge Center (KKC) in India regularly organizes training sessions for customers covering a plethora of topics related to metalworking, such as the latest manufacturing, tooling developments and strategies; tool selection; machining parameters for different applications, etc. "These interactive sessions see a lot of participation from individuals enthusiastic about knowledge sharing and upskilling themselves. These trainings are flexible to ensure a wider reach - conducted both within our campus as well as customer locations," he adds.

Company's growth and expansion plans

The Managing Director reveals the company's revenue in FY23 to be INR 10,771 million. This impressive financial achieve-

ment aligns seamlessly with the current economic landscape in India. "It is quite evident today that India is leading the curve among nations as the fastest growing economy with 7.2 percent GDP growth, driven by the Government's push on infrastructure development, increase in CAPEX, resilience in consumer sentiments and a boost to 'Atmanirbhar Bharat' (self-reliant economy) through PLI (Production Linked Incentives) schemes. The current fiscal also reflects a similar growth momentum in all the sectors we operate in," he remarks.

Kennametal India is poised to benefit from these trends with a focus on its strategic initiatives. The company's investment in enhancing its manufacturing prowess through modernization will help it ride the wave in a growing market, besides delivering products to Kennametal regions across the globe. 



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COMBINING EXPERTISE FOR MEDICAL INDUSTRY

Using new and modern manufacturing processes, a few prominent medical industry players together have tackled the challenges for economical machining of implants with multifunctional as well as non-round bionic designs. The focus was on the three manufacturing processes of eccentric turning, polygon turning, and high-speed whirl milling (turn whirl milling).



All procedures are in use under cutting conditions.

Modern medical implants for orthopedics, traumatology, and dental technology are characterized by rigorous demands on strength, biocompatibility, and bionic-optimized geometry. The geometry of an implant is adapted to the bone and tissue. In the process, the functional surfaces of the implants are given an increasingly sophisticated design to facilitate their attachment to the body and make them less invasive for the patient. The new designs of implants drive up manufacturing costs because the surfaces are no longer circular or square. They have more curved surfaces and functional elements with continuous transitions in a very small space. In particular, the need for several manufacturing steps on different machines causes costs to rise significantly. For ex-

ample, precise handling for the exact reclamping of a workpiece represents a considerable cost factor. Therefore, despite the high level of functional integration, an efficient process route is needed for economical production.

Novel processes

ZykloMed, a joint project funded by the Federal Ministry of Education and Research (BMBF), has the participating partners INDEX, Paul Horn GmbH, Beutter Präzisions-Komponenten GmbH, and the wbk Institute for Production Engineering at the Karlsruhe Institute of Technology (KIT) demonstrate their expertise in the medical industry. Using new and modern manufacturing processes, the partners have tackled the challenges for economical machining of implants

with multifunctional as well as non-round bionic designs. The focus was on the three manufacturing processes of eccentric turning, polygon turning, and high-speed whirl milling (turn whirl milling). The novel manufacturing processes of eccentric turning, polygon turning, and high-speed whirl milling (turn whirl milling) are all based on the same kinematic principle of multiple synchronized rotating axes. While this principle is well known, its application to non-circular and curved shapes is highly demanding. At the same time, the practical implementation must meet the high-quality requirements of the Medical industry. The project partners researched and developed novel manufacturing procedures along the entire process and supply chain, from

Source: NN Combined Engineering Agencies Pvt Ltd

the machines and control technology to the tool design to prototype and pre-series production. The manufacturing processes were simulated and designed based on known methods with the same mathematical principles in order to determine the requirements for the tool and machine. The tests were divided into equivalence tests under laboratory conditions as well as pre-series tests in laboratory and near-application environments. The engineers focused on both machine and tool technology for the development and design of the individual processes. In eccentric turning, a rotating non-circular tool is guided along a rotating workpiece under positional coupling. The speeds are brought into a certain ratio to each other. The out-of-round shape is thus reproduced on the component within certain limits. The process offers highly productive production of eccentric outer contours. The rotation of the tool reduces the thermal load at the cutting edge, which ensures long tool life. The process also enables the production of tapered profiles. Polygon turning is a process for producing non-circular external and internal contours with the shape of a hypotrochoid. Like rotary eccentric turning, the process offers the possibility of producing non-circular contours on



Polygon turning offers the possibility of producing non-round contours on lathes.



Source: HORV/Sauermann

Eccentric turning enables highly productive production of non-round external contours.

lathes. In the process, the parallel axes of the workpiece and the tool are offset from each other by an axial distance and are brought into a specific speed ratio under positional coupling. The axial distance, the speed ratio of the workpiece to the tool, and the cutting diameter of the inserts define the dimension of the contour. A tool system for polygon turning is individually adapted to the contour of the workpiece to be produced. High-speed whirl milling (turn whirl milling) is a highly productive process for producing threads for bone screws. One or two circular milling cutters are set at a



High-speed whirl milling (turn whirl milling) is a highly productive process for manufacturing bone screw threads.

certain angle to the workpiece. The directions of rotation of the cutters and the workpiece can be the same or opposite. The speed ratio of the workpiece to the two cutters depends on the number of threads and the number of cutter inserts. For the first time, high-speed whirl milling (turn whirl milling) can also be used to economically produce threads with a true variable pitch by dynamically changing the thread profile.

Tests close to series production successful

With successful tests in a near-series production environment, the partners of the ZyloMed project have come a big step closer to the goal of the research project, the economic production of implants of multifunctional and non-round bionic design. The engineers proved that the synchronized manufacturing processes enable the economic production of modern implants. In addition to the production of new component geometries, the processes also offer optimization potential for the economic production of existing implants, as well as possible applications beyond the Medical industry.

In addition to the production of new component geometries, the processes also offer optimization potential for the economic production of existing implants, as well as possible applications beyond the Medical industry.



Source: HORV/Sauermann

R-L: The project participants at the final presentation of the BMBF joint project. Dr-Ing Volker Sellmeier, INDEX-Werke GmbH & Co KG Hahn & Tessky; Andreas Kanz, Paul Horn GmbH; Dr-Ing Wolf-Dieter Kiessling, BEUTTER Präzisions-Komponenten GmbH & Co.KG and Tassilo Arndt, Institute for Production Engineering at the Karlsruhe Institute of Technology (KIT).

INNOVATIONS FOR THE AIR

An interesting read on how Plant-8, Aerospace Division, Godrej & Boyce Mfg. Co. Ltd, increased its production rate of a critical defence system, the challenges encountered in the process, and the innovative solutions that emerged through them.



Source: Godrej & Boyce Mfg. Co. Ltd

Plant-8, Aerospace Division of Godrej & Boyce Mfg. Co. Ltd was faced with an urgent need from a customer that required ramping up of production of one of the critical systems for the defence of the country as the border tensions escalated. The requirement was to produce at double or triple the speed as soon as possible.

Key concerns

If the production had not been ramped up, the team at Plant-8 would not have been able to supply enough weapon systems to secure the border fully. This would have made the nation insecure to that extent and affected the morale of the forces. The other option of importing would have been very costly and time-consuming, apart from the risk of sabotage during transportation from overseas.

The challenges faced while executing the project were:

- The rate of production could have been increased by capacity expansion, but that would have required importing machinery,

which required time in months.

- The rate of production could have been increased by recruiting additional manpower, but that would have required training them on niche skills in assembly and testing, so again it would have required time in months.
- While the ramp-up of assembly and testing activities was started with productivity improvement efforts, it required components to be available in increased quantities. Outsourcing component machining to new suppliers was a challenge due to their technical understanding of the requirements.

Solution generation, innovation, and complexity Re-designing of manufacturing system:

The final deliverable consists of 35,000 manufacturing and QC operations to make 2,900 types of parts and sub-assemblies and to integrate them into final assembly. The team approached the problem with industrial engineering tools like

Value Stream Mapping, Layout Optimization, and Virtual Line Balancing (since a physical Line Set-up was not a possibility being a brown-field project under pressure of ramp-up).

The team was operating with a Process-oriented Layout where one type of manufacturing process e.g. machining or welding was centralized in one area of the shop floor. They changed it to a Product-oriented Layout where different processes required for a certain sub-assembly were brought together to form Work Centers. These Work Centers work in parallel at a balanced speed of output to match the takt (required output rate) at the end of the (virtual) Line.

Leveraging the takt-based repetitive manufacturing set-up:

As the team switched to a Product-oriented Layout as above, it gave the people the opportunity to get on a quick learning curve since they were now doing the same work repetitively every day. That brought in consistency and speed

PANCHAL DEEPAK C
AGM & Plant 8 Head
Plant-8,
Aerospace Division
Godrej & Boyce Mfg.
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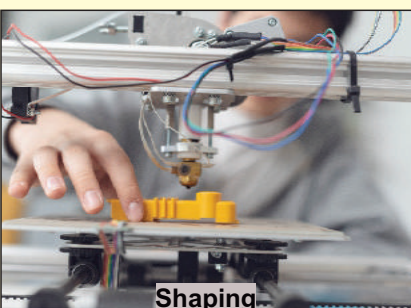
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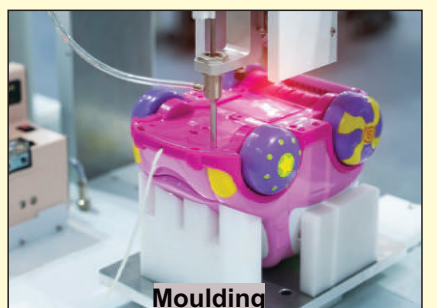
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As the team tripled the rate of production (reaching 2.5 times by March 23, with a target of 3 times by March 24), they only increased manpower by 1.8 times (with no additional plans until Mar-24) and augmented capital by a modest 30 percent.

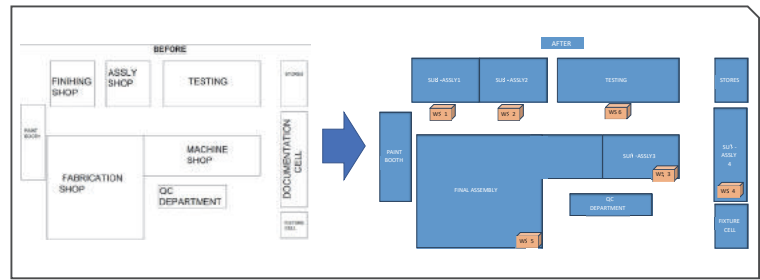
in their output. It also allowed the team to perform time study in a focused way to consult their Japanese consultants and to reduce the process cycle time.

The operators could do better Kaizens in their respective tasks, contributing to productivity improvement in a big way. The Work Center In-charges developed an entrepreneurial attitude as they saw themselves accountable for the delivery of products at a targeted speed. They started creating a pull in the system, and the ownership of the quality of the deliverables increased as it would be visible if any stoppages happened in the (virtual) Line due to the unavailability of supply from previous Work Centers.

Rolling the juggernaut in a virtuous circle:

The team then focused inside the Work Centers. Respective Work Centers In-charges developed their own VSMs, and identified bottlenecks that were deciding the throughput from their Work Centers. Focused Kaizens were ideated and implemented, like low-cost automation of set-up of long shells from horizontal position to vertical position, etc. Manufacturing processes were reviewed and modified, like changing over from welded sub-assemblies to fully-machined sub-assemblies to reduce quality issues, inspection requirements, and material movement.

Then the micro-level study of workstations was taken up, us-



ing IIoT to monitor True Value Added (VA) time e.g. Spindle Run Time in machining, Arcing Time in welding, etc. That gave huge insights and a positive pressure on the operators as they realized the amount of NVA present in their working methods. That made them vigilant and True Capacity Utilization started improving.

The above step-by-step drill-down improved productivity multi-fold, and as the speed of production was seen improving, the team got the motivation to improve further, thus putting the juggernaut in motion in a virtuous circle.

Implementation

A CFT comprising of representatives from Engineering, Purchase, Production, Safety, Quality Control, and HR was formed with specific tasks in respective areas aligned to the overall goal of delivering 6 systems per month.

Re-thinking on policies and business processes:

The main challenge was to simplify the processes both in offices and shop floor for the people to deliver faster on their respective tasks. Purchase needed more authority

to negotiate by giving an incentive to willing suppliers. The engineering needed advanced software to simulate and re-model the processes. The production team needed a more visible recognition of incremental improvements/ Kaizens. All of these were thought across and new norms and policies were introduced, thus making it possible to meet the timelines.

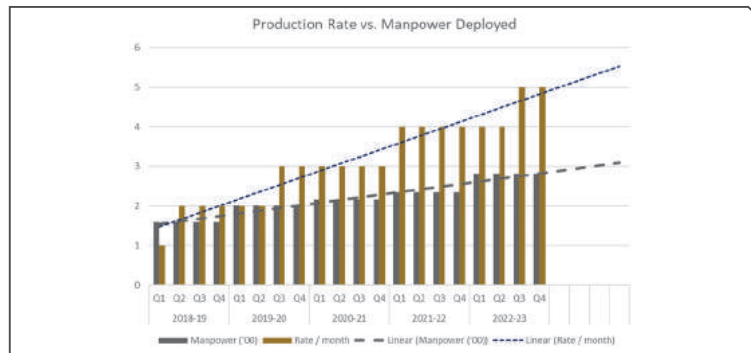
Protecting the environment even as the production was increased:

This business runs with the raw materials provided as free issue material by the customer, due to the specialized quality requirements. In the COVID period, the supply was affected. The team generated ideas to save material through two approaches:

- Value Engineering efforts involved modifying input material conditions and weights, such as considering near-shape forging instead of solid cylinders.
- Recycling scrap, a substantial amount (up to 80% in the Aerospace industry), by sending it to the smelters. Both initiatives were in line with the environmentally conscious philosophy embraced wholeheartedly by the company.

Results and impact

As the team tripled the rate of production (reaching 2.5 times by Mar-23, with a target of 3 times by Mar-24), they only increased manpower by 1.8 times (with no additional plans until Mar-24) and augmented capital by a modest 30 percent.





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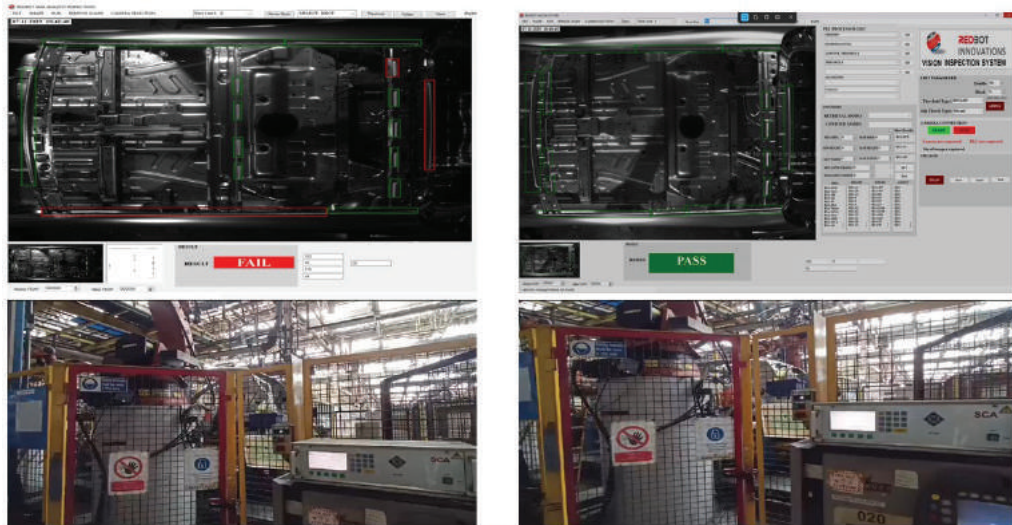


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ENHANCING PRODUCTIVITY

The team at Tata Motors Passenger Vehicles had to resort to initiatives to achieve a significant reduction in losses and the targeted production volume for the Nexon, which, in turn, helped the company improve supplies and meet demand.

Sealant Inspection loss Elimination



Robust L3 control for Sealant Inspection process implementation

Source: Tata Motors Passenger Vehicles Ltd

Nexon is the first compact crossover SUV from Tata that was first displayed as a prototype in 2014 at the Auto Expo before being launched in 2017. It proved to be a masterstroke and a breath of fresh air capturing the hearts and minds of the public at large. The Tata Nexon entered a market segment that was highly competitive and could even be said to be saturated today. Yet, it found its way to becoming a bestseller. Its sales figures have risen year on year with the pandemic proving to be just a blip on the radar. Tata simply changed the rules of the game by making safety an imperative. The Tata Nexon became the first Indian vehicle to score a perfect five stars in the GNCAP test, establishing a new benchmark for the automotive market. Suddenly, just like price and fuel efficiency, the emergence of safety norms had the Indian public ask-

ing questions related to it. Safety became the new buzzword, and Tata cars were ahead of the competition, giving the Nexon the boost to become one of India's top-selling vehicles.

The increasing customer demand, multiplying significantly each month, placed immense strain on the old facility, resulting in substantial breakdown losses attributed to machine health issues.

Since the shelf life of various equipment had expired, Tata Motors faced a myriad of challenges such as deterioration of the health of equipment, breakdown of outdated technology and no upgradation, unavailability of spares, frequent downtime for quality adjustment, increased cycle time due to the condition of the equipment, non-adherence to preventive maintenance, and difficulty in getting a line for maintenance activities.

These issues led to the risk of losing potential customers in the market.

To resolve the above challenges and ramp up production from 500/day to 650/day, a cross-functional team, comprising all the departments, was formed and Project Pheonix was launched to timely achieve the target.

The team used a data-based approach for loss analysis and based on the losses, theme-based initiatives were rolled out with each CFT member leading one initiative.

Taking charge of the losses

The team could significantly make improvements in machine health, reduce various losses, and adopt new technologies by resorting to loss analysis, innovation, digitization, effective project management, learning initiatives, and horizontal deployment implementation. This

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Quality Loss -Weld Spot Integrity Improvement

- 1 Conversion of FTS weld gun to MFDC gun → 15 Nos
- 2 Arm play elimination → 67 Nos
- 3 Tip alignment → 92 Nos
- 4 Current & Force calibration → 167 Nos
- 5 Tip dresser upgradation → 86 Nos
- 6 Water flow improvement by Activation of Chiller unit → 2 Nos
- 7 Transformer megger checking → 190 Nos
- 8 Weld gun Pneumatic & Water hose replacement → 47 Nos

Spot quality Improvement → 68% to 91%

helped them to move from a quality-by-inspection approach to a built-in-quality model.

Loss Analysis: Data-driven approach was used to identify various losses prominently observed through HPC (Hourly Production Chart) and separate teams were identified to lead different losses. The identified losses include breakdown loss, measured by MTBF (mean time before failure) and MTTR (mean time to recovery, repair, respond, or resolve); motion loss, associated with logistics; speed loss, associated with cycle time; quality loss, pertaining to sealant inspection; and set-up and fixed loss, involving tip change and dresser cleaning. Additionally, minor stoppages loss was identified and categorized as PPS.

Breakdown Loss: Breakdown analysis was conducted based on different phenomena and 15 activities were implemented along with Horizontal deployment (HD) implementation, resulting in total time invested time of 4,520 hours.

Quality Loss Elimination: Dressing-related losses to achieve spot integrity were reduced through technology upgradation, design modification, and life cycle enhancement.

Set-up Loss: Tip change, which is a fixed loss, was reduced through cross-learning from other plants where different material composition tips were used to improve both dressing frequency as well as tip change frequency. Tip changing frequency almost doubled to ensure that the lines are run smoothly in a rhythmic way without interventions for a long time. New Technology adoptions like 3 blade cutters were implemented to improve the life of tip as well as cutter.

Inspection Loss Reduction: AI-based digital solutions were implemented where camera-based detection was installed to eliminate frequent human interventions for sealant checks which additionally helped to instill built-in quality in the product. These cameras check ideal sealant ap-

plication with actual sealant applied. Any small deviation is captured and robots are automatically stopped which improves the robustness of the process too.

Rework Reduction Loss: To eliminate rework loss due to wrong/missing parts, more than 100 sensor-based pokayokes were installed to ensure product quality the first time right which helped improve DIFTR (Do it first time right), causing heavy dip in the rework and associated manpower for the same.

Speed Loss Reduction: Parameter optimization, unwanted movement elimination, and balancing the work content of robots in the cells were used as levers to bring down the cycle time to the required takt time.

Reduction of Minor Stoppage Loss: Despite being the most neglected loss, it has a high impact due to its cumulative damage from repeated occurrences. Based on the top 5 high-occurrence losses from each cell through Hourly Production Chart (HPC) analysis, actions were taken through localized improvements and effective targeted preventive maintenance (PM) activities to address this issue.

All these improvements at the point level, line level, and cube level (Entire Shop) helped to get benefits for all the cells together. With a strong and rigid approach for converting quality by inspection to quality by innovation, the team could avoid many quality-related downtimes which resulted in improved quality matrices of the shop.

The team could significantly make improvements in machine health, reduce various losses, and adopt new technologies by resorting to loss analysis, innovation, digitization, effective project management, learning initiatives, and horizontal deployment implementation.

Tangible benefits

With all these initiatives, substantial improvement of more than 30 percent loss reduction was observed which helped to achieve the targeted production volume of the Nexon, which, in turn, helped better supplies and meet demand.



New Technology Adoption – Installation 3 blade of Sinterleghe tip dresser

Type / Make →	1 Blade / Obara	3 Blade / Sinterleghe	Single Blade Cutter Chip (80 Microns in 1 Sec)	3 Blade Cutter Chips (37 micron in 1 Sec)
Shop Used:				
Cutter Cost: (INR)	11.5K	30K (260% ↑)		
Cutter Cost / Cycle:	1.15 INR	0.5 INR (230% ↓)		
Life of Cutter:	10k Cycles	60k Cycles		
Cutter Change Freq.:	3 Months	1 Year		
Copper removal / Cycle:	80 Micron	37 Micron		
Tip Angle:	90 Deg.	120 Deg.		
Cleaning Effectiveness:	Low	High		

Tip Angle Comparison

ADDING VALUE TO LASER CUTTING ASSEMBLY

To improve the productivity and capacity of its laser cutting assembly, SLTL Group undertook a strategic project that put forth several challenges to be addressed with unique solutions.



Source: SLTL Group

S LTL Group, a dynamic and innovation-driven conglomerate with expertise in industrial laser, diamond and jewelry processing, medical devices, RF and microwave, and renewable energy, undertook a strategic project to improve the productivity and capacity of its laser cutting assembly. Originally planned for a capacity of 15 machines per month, the assembly shop faced challenges due to increased customer demand, necessitating a systematic approach to enhance efficiency and ensure on-time deliveries.

Trigger for the project

The decision to embark on this

project was triggered by the significant growth projected in the global market for laser cutting machines. According to Future Market Insights (FMI), the market was anticipated to grow at a CAGR of 5.8 percent, reaching a valuation of US \$5,974.1 million by 2032. SLTL experienced a surge in demand, reaching up to one machine per day, showcasing the need to optimize the assembly shop's capacity to meet market demands promptly.

Challenges and solution generation

The project identified challenges across the 4Ms – Man, Method, Material, and Machine/

Equipment/Tools. Skilled manpower attrition, assembly sequencing issues, material shortages, and inefficient material handling were key obstacles.

The solution involved a multi-faceted approach:

Man (Skill Development): A comprehensive skill development program was initiated, focusing on training new associates for different assembly stages. A skill matrix was implemented to increase flexibility, and a visual API (Assembly Process Instruction) was introduced to enhance transparency and train new manpower effectively.

Method (Assembly Sequencing): Detailed assembly process stud-

MAULIK PATEL
Executive Director
SLTL Group



ies were conducted, leading to the identification of optimized assembly sequences. Sub-assemblies were created, and off-station assembly was implemented to reduce occupancy time and material movement, resulting in improved efficiency.

Material (Leveling): Strategies for leveling production were employed, including the realization of multiple planning concepts and capacity reserves. This approach aimed to manage fluctuations in customer demand, ensuring a smoother production flow.

Machine/Equipment/Tools/Material Handling Trolley: The project introduced specific trolleys for material handling, re-designed assembly processes, and implemented power tools to enhance efficiency and reduce assembly time.

Results and impact

The impact of the project was measured through various key performance indicators (KPIs):

Station Throughput Time: Improved by 56 percent, signifying a significant improvement in the efficiency of the assembly process.

On-time Delivery: Increased from 60 percent to an impressive 85 percent, demonstrating the project's success in meeting customer delivery requirements promptly.

Rework Hours: Decreased by 53 percent per machine, indicating enhanced quality and reduced rework.

Manpower Overtime: Reduced from 83 to 43 hours per machine, highlighting improved efficiency and reduced strain on manpower.

Business sustainability and future focus

To ensure the sustainability of the implemented solutions, the project initiatives have been incorporated into SLTL's Quality Management

System (QMS) and Enterprise Resource Planning (ERP) system. Milestones in the ERP system track the progress of each operation, contributing to data accuracy and transparency. The company is committed to continuous monitoring and improvement, ensuring that the benefits of the project are sustained over the long term.

Resource impact and sustainability

The project had a positive impact on resource usage and sustainability:

Waste Reduction: Significant reductions were observed in plastic, paper cardboard, and wooden scrap waste, demonstrating a commitment to environmentally friendly practices.

ERP Integration: The incorporation of project initiatives into the ERP system ensures ongoing visibility and management of key milestones, contributing to the sustainability of the improvements.

Business metrics

Key business metrics exhibited substantial improvements:

Sales Volumes: Monthly dispatch increased by 60 percent for laser cutting machines, showcasing the positive impact of the project on production and market demand.

Customer Satisfaction Score: Improved across categories such as machine performance, quality, and consistency. Customer reviews reflected a significant increase in satisfaction levels.

Scope for horizontal deployment


The success of the project has paved the way for horizontal deployment across other value streams within SLTL Group. The concepts of block assembly, sub-assembly, and leveling will be applied to laser marking and laser welding value streams. Furthermore, these successful

concepts will be deployed in part production at the fabrication and CNC units, extending the positive impact and efficiency gains across various facets of the company.

Conclusion

SLTL Group's laser cutting assembly improvement project stands as a testament to the company's commitment to innovation, efficiency, and customer satisfaction. By systematically addressing challenges and implementing innovative solutions, SLTL not only improved its assembly processes but also set the stage for broader organizational enhancements. The project's success underscores the importance of continuous improvement and adaptability in the face of evolving market demands. As SLTL looks towards the future, the lessons learned from this project will undoubtedly shape its approach to operational excellence and sustainable business practices.

Creating a level playing field

Aiming to protect domestic industries from cheap Chinese imports, the Ministry of Finance has approved Import Dumping duties on industrial laser machines following an investigation by the Ministry of Heavy Industries and the Directorate General of Trade Remedies. This move aligns with the Make-in-India initiative, fostering self-reliance and fair competition for advances in R&D, academia, and laser applications. SLTL Group, a supporter of Make-in-India, welcomes the decision, expecting a 30 percent price increase in Chinese machines. The initiative aims to create a level playing field, encouraging Indian manufacturers to prioritize quality and market needs. The Government's comprehensive strategy supports economic growth, innovation, and global competitiveness. 

To ensure the sustainability of the implemented solutions, the project initiatives have been incorporated into SLTL's QMS and ERP system. Milestones in the ERP system track the progress of each operation, contributing to data accuracy and transparency.

FOR MANUFACTURING COMPETITIVE PRODUCTS

Product Lifecycle Management (PLM) has come a long way from being utilized as a repository for the CAD data authored in Mechanical CAD tools to managing the critical process areas for new product development (NPD).



Source: Magic Wand Media

New Product Development (NPD) process typically captures the journey of a product from ideation to retirement with multiple milestones along the journey, providing input and feedback to the corresponding milestones and business gates. The NPD journey starts with ideation, concept, design, development, prototype, validation, production, sales, service & warranty, and product retirement.

The present-day PLM

The present-day PLM predominantly addresses engineering aspects like product definition, product configurations, classification, Bill of Material (BOM) management, and change management of NPD process. It extends its reach to upstream and downstream areas, including requirements, manu-

facturing, quality, project management, and supplier management. The critical elements of product data from Mechanical Design perspective and PLM's ability to incorporate Mechanical CAD authoring tools have undergone significant evolution and maturation. The transfer of CADBOM from CAD authoring tools to PLM, coupled with the concurrent generation of the corresponding Engineering BOM (EBOM), establishes EBOM as the primary BOM within PLM. Other BOMs like Purchase BOM (PBOM), Manufacturing BOM (MBOM), Plant specific BOM, Service BOM (SBOM) can be derivatives of EBOM.

The evolution for Electrical and Electronics (E&E) data that needs to be managed in PLM has begun, wherein the E&E data related to EBOM is transferred to PLM and utilized for collaboration with oth-

er streams and stakeholders (for example, design reviews, clash detection, etc.).

The present-day PLM enables concurrent engineering by providing a platform for collaboration of stakeholders, integration of systems among disciplines like design, engineering, manufacturing suppliers, etc. with an objective to enhance product quality and streamline the business process. This enables processes to run in parallel, thereby improving efficiency, productivity, and reducing time-to-market for products.

The future of PLM

With a radical shift in consumer behavior, products too have evolved into 'software-defined connected products'. They are complex (a combination of mechanical, electrical & electronics, and software) and connected

SUNDARAM SHANMUGA
PLM COE Lead
Tata Technologies



(through Internet of Things [IoT]). They transmit product and user data to the cloud through 5G technologies and have a high volume of software, enabling updates over-the-air (OTA). For example, premium vehicles contain 150 million lines of software code, distributed among as many as 100 electronic control units (ECUs) and an array of sensors, cameras, radar, and light detection and ranging (lidar) devices.

“Once software was a part of the car. Now, software determines the value of a car,” notes Manfred Broy, emeritus professor of informatics at Technical University, Munich, and a leading expert on software in automobiles.

When businesses embark on a journey to create high-performing, software-defined connected products, they need to make sure that they have the pre-requisite foundation and framework that can bring process, systems, and data together and leverage Artificial intelligence (AI) for trends and analysis, predictive maintenance, etc., hosting enterprise-wide applications on cloud and connecting products through IoT, Augmented Reality and Virtual Reality for enhanced customer experience.


Businesses that aspire to manufacture competitive products now and also in the future with shorter time-to-market, thereby increasing margins, should consider the following aspects for next generation PLM solutions:

- Manufacturing ‘software-defined connected products’ that are sustainable should have an enterprise wide framework, whereby connected products are a natural outcome of efficient processes, integrated application(s) with which, data is seamlessly traced and consumed, and collaborations among people on topics like design reviews, quality improvements, cost optimizations happen with zero or limited effort.

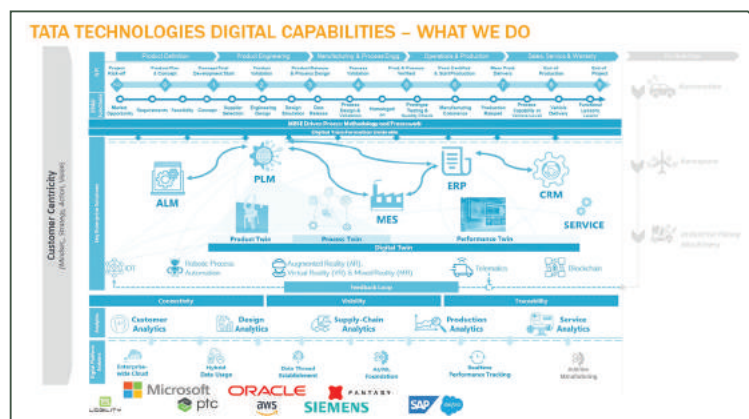
- The ultimate objective for companies is to create a seamless NPD process with enterprise wide foundation or framework, which would have an integration between ALM-PLM-ERP-MES-CRM. This ecosystem will enable single source of truth for the product & traceability from Requirements Bill of Material (Requirements BOM) to CAD-BOM to Engineering BOM (EBOM) to Purchase BOM (PBOM) to Manufacturing BOM (MBOM) to Plant Specific BOM to Service BOM (SBOM) etc (Requirements BOM-CAD-BOM-EBOM-PBOM-MBOM-Plant BOM-SBOM)
- With global economies aligning towards achieving climate neutrality by 2050, businesses worldwide are compelled to shift towards sustainable products. This underscores the imperative for adopting next-generation Product Lifecycle Management (PLM) as a crucial strategy for businesses to thrive and endure. The integration of carbon calculators with PLM equips designers in the early stages of New Product Development (NPD) to make informed choices regarding materials, manufacturing processes, and more, facilitating the creation of sustainable products with reduced carbon emissions.

- Deploying enterprise-wide applications on the cloud facilitates seamless access for both internal and external stakeholders, partners, and vendors through web browsers. This reduces costs associated with maintaining on-premise hosted applications.
- Creating a strong foundation, which will enable digital twin (a digital representation in sync with the physical product) in its truest sense. This makes concepts such as enterprise change management and traceability across the entire new product development etc., become a reality.
- Establishing a single source of truth for the product(s) so that the product data is authored by a business unit within one application and utilized by other stakeholders, as well as other applications positioned either upstream or downstream in the process.

Conclusion

Businesses need the framework and foundation to be architecturally strong, yet be flexible, scalable, and secure. Hence, PLM is mandatory for businesses not just to succeed but also to stay afloat and relevant in these ever-growing and competitive markets where the customer has to see the value in the product(s) to buy them. 

As the consumer gravitates more towards software-defined connected products, the businesses that cater to these needs have to naturally manufacture these products efficiently with mandated quality and higher margins. The products should be better in terms of value (real and perceived) in the segment they compete and be sustainable environmentally.



Source: Tata Technologies

EMPOWERING GROWTH

Dassault Systèmes, with its 3D Experience Lab, offers promising startups an ideal platform to unleash their creativity, foster innovation, and accelerate their journey toward unprecedented success. Here's knowing how three startup winners – 3k Nano, P-Flow, and Ares Systems – feel about the 3DxPitch Disruptive Innovation competition and their further plans...



Source: Dassault Systèmes

Bolstered by rapid advancements in technology and future-focused government policies, India's startup community has grown immensely in the last few years. In 2017, India was the world's third-largest country in terms of startup volumes with 4,200 new technology companies. The year 2023 witnessed a large number of veteran entrepreneurs, high-net-worth individuals (HNIs), and celebrities offering funding to the startup ecosystem. According to data gathered by market intelligence platform TheKredible, they have made upwards of 101 investments in 2023.

Dassault Systèmes' contribution

To support this group of innovative entrepreneurs who are breaking new ground to bring about significant positive change in the country, Dassault Systèmes enables access to the latest tools and technologies via its 3DEXPERIENCE Lab.

The 3DEXPERIENCE Lab showcases the power of the 3DEXPERIENCE Platform, bringing cloud connectivity, digital continuity, and operational efficiency to speed up time-to-market for new products.

Since 2015, the 3DEXPERIENCE Lab has brought Dassault Systèmes' market-leading

innovations to startups across the globe. It has worked with companies in IoT (Internet Of Things), Healthcare, Smart Cities, Transportation & Mobility, and various other segments to aid their product ideas through 3D simulations, smarter product design processes, and multi-disciplinary collaboration.

In September 2018, the company launched its 3DEXPERIENCE Lab in India in one of the country's major startup hubs, Pune. At the facility, entrepreneurs can leverage collective intelligence and Dassault Systèmes' technology to nurture projects that could bring in sustainable innova-

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“The 3DxPitch program offers an exceptional platform to connect with Dassault Systèmes, a leading company in technology and innovation. The program provides access to cutting-edge technological solutions and opens doors to a supportive ecosystem of industry professionals and experts who can provide invaluable guidance and support to startups like ours.”

Dr Pratima Solanki
Founder
3k Nano LLP
Special Center for NanoScience
Jawaharlal Nehru University,
New Delhi

tion, and transform society, and lives. The Lab is an open innovation center that works with selected startups across specific focus areas and provides deep support to their product design and development processes for two years.

Celebrating innovative startups: 3DxPitch 2023

3DxPitch by Startup was a remarkable event held during the 3DEXPERIENCE Forum 2023 with the objective of identifying disruptive startups that 3DS can support. The theme ‘Propelling Sustainability’ resonated with Indian industry leaders as the event aimed to foster startups with a positive impact on society.

The event featured an illustrious jury and took place on October 5, 2023, in Bangalore. Each startup had 20 minutes, including a 3-minute pitch and a 2-minute Q&A session with the jury.



“This unique partnership has opened doors to a network of experts, resources, and mentorship, fostering our growth and development in an environment that nurtures cutting-edge technologies and insights. This has empowered us to push the boundaries of what’s possible in our industry.”

Dr Ashish Rawandale-Patil
CEO, Tejnaksh Healthcare
Chief Urologist
Institute of Urology, Dhule

Meet the winners

The winners of the 3DxPitch Disruptive Innovation competition are as follows:

3k Nano: This startup specializes in new material technology, particularly nano-materials. They work with noble nanoparticles, quantum dots, nanofibers, metal and metal oxide nanoparticles, and nano-composites. These materials find applications in various environmental and medical fields. It was presented by Dr Pratima Solanki, Founder, 3k Nano LLP, Special Center for NanoScience, Jawaharlal Nehru University, New Delhi.

P-Flow: P-Flow offers a home-based urine flow and urine test kit designed to replace conventional uroflowmetry test procedures. Its portable kit provides a diagnosis of prostate and urinary infections, enhancing convenience for patients. It was led by Dr Ashish Rawandale-Patil,



“The Dassault team was very supportive throughout the process and guided us through the program very efficiently. They consistently helped us set up and structure our pitch, present, and also with meeting key stakeholders. We had a wonderful time associating with Dassault Systèmes.”

Yash Tambi
Founder & CEO
ARES Systems

CEO, Tejnaksh Healthcare and Chief Urologist, Institute of Urology, Dhule.

ARES Systems: ARES Systems envisions a sustainable world through hydrogen technology. They design and develop energy storage and conversion systems based on hydrogen (Fuel Cells) for off-road heavy-duty mobility and industrial applications. It was presented by ARES Systems’ Yash Tambi, Founder & CEO; Dr Dhiraj Mahajan, Co-founder & CTO; and Sikhar Barari, Founding Member.

The winner startups will get a chance to present at the Global 3DEXPERIENCE Lab Community event in Paris. Besides, they will be getting Communication and Branding in 3DS Social Media channels and six months of mentorship from Lab. They will also be receiving access to a 6-month 3DEXPERIENCE Platform (Industrial Software Design, Simulation Manufacturing, and Data Man-

In September 2018, the company launched its 3DEXPERIENCE Lab in India in one of the country’s major startup hubs, Pune. At the facility, entrepreneurs can leverage collective intelligence and Dassault Systèmes’ technology to nurture projects that could bring in sustainable innovation, and transform society, and lives.

3DxPitch by Startup was a remarkable event held during the 3DEXPERIENCE Forum 2023 with the objective of identifying disruptive startups that 3DS can support. The theme, 'Propelling Sustainability', resonated with Indian industry leaders as the event aimed to foster startups with a positive impact on society.



Shree Harsha, Logistics & Supply Chain Global Sales Strategy Director, Dassault Systèmes, at the event.

agement); access to 3DEXPERIENCE Platform Training; and access to External 3DEXPERIENCE Lab Swym community and Global Startup ecosystem.

Sharing of the experience

Dr Solanki notes that her association with Dassault Systèmes and the 3DEXPERIENCE Lab through the 3DxPitch program has been incredibly valuable. "It has provided us with a unique opportunity to showcase our startup on an international stage. The program has also given us access to a network of experts, resources, and mentorship that has been instrumental in our growth and development. The collaborative environment has allowed us to tap into cutting-edge technologies and gain insights that are helping us push the boundaries of what's possible in our new Materials industry."

She highly recommends participating in the 3DxPitch program to her peers in the startup community. "It offers an exceptional platform to connect with Dassault Systèmes, a leading company in technology and innovation. The program provides access to cutting-edge technological solutions and opens doors to a supportive ecosystem of industry professionals and

experts who can provide invaluable guidance and support to startups like ours. The experience is transformative, offering opportunities for collaboration and growth that are unparalleled in the startup landscape." She then shares plans to collaborate with institutions such as AIC-JNU to strengthen the startup's presence in the Indian research industry. "Through a customer-centric approach, we aim to not only increase our reach but also provide tailored solutions that address the specific needs of the Indian health sector as well as other industries," she reveals.


For Dr Patil of P-Flow, collaboration with Dassault Systèmes and the 3DEXPERIENCE Lab through the 3DxPitch program has been an invaluable catalyst for the startup, propelling its healthcare innovation to new horizons. "This unique partnership has opened doors to a network of experts, resources, and mentorship, fostering our growth and development in an environment that nurtures cutting-edge technologies and insights. This has empowered us to push the boundaries of what's possible in our industry," he adds.

He strongly endorses his fellow entrepreneurs in the startup

community to engage with the 3DxPitch program and intends to utilize his established connections to bolster the startup's footprint in the Indian market where a common man can access its products. "Furthermore, we are committed to actively interacting with industry associations, joining pertinent conferences and events nationally and internationally," he further adds.

IIT-Ropar incubated Ares Systems is a deep-tech green hydrogen startup developing novel materials and technologies for highly efficient membrane-less electrolysis. "We provide containerized plug-and-play on-site hydrogen generation systems based on its proprietary technology, an indigenous, novel and highly efficient (>85% HHV) and low cost (<200\$/kWe), which helps bring down the cost of green hydrogen production drastically," Tambi claims. Sharing his experience at the 3DxPitch program, he remarks, "The Dassault team was very supportive throughout the process and guided us through the program very efficiently. They consistently helped us set up and structure our pitch, present, and also with meeting key stakeholders. We had a wonderful time associating with Dassault."

He shares that it turned out to be a useful experience to pitch in front of a highly intellectual audience present at the pitch event. "Moreover, Dassault's suite of software is very useful for a multi-physics development such as ours and having them available definitely speeds up the development and scale up the process," he adds.

At present, the startup is focusing on developing and maturing its technology further which, Tambi reveals, will continue over the next year. "Commercialization is expected to begin 2026 onwards," he adds. 

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LMW EXPANDS ITS FOOTPRINT

Lakshmi Machine Works (LMW) – Machine Tool Division hosted a successful and exclusive roadshow at Ambattur Industrial Estate Manufacturers' Association (AIEMA) in Ambattur, Chennai, on November 24-25, 2023. It was an excellent opportunity for the industry players to explore the company's cutting-edge machines featured at the show.



Source: Magic Wand Media

Lakshmi Machine Works (LMW) – Machine Tool Division has opened an office in Chennai which will serve as a vital platform for connecting with its customers from the target industries.

The Automobile industry in India is anticipated to grow substantially in the near future. With Chennai rising in status as an automobile manufacturing hub, Ambattur has emerged as a key location for auto components manufacturing. This move facilitates LMW to connect with auto components manufacturers, which are its prime customers, and also customers from diverse industries including Die & Mold, Valves, Fittings, Tool-room, and many more.

“LMW’s cutting-edge machines are built to successfully meet industry demands and ensure high quality and precision for accurate machining results. They consistently deliver products that meet tight tolerances, enabling the production of high-precision components. Moreover, these machines address market needs by optimizing efficiency and productivity, achieving maximum output, minimizing cycle times, and significantly reducing downtime,” noted Indraneel Bhattacharya, Vice President, Sales & Marketing, Lakshmi Machine Works – Machine Tool Division. The upcoming warehouse cum center will stock spare parts for all fast-selling LMW machines.

The company’s Ambattur office is equipped to provide spare support, maintaining an inventory of spare parts and consumables. To expedite delivery, a few critical components will be stocked to reduce lead times for spare parts from the LMW plant to customer locations.

Service facility and virtual help

LMW’s Machine Tool Division has a dedicated service team in the Ambattur region that effectively covers 12 surrounding areas, ensuring prompt assistance for over 1,800 machines. “We provide a comprehensive multi-channel support system, allowing customers to report service-related inqui-

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ries through our Web portal, Mobile app, Toll-free number, or E-mail. Our skilled service engineers promptly visit customer locations, swiftly resolving issues. Proximity to our customers enables us to minimize downtime, ensuring quick resolution of service-related matters," informed Bhattacharya.

Following are the machines that were featured in the Open House:

Smart Minimaster HTC - Ultra-Compact Turning Center

Smart Minimaster is an ultra-compact turning center equipped with Turret and Linear tooling options to cater to the evolving needs of emerging industries where accuracy and productivity are paramount. This cutting-edge machine is designed to deliver outstanding performance while taking up minimal space on the shop floor, occupying just 1.77 sq m.

It comes packed with essential features as standard, ensuring efficient operations and enhanced productivity. It has a 5 in. chuck, a spindle speed up to 6,000 rpm and a power of 3.7/5.5 kW. For maximum efficiency, the machine offers rapid rates of 30 m/min, significantly reducing idle times and enhancing overall productivity. This makes it the ideal solution for small part turning with high volume demands, catering to the needs of diverse industries.



"LMW's cutting-edge machines are built to successfully meet industry demands and ensure high quality and precision for accurate machining results. They consistently deliver products that meet tight tolerances, enabling the production of high-precision components. Moreover, these machines address market needs by optimizing efficiency and productivity, achieving maximum output, minimizing cycle times, and significantly reducing downtime."

Indraneel Bhattacharya
Vice President, Sales & Marketing
Lakshmi Machine Works - Machine Tool Division

When it comes to precision machining, the Smart Minimaster stands out as a best-in-class choice. Perfectly suited for industries dealing with fittings, connectors, bearings, and more, it truly lives up to its name as a mini master.

JD 1 - High-Speed Drill Tap Center

JD1 has a stroke capabilities of 500 mm on the X-axis, 400 mm

on the Y-axis, and 320 mm on the Z-axis. It also boasts a spacious pallet size of 650 mm X 400 mm, allowing for efficient handling of the materials. This machine is designed to deliver superior performance and precision. LMW's high-speed drill tap center features a rigid structure that provides a wider working area, allowing for greater flexibility and precision.

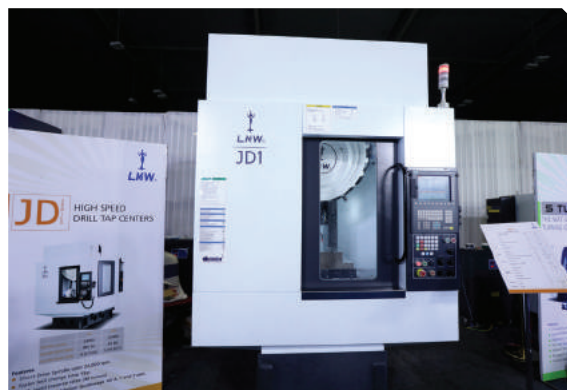
With a direct drive BBT 30 high-speed spindle up to 24,000 rpm, this machine is capable of delivering unparalleled performance and accuracy. The high-speed pocket tilting automatic tool changer ensures smooth and seamless tool changes, while the high rapid transverse rates of 48 m/min enable efficient and speedy movements of the machine.

Its advanced design ensures exceptional precision and efficiency in the production of high-quality components for the Automobile, Electric Vehicle, Die & Mold, and Electronic segments.

Gigaturn I - Optimal Large Diameter Turning Center

This state-of-the-art machine is equipped with distinctive features to enhance turning operations. With a maximum turning diameter of 510 mm and a turning length of 590 mm, this machine can handle a variety of turning operations with ease. The machine is equipped with an A2-11 spindle and an 18-inch

The company's Ambattur office is equipped to provide spare support, maintaining an inventory of spare parts and consumables. To expedite delivery, a few critical components will be stocked to reduce lead times for spare parts from the LMW plant to customer locations.



Source: Magic Wand Media



Source: Magic Wand Media

This move facilitates LMW to connect with auto components manufacturers, which are its prime customers, and also customers from diverse industries including Die & Mold, Valves, Fittings, Tool-room, and many more.


chuck, making it ideal for working with large workpieces. With spindle power ranging from 15 kW to 30 kW, this machine can handle even the toughest of materials and produce high-quality finished products. A 12-station hydraulic turret provides stable cutting, ensuring efficient and precise results. This machine also boasts roller LM guideways on all axes, delivering exceptional accuracy. Gigaturn offers enhanced chip disposal capacity in addition to a powerful cutting capacity. Gigaturn can be optimized for the machining of aluminum alloy wheels with necessary work holdings and accessories. It also

caters to other industries like Pump & Valve, Oil & Gas, Industrial Machinery, etc.

J2 - Vertical Machining Center

J Series machines have a high demand in the market for their exceptional reliability, performance, and precision. These machines have a wide working area and boast spindle power ranging from 7.5 to 22 kW, with a direct drive spindle speed of up to 12,000 rpm. The machines feature direct drive BT 40 and BT 50 spindles and also have the option of BBT 40 and BBT 50 spindles. In addition, the J series machines are equipped with a 24-tool ARM-type automatic tool

changer (ATC) that facilitates rapid and efficient tool changes, taking less than 2 seconds. The machines feature precision linear guideways on the X, Y, and Z axes, ensuring accuracy and stability during operation. Rotary Automatic Pallet Changer (RAPC) is available in the selected models of the J Series as an optional feature.

J Series machines can be easily configured to handle different materials like steel, aluminum, brass, die steel, Inconel, and titanium. These machines are highly versatile and cater to major industries like Automobile, Die & Mold, Pumps & Valves, Forging, and General Engineering. 



Source: Magic Wand Media



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ISFT 2024: FORMING TECHNOLOGIES FOR SUSTAINABLE GROWTH

With a view to highlight advancements and applications in Forming Technologies, Indian Machine Tool Manufacturers' Association (IMTMA) is organizing a one-day 'International Seminar on Forming Technology' on January 18, 2024, a day before IMTEX FORMING 2024, at BIEC (Bangalore International Exhibition Centre).



Source: Magic Wand Media

The 'International Seminar on Forming Technology' will attempt a wide coverage of topics and new developments in the Forming arena that could be readily implemented to improve productivity and stay updated with the market trends.

The seminar will spotlight a range of recently evolved, better-optimized forming technologies and their supportive ecosystem of software, design, and

equipment to enable sustainable growth through: the evolution of electric and hydrogen vehicles with more range per charge; lightweighting of vehicles and airplanes for lesser fuel consumption; energy-efficient and minimal waste seeking manufacturing processes to reduce overall carbon footprint; and simulation-powered, predictable, defect-free, and first-time-right manufacturing processes.

Seminar highlights

The Seminar is to include inaugural and keynote sessions on the 'Opportunities and Preparedness for Infrastructure Growth' by JBM Auto and 'Prospects in Defense Sector for Indian Manufacturing Industry' by L&T Defense.

Other keynote sessions during the day will be on 'Light weighting of Aircraft and Automotive Components' by The Japan Steel

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Focus Areas

- Technologies of automotive / EV lightweight with improved crashworthiness
- Virtual Proving and Predictive Software
- Stamping Process, Equipment, and Tools
- Recent developments in Sheet / Plate Cutting, Bending, and Joining
- Exotic Sunrise Technologies
- Innovations to watch for
- Expert Solutions

Works and 'Prospects of Forming Industry into Aerospace Sector' by Godrej Aerospace. Sessions will be happening as per the themes in different halls. The theme on 'New Technology Trends' will cover topics such as 'Customer and Application-driven Trends in Tube Bending and Press Forming' by Electropneumatics & Hydraulics, India; 'Hot Forming' by ALF Engineering, In-

Keynote Sessions


- 'Opportunities and Preparedness for Infrastructure Growth' by JBM Auto
- 'Prospects in Defense Sector for Indian Manufacturing Industry' by L&T Defense
- 'Light weighting of Aircraft and Automotive Components' by The Japan Steel Works
- 'Prospects of Forming Industry into Aerospace Sector' by Godrej Aerospace

dia; 'Hollow drive train elements for EVs by Rotary Swaging and Axial Forming Technology' by FELSS, Germany; and 'Challenges in making Dies for AHSS' by Tata Technologies, India. The theme on 'Equipment and Processes' will cover topics of 'Technologies for Aero-Def segment' by Kalyani Strategic Systems, India; 'Industry 4.0 for Forming Equipment and

Tools' by Marposs, Germany; 'Adaptive Sheet Bending at Press Brake' by Bystronics, India; and 'Presses with I4 compatibility for Progressive & Transfer Dies' by ISGEC, India.

The theme on 'Tools and Enabling Ecosystem' will cover topics, including 'I4.0 compatible features in Compact Multi-function Dies' by Fibro, Germany; 'Die Life enhancement with Laser Cladding & Laser Hardening' by TRUMPF, India; 'Optimal Milling Data Preparation for Draw Dies' by Autoform, India; and 'Automated Quality See-through with Digitization' by APM Technologies, India.

The theme on 'Laser Applications and Joining' will focus on topics such as 'New developments in Laser Remote Welding' by Scansonic Laser Automation, Germany; 'Dynamic Beam Mode in Laser Cutting' by Proteck, India; 'Advances in Sheet Welding Technology' by Fronius, India; and 'Forecasting Joint Quality: Simulation of Sheet Joining' by Hexagon, India.

Other sessions include 'Manufacturing of Bipolar Plates for Fuel Cells for EVs' by IIT - Bombay, India and 'Process and Simulation for Roll Forming' by Data M, Germany. 

The seminar will spotlight a range of recently evolved, better-optimized forming technologies and their supportive ecosystem of software, design, and equipment to enable sustainable growth.

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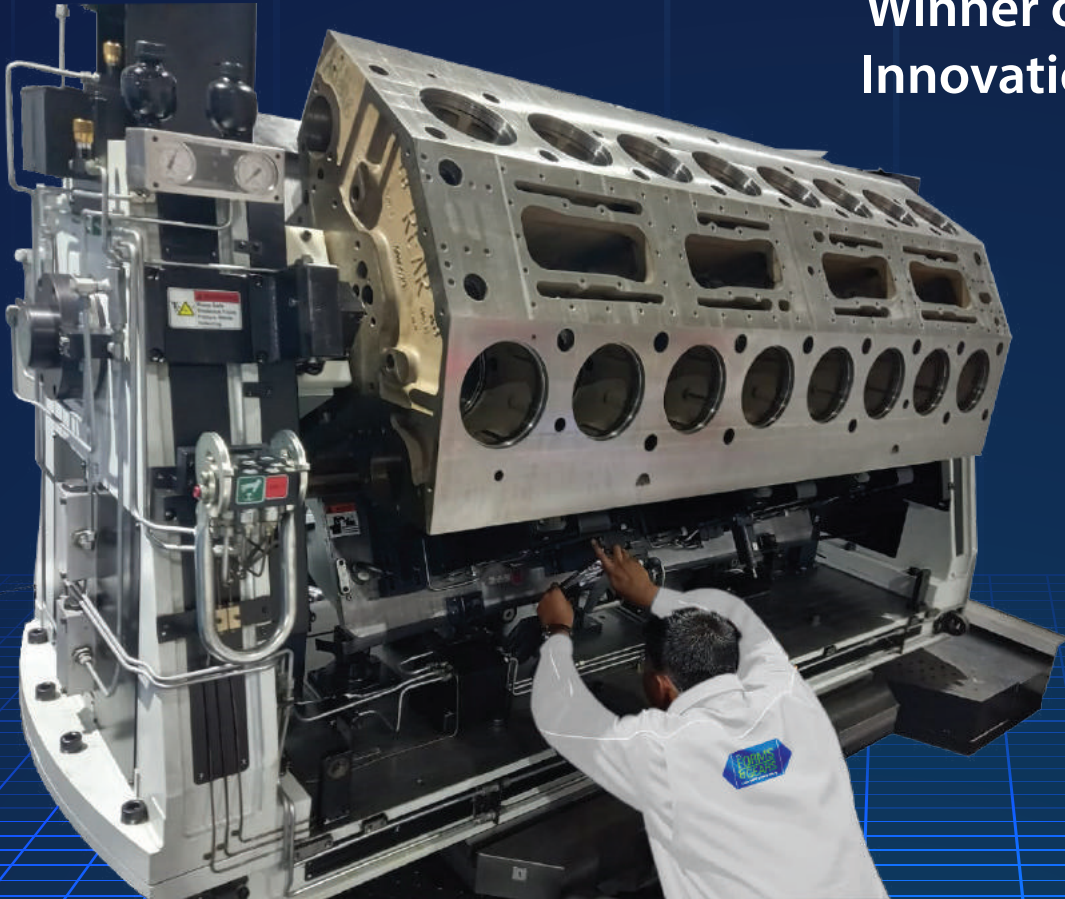


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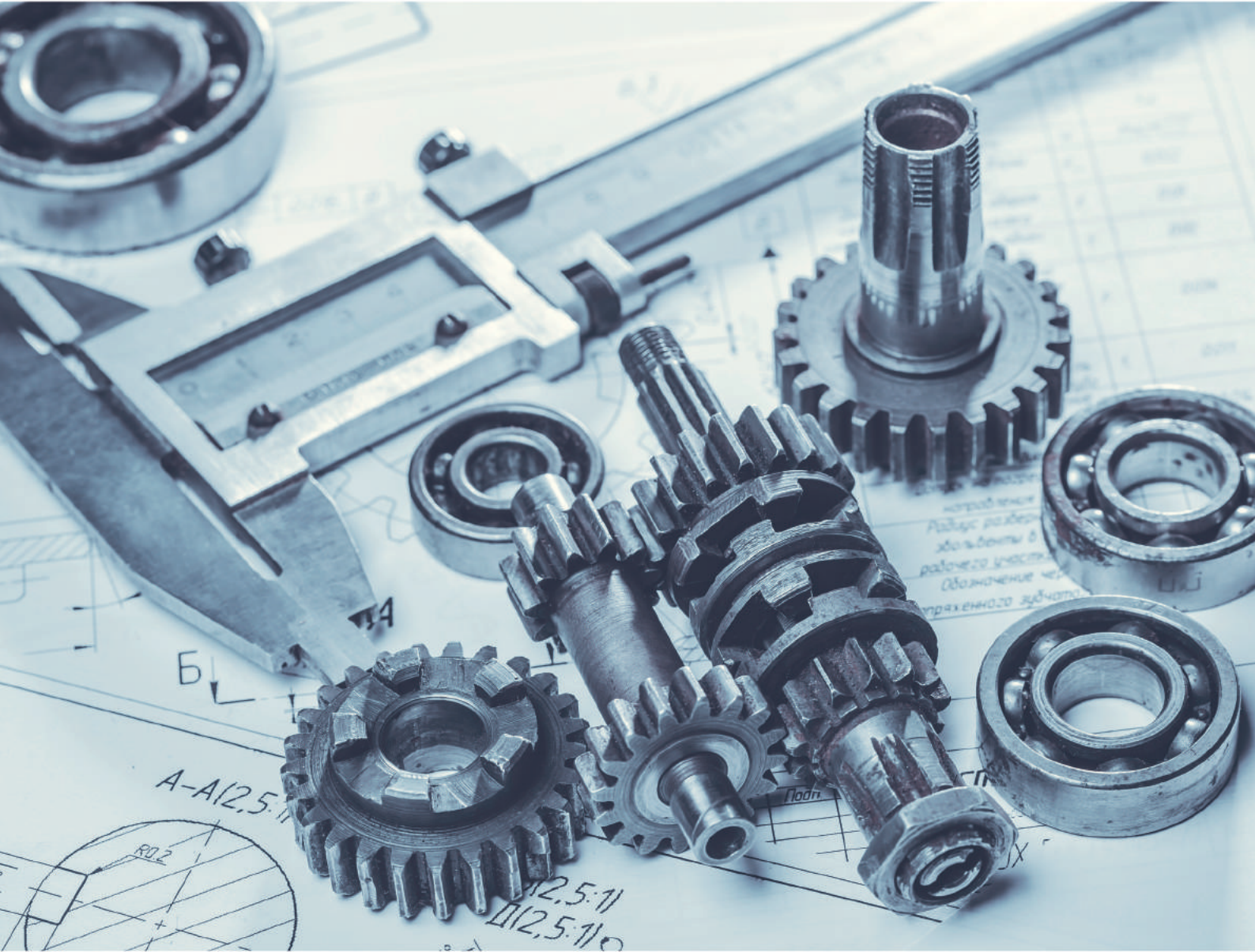
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